И. А. Асеева

Искусственный интеллект и общество: аннотированная библиография 2017-2021 гг.

Содержание

Введение

Разработка технологии искусственного интеллекта, его внедрение в информационные системы различных сфер общества выявили несомненные экономические выгоды, но вместе с тем привели к неожиданным последствиям, проявили проблемы взаимодействия человека с умными машинами. Высказываются опасения, что разработки в областях глубинного обучения, роботизация производственных процессов, использование технологий с функцией искусственного интеллекта подвергают опасности человечество, ставят под сомнение оптимистический сценарий его развития в будущем. Это, разумеется, обостряет вопросы ответственного отношения к разработке интеллектуальных систем и технологий, заставляет производить глубокий анализ на этапах проектирования, прогнозирования результатов и эффектов использования таких систем, моделировать процесс работы интеллектуальных систем в реальных условиях для выявления непредвиденных критических, конфликтных, опасных для человечества ситуаций.

В представленном обзоре обсуждению социальных эффектов разработки и применения искусственного интеллекта (ИИ) посвящен целый ряд статей авторов из Португалии, Великобритании, США, Испании, Италии, Китая, Швейцарии, Германии, России и других стран. Период публикации статей – 2017–2021 гг. – не случаен, именно на него приходится пик интереса исследователей к этой проблематике.

Обзор структурирован по основным социальным сферам, испытывающим непосредственное и неоднозначное влияние технологии ИИ: этика, право, экономика, политика, здравоохранение, образование, экология, городская среда. Каждый раздел снабжен гиперссылкой для облегчения поиска публикаций. Кроме того, для лучшей ориентации в теме и содержании публикации приводится ее краткая аннотация, ключевые слова и ссылка на источник.

Мы надеемся, что данный аннотированный обзор будет полезен ученым, студентам, аспирантам и всем заинтересованным в осмыслении социокультурных проблем и последствий разработки и применения технологии ИИ.

01. Влияние ИИ на общество, вызовы и возможности

Искусственный интеллект проникает во все сферы жизни людей, предоставляя беспрецедентные возможности и создавая ранее неизвестные социальные напряжения. В подборке статей этого раздела обсуждается суть ИИ как гибридного социобиотехнического феномена, функции и сферы использования ИИ обществом, рискогенная роль ИИ в современном сложном социуме, анализируются отложенные риски и возможность кардинального изменения человеческого общества в связи с внедрением интеллектуальных технических инноваций.

Авторов интересует проблема адаптации машин с ИИ в обществе, критически осмысливается возможность передачи части человеческих компетенций и функций роботам, оцениваются опасности троллинга, манипулирования, нарушения прав человека в связи с повсеместным распространением новых интеллектуальных технологий, а также способы снижения агрессии, в частности вербальной агрессии в социальных сетях с помощью специализированных чат-ботов.

Au-Yong-Oliveira, M., Lopes, C., Soares, F., Pinheiro, G., Guimarães P.

What can we expect from the future? The impact of Artificial Intelligence on Society // *15th Iberian Conference on Information Systems and Technologies (CISTI)*, 2020, 1-6, doi:10.23919/CISTI49556.2020.9140903.

URL:https://ieeexplore.ieee.org/document/9140903

Abstract. The impact of the digital revolution has influenced society significantly in many ways, including with Artificial Intelligence (AI). The advantages and disadvantages of AI and what can be and should be done in order to influence that in a positive way are discussed. The study is based on interviews (ten) and survey answers (from 100 respondents). The survey results show that there is a general concern about the impact of AI in the future (the negative impact on work and related to a general loss of control). Furthermore, more than 50% of the answers lead to the thought that “Humans will learn to use the power of computers to improve their own skills and be ahead of AI”. As concerns the interviews, it was interesting to realize that practical courses, such as students studying engineering, were the ones who were afraid of AI instead of the social ones. This may be because the engineering students are the ones who know more about AI so they better realize the possible implications of AI on their future jobs. Another possible reason is that non-engineering students believe that human sensibility needed in their fields of study is more difficult to reproduce by AI machines than technical skills present in other fields of study/jobs.

Keywords: artificial intelligence, robots, task analysis, law, computers, automation.

Cave, S., ÓhÉigeartaigh, Seán S.
An AI Race for Strategic Advantage: Rhetoric and Risks // *ACM Conference on AI, Ethics, and Society (AIES'18)*, February 2–3, 2018, New Orleans, LA, USA, doi:10.1145/3278721.3278780.
URL:https://www.researchgate.net/publication/330280774_An_AI_Race_for_Strategic_Advantage_Rhetoric_and_Risks

Abstract. The rhetoric of the race for strategic advantage is increasingly being used with regard to the development of artificial intelligence (AI), sometimes in a military context, but also more broadly. This rhetoric also reflects real shifts in strategy, as industry research groups compete for a limited pool of talented researchers, and nation states such as China announce ambitious goals for global leadership in AI. This paper assesses the potential risks of the AI race narrative and of an actual competitive race to develop AI, such as incentivising corner-cutting on safety and governance, or increasing the risk of conflict. It explores the role of the research community in responding to these risks. And it briefly explores alternative ways in which the rush to develop powerful AI could be framed so as instead to foster collaboration and responsible progress.
Keywords: artificial intelligence, AI, advantages, strategic advantages, potential risks.

Колесникова, Г.И.
Искусственный интеллект: проблемы и перспективы // *Видеонаука*, 2018, 2(10), 5.
URL:https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-problemy-i-perspektivy

Аннотация. В современном научном пространстве всё активнее исследуется искусственный интеллект и, как следствие, нарастают споры о перспективах и рисках его более широкого применения. Автор, выделяя основные проблемы интеграции искусственного интеллекта в пространство человеческого социума, которые могут возникнуть в ближайшем будущем, намечает и возможные способы их если не предотвращения, то нивелирования.
Ключевые слова: искусственный интеллект, компьютер, робот, мышление, сознание, осознание, личность, общество, человечество, проблемы, перспективы, будущее.

Лукьянова, Е.Д.
Создание искусственного интеллекта: современные достижения и отложенные риски // *Социологическая наука и социальная практика*, 2019, 1(25), 142-148, doi: 10.19181/snsp.2019.7.1.6275.
URL:https://cyberleninka.ru/article/n/sozdanie-iskusstvennogo-intellekta-sovremennye-dostizheniya-i-otlozhennye-riski

Аннотация. В статье рассмотрена проблема развития искусственного интеллекта, его амбивалентное влияние на общество и человека. Дано определение искусственного интеллекта, очерчено проблемное поле его исследования. Проанализированы явные и латентные функции искусственного интеллекта, которые могут спровоцировать отложенные риски. Рассмотрен искусственный интеллект как сложный социобиотехнический гибрид и качественно новый механизм социального контроля. Оценены достижения, а также рискогенная роль искусственного интеллекта в современном сложном социуме в производстве отложенных рисков. Особое внимание уделяется знанию о феномене искусственного интеллекта, приобретающего междисциплинарный характер.
Ключевые слова: сложный социум, искусственный интеллект, цифровизация экономики и социума, побочные эффекты, риски, дегуманизация, рационализация, социобиотехнический гибрид, социальный контроль.

Liu, Zh.
Sociological perspectives on artificial intelligence: A typological reading // *Sociology Compass*, 2021, 15, doi:10.1111/soc4.12851.
URL:https://compass.onlinelibrary.wiley.com/doi/10.1111/soc4.12851

Abstract. Interest in applying sociological tools to analysing the social nature, antecedents and consequences of artificial intelligence (AI) has been rekindled in recent years. However, for researchers new to this field of enquiry, navigating the expansive literature can be challenging. This paper presents a practical way to help these researchers to think about, search and read the literature more effectively. It divides the literature into three categories. Research in each category is informed by one analytic perspective and analyses one “type” of AI. Research informed by the “scientific AI” perspective analyses “AI” as a science or scientific research field. Research underlain by the “technical AI” perspective studies “AI” as a meta-technology and analyses its various applications and subtechnologies. Research informed by the “cultural AI” perspective views AI development as a social phenomenon and examines its interactions with the wider social, cultural, economic and political conditions in which it develops and by which it is shaped. These analytic perspectives reflect the evolution of “AI” from chiefly a scientific research subject during the twentieth century to a widely commercialised innovation in recent decades and increasingly to a distinctive socio-cultural phenomenon today.
Keywords: artificial intelligence, digital technology, sociology typology.

Kelley, K.H., Fontanetta, L.M., Heintzman, M., Pereira, N.
Artificial Intelligence: Implications for Social Inflation and Insurance //
Risk Management and Insurance Review, 2018, 21(3), 373-387, doi:10.1111/rmir.12111.

URL:https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3302778

Abstract. Artificial intelligence (AI) has the ability to enhance the insurance industry's value chain by altering relationships, reinventing business platforms, and expanding hidden data. Insurance companies will apply AI to greatly enhance large data analytics, evolve algorithms with transactional data faster, and combine data in new ways to discover better underwriting risks and appropriately price the risk of various insureds based on the true value of their business risks. This article explores how AI will have a significant impact on the workforce, jobs, and furthermore how the elimination of jobs will potentially exacerbate social equality gaps on a global scale, leading to a shift in culture and increased social inflation, thus impacting the insurance industry as well as its customers.
Keywords: artificial intelligence, social insurance, impact, social inflation.

Луков, С.В.
Искусственный интеллект и киберпространство // *Горизонты гуманитарного знания*, 2017, 2, 71-76, doi:10.17805/ggz.2017.2.7.
URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-i-kiberprostranstvo

Аннотация. В статье рассматриваются две стороны киберпространства, в рамках которого искусственный интеллект используется как технология самонастройки компьютеров. Одна сторона показывает опасности киберпространста для человека, другая – преимущества, которые человек может использовать в решении транспортной проблемы. Искусственный интеллект и киберпространство, таким образом, открываются для человека теми или иными своими сторонами в зависимости от ценностного выбора человека.
Ключевые слова: киберпространство, искусственный интеллект, ценности, национальная безопасность, андроид, ватцап, Викиликс, автономный автомобиль для райдшеринга, тезаурусный подход.

Lea, G.R.
Constructivism and its risks in artificial intelligence // *Prometheus*, 2020, 36(4) (December 2020), 322-346.
URL:https://www.jstor.org/stable/10.13169/prometheus.36.4.0322

Abstract. The research and development of artificial intelligence (AI) technologies involve choices that extend well beyond the search for narrow engineering solutions to problems. The label ‘constructivism’ is used to capture this larger realm of social choice. Drawing on the history of AI, a distinction is made between limited artificial narrow intelligence (ANI) and artificial general intelligence (AGI). Both forms, the paper argues, carry risks. Following this history, the paper outlines how different approaches to rationality have led to different ‘tribes’ of AI. No universal model of rationality is available to AI engineers. Choice is

everywhere. The paper then moves to an exploration of the links between AI and chess. It argues that chess, far from being an objective measure of rationality and intelligence, reveals the subjective biases and risks involved in the pursuit of AI. The paper moves on to provides examples of various unstable and potentially dangerous race heats taking place in AI, including those among various AI research groups (public and private), among corporations and among states. The final section draws together the various risks of AI.
Keywords: Artificial intelligence, risks, sociology, implementation.

Aale, L., Ylipulli, J.
Artificial Intelligence and Risk in Design // *Proceedings of the 2020 ACM Designing Interactive Systems Conference*, 2020, 1235-1244.
URL:https://dl.acm.org/doi/10.1145/3357236.3395491

Abstract. As artificial intelligence (AI) technologies are more and more integrated into everyday lives, both scholarly and popular discourses on AI's often revolve around charting the various risks that may be associated with them. The manner and magnitude of risk that various researchers identify and foresee varies; however, what is common between them is, undoubtedly, the concept of risk itself. This concept, we argue, has been largely taken for granted by the fields involved in the research on AI's; in other words, "risk" has been employed with an everyday sensibility without due critical examination. In this paper, we address risk as a concept directly, by examining interdisciplinary theories and literatures on risk to discuss examples of AI technologies. Through this work, we aim to begin a critical discussion of the importance of theorising risk within design research and practice, and within the development of emerging technologies.
Keywords: artificial intelligence, general AI, narrow AI, urban AI, risk, subjective risk, objective risk, experience, theory.

Nyholm, S., Smids, J.
Can a Robot Be a Good Colleague? // *Science and Engineering Ethics*, 2019, 26(4), 2169-2188, doi:10.1007/s11948-019-00172-6.
URL:https://doi.org/10.1007/s11948-019-00172-6

Abstract. This paper discusses the robotization of the workplace, and particularly the question of whether robots can be good colleagues. This might appear to be a strange question at first glance, but it is worth asking for two reasons. Firstly, some people already treat robots they work alongside as if the robots are valuable colleagues. It is worth reflecting on whether such people (e.g. soldiers giving “fallen” military robots military funerals and medals of honor) are making a mistake. Secondly, having good colleagues is widely regarded as a key aspect of what can make work meaningful. In discussing whether robots can be good colleagues, the paper compares that question to the more widely discussed questions of whether robots can be our friends or romantic partners. The paper argues that the ideal of being a good colleague has many different parts, and that

on a behavioral level, robots can live up to many of the criteria typically associated with being a good colleague. Moreover, the paper also argues that in comparison with the more demanding ideals of being a good friend or a good romantic partner, it is comparatively easier for a robot to live up to the ideal of being a good colleague. The reason for this is that the "inner lives" of our friends and lovers are more important to us than the inner lives of our colleagues.
Keywords: robots, colleagues, meaningful work, human–robot interaction, friendship and love.

Daley, K.
Two arguments against human-friendly AI // *AI and Ethics*, 2021, 1(4), 435-444.
URL:https://doi.org/10.1007/s43681-021-00051-6

Abstract. The past few decades have seen a substantial increase in the focus on the myriad ethical implications of artificial intelligence. Included amongst the numerous issues is the existential risk that some believe could arise from the development of artificial general intelligence (AGI) which is an as-of-yet hypothetical form of AI that is able to perform all the same intellectual feats as humans. This has led to extensive research into how humans can avoid losing control of an AI that is at least as intelligent as the best of us. This 'control problem' has given rise to research into the development of 'friendly AI' which is a highly competent AGI that will benefit, or at the very least, not be hostile toward humans. Though my question is focused upon AI, ethics and issues surrounding the value of friendliness, I want to question the pursuit of human-friendly AI (hereafter FAI). In other words, we might ask whether worries regarding harm to humans are sufficient reason to develop FAI rather than impartially ethical AGI, or an AGI designed to take the interests of all moral patients – both human and non-human – into consideration. I argue that, given that we are capable of developing AGI, it ought to be developed with impartial, species-neutral values rather than those prioritizing friendliness to humans above all else.
Keywords: AI, artificial general intelligence, superintelligence, existential risk, control problem, impartiality, friendly AI.

Kaplan, A., Haenlein, M.
Rulers of the world, unite! The challenges and opportunities of artificial intelligence // *Business Horizons*, 2020, 63(1), 37-50.
URL:https://doi.org/10.1016/j.bushor.2019.09.003

Abstract. A decade ago, we published an article in Business Horizons about the challenges and opportunities of social media with a call to action: "Users of the world, unite!" To celebrate its anniversary, we look at artificial intelligence and the need to create the rules necessary for peaceful coexistence between humanity and AI. Hence, we now are urging: "Rulers of the world, unite!" In this article, we outline six debates surrounding AI in areas like artificial superintelligence,

geographical progress, and robotics; in doing so, we shed light on what is fact and what is utopia. Then, using the PESTEL framework, we talk about the six dilemmas of AI and its potential threat and use. Finally, we provide six directions on the future of AI regarding its requirements and expectations, looking at enforcement, employment, ethics, education, entente, and evolution. Understanding AI's potential future will enable governments, corporations, and societies at large (i.e., the rulers of this world) to prepare for its challenges and opportunities. This way, we can avoid a scenario in which we return in 10 years to write the article: "Dreamers of the world, unite!"
Keywords: artificial intelligence, artificial superintelligence, human-machine symbiosis, machine learning, robotics, work displacement.

Wirtz, B.W., Weyerer, J.C., Geyer, C.
Artificial Intelligence and the Public Sector – Applications and Challenges // *International Journal of Public Administration*, 2019, 42(7), 596-615.
URL:https://doi.org/10.1080/01900692.2018.1498103

Abstract. Advances in artificial intelligence (AI) have attracted great attention from researchers and practitioners and have opened up a broad range of beneficial opportunities for AI usage in the public sector. Against this background, there is an emerging need for a holistic understanding of the range and impact of AI-based applications and associated challenges. However, previous research considers AI applications and challenges only in isolation and fragmentarily. Given the lack of a comprehensive overview of AI-based applications and challenges for the public sector, our conceptual approach analyzes and compiles relevant insights from scientific literature to provide an integrative overview of AI applications and related challenges. Our results suggest 10 AI application areas, describing their value creation and functioning as well as specific public use cases. In addition, we identify four major dimensions of AI challenges. We finally discuss our findings, deriving implications for theory and practice and providing suggestions for future research.
Keywords: artificial intelligence, public sector, AI applications, AI challenges.

Boyd, R., Holton, R.J.
Technology, innovation, employment and power: Does robotics and artificial intelligence really mean social transformation? // *Journal of Sociology*, 2018, 54(3), 331-345.
URL:https://doi.org/10.1177/1440783317726591

Abstract. How far do recent innovations in robotics and artificial intelligence herald an unprecedented economic and social transformation? This article provides a critical evaluation of this question, challenging the relentless technological determinism of much debate, and reframing the issues involved within a political-economic and sociological approach. This focuses on the economic, political and historical dynamics of technological innovation, and its consequences for

employment and economic re-structuring, mediated through sovereign and discursive power. A range of epistemological and empirical problems with the transformationist position are identified, and an alternative perspective proposed emphasizing complexity and uncertainty around contemporary and future trends.
Keywords: artificial intelligence, employment, robotics, social transformation, sociology, technological innovation.

Societal, Economic, Ethical and Legal Challenges of the Digital Revolution: From Big Data to Deep Learning, Artificial Intelligence, and Manipulative Technologies. In: Helbing D. (eds). Towards Digital Enlightenment. Springer, Cham, 2019, 47-72.
URL:https://doi.org/10.1007/978-3-319-90869-4_6

Abstract. In the wake of the on-going digital revolution, we will see a dramatic transformation of our economy and most of our societal institutions. While the benefits of this transformation can be massive, there are also tremendous risks to our society. After the automation of many production processes and the creation of self-driving vehicles, the automation of society is next. This is moving us to a tipping point and to a crossroads: we must decide between a society in which the actions are determined in a top-down way and then implemented by coercion or manipulative technologies (such as personalized ads and nudging) or a society, in which decisions are taken in a free and participatory way and mutually coordinated. Modern information and communication systems (ICT) enable both, but the latter has economic and strategic benefits. The fundaments of human dignity, autonomous decision-making, and democracies are shaking, but I believe that they need to be vigorously defended, as they are not only core principles of livable societies, but also the basis of greater efficiency and success.
Keywords: manipulative technologies, super-intelligent machines, FuturICT, Planetary Nervous System, informational self-determination.

Абрамова, О.Ф.
Общество и искусственный интеллект: путь к человекоцентрированному подходу // *Информационное общество*, 2020, 5, 10-21.
URL:http://infosoc.iis.ru/article/view/506

Аннотация. Оптимальный сценарий безопасного и ответственного внедрения искусственного интеллекта (далее ИИ) предполагает человекоцентрированный подход – использование технологий для помощи человеку, а не для его замены. Такая стратегия позволит снизить сопротивление инновациям, страх нового в обществе и ускорит положительный эффект от автоматизации мыслительных процессов. Для создания более развитого, универсального ИИ обществу потребуется решить ряд задач: интеграция социально-психологических конструктов в технологии ИИ, внедрение этических норм в структуру ИИ, ответственность

разработчиков, безопасность и контроль ИИ. Теоретическая статья рассматривает перспективы принятия ИИ обществом с описанием основных социальных рисков, сравнивает интеллект машины и человека с целью лучшего понимания роли человека при создании и распространении ИИ.
Ключевые слова: искусственный интеллект, человекоцентрированный подход, технологическое общество, риски искусственного интеллекта, полезный ИИ.

Bilewicz, M., Tempska, P., Leliwa, G., Dowgiałło, M., Tańska, M., Urbaniak, R., Wroczyński, M.
Artificial intelligence against hate: Intervention reducing verbal aggression in the social network environment // *Aggressive behavior*, 2021, 47(3), 260-266.
URL:https://onlinelibrary.wiley.com/doi/abs/10.1002/ab.21948

Abstract. This article presents a quasi-experimental intervention study designed to reduce the level of verbal aggression on a social networking service (Reddit). The interventions were based on three psychological mechanisms: induction of a descriptive norm, induction of a prescriptive norm, and empathy induction. Each intervention was generated using a communicating bot. Participants exposed to these interventions were compared with a control group that received no intervention. The bot-generated normative communications (both the ones priming descriptive and the ones priming prescriptive norms), as well as the empathizing intervention, reduced the proportion of verbal aggression posted by Reddit accounts. All three interventions proved effective in reducing verbal violence when compared with the control condition.
Keywords: artificial intelligence, empathy, hate speech, social media, verbal aggression.

Kelley, K.H., Fontanetta, L.M., Heintzman, M., Pereira, N.
Artificial Intelligence: Implications for Social Inflation and Insurance // *Risk Management and Insurance Review*, 2018, 21(3), 373-387.
URL:https://onlinelibrary.wiley.com/doi/10.1111/rmir.12111

Abstract. Artificial intelligence (AI) has the ability to enhance the insurance industry's value chain by altering relationships, reinventing business platforms, and expanding hidden data. Insurance companies will apply AI to greatly enhance large data analytics, evolve algorithms with transactional data faster, and combine data in new ways to discover better underwriting risks and appropriately price the risk of various insureds based on the true value of their business risks. This article explores how AI will have a significant impact on the workforce, jobs, and furthermore how the elimination of jobs will potentially exacerbate social equality gaps on a global scale, leading to a shift in culture and increased social inflation, thus impacting the insurance industry as well as its customers.
Keywords: artificial intelligence, social insurance, impact, social inflation.

Ефимов, А.Р.

Снятся ли чат-ботам андроиды? Перспективы технологического развития искусственного интеллекта и робототехники // *Философские науки*, 2019, 62(7), 73-95.
URL:https://www.elibrary.ru/item.asp?id=41131990

Аннотация. Статья посвящена обобщению основных трендов развития систем искусственного интеллекта и робототехники (ИИиР). Основной вопрос, который рассматривается в этом контексте: будут ли искусственные системы становиться все более антропоморфными как в интеллектуальном, так и в физическом отношении? В статье автор не только проводит анализ современного состояния и перспектив технологического развития искусственного интеллекта и робототехники, но и определяет основные аспекты влияния этих технологий на общество и экономику, указывая на геополитический стратегический характер данного влияния. Автор рассматривает различные подходы к определению искусственного интеллекта и робототехники, выделяя предметно-ориентированный и функциональный. Также производится сопоставление способностей ИИиР и человеческих способностей в таких областях, как категоризация, распознавание образов, планирование и принятие решений и др. На основе этого сопоставления сделаны выводы о том, когда ИИиР уступают человеку, а в каких случаях превосходят его.
Ключевые слова: робототехника, искусственный интеллект, Тьюринг, тест Тьюринга, философия искусственного интеллекта, robotics, artificial intelligence, Turing, Turing test, philosophy of artificial intelligence.

Han, T., Yang, F., Deng, K.

Application and Development Prospect of Artificial Intelligence in Healthy Pension Industry // *CAIH2020: Proceedings of the 2020 Conference on Artificial Intelligence and Healthcare*, October 2020, 79-83.
URL:https://doi.org/10.1145/3433996.3434364

Abstract. History and experience of the international community show that long-term aging has a huge impact on both economic and social development. China's ageing population is rising, and the country faces a "getting old before getting rich" and "getting old before getting prepared" situation. If effective measures are not taken in time, the impact of aging on China's economy may be more severe than in other countries. With the increasingly mature application of Internet technology, artificial intelligence and Internet of Things technology are more and more applied in the field of health management. Relying on the Internet and the Internet of Things, artificial intelligence provides real-time, safe and fast intelligent elderly care services for the elderly through intelligent, structured, classified and integrated health data of the elderly.

Keywords: artificial intelligence, healthy pension, psychological care industry, artificial intelligence community.

Muhlenbach, F., Sayn, I.

Artificial intelligence, Healthy pension, Psychological care industry, Artificial intelligence community // ICAIL'19: Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law, June 2019, 224-228.
URL:https://doi.org/10.1145/3322640.3326722

Abstract. This paper addresses issues related to the ethical consequences of using AI technologies in court decisions. With the prodigious technological leap made in the field of artificial intelligence in recent years, disruptive innovations have affected many business sectors, with economic, social and ethical consequences.
But what do people really want about the application of artificial intelligence technologies in the law system? This article presents a general methodological approach to take into account the ethical aspect of the introduction of a new technology in a given domain. We apply this methodology in the specific case of the introduction of AI technologies in the law system. As a multidisciplinary working group interested in this application in the case of France, we have organized a series of workshops to discuss this topic and highlight the respective values and interests of each stakeholder. The result of this work in presented in the form of an ethical matrix that can be used as a tool by the public authorities to help decision-making on the subject with a prioritization of certain values in order to reflect the respect for fundamental rights.
Keywords: artificial intelligence, justice, value, ethical matrix.

Eling, M., Nuessle, D., Staubli, J.

The impact of artificial intelligence along the insurance value chain and on the insurability of risks // *The Geneva Papers on Risk and Insurance – Issues and Practice*, 2021, 1-37.
URL:https://link.springer.com/article/10.1057/s41288-020-00201-7

Abstract. Based on a data set of 91 papers and 22 industry studies, we analyse the impact of artificial intelligence on the insurance sector using Porter's (1985) value chain and Berliner's (1982) insurability criteria. Additionally, we present future research directions, from both the academic and practitioner points of view. The results illustrate that both cost efficiencies and new revenue streams can be realised, as the insurance business model will shift from loss compensation to loss prediction and prevention. Moreover, we identify two possible developments with respect to the insurability of risks. The first is that the application of artificial intelligence by insurance companies might allow for a more accurate prediction of loss probabilities, thus reducing one of the industry's most inherent problems, namely asymmetric information. The second development is that artificial intelligence might change the risk landscape significantly by transforming some risks from low-severity/high-frequency to high-severity/low-frequency. This

requires insurance companies to rethink traditional insurance coverage and design adequate insurance products.
Keywords: artificial intelligence, value chain, impact, risks, risks transformation.

Gabor, T., Sünkel, L., Ritz, F., Phan, T., Belzner, L., Roch, Ch., Feld, S., Linnhoff-Popien, C.

The Holy Grail of Quantum Artificial Intelligence: Major Challenges in Accelerating the Machine Learning Pipeline // *ICSEW'20: Proceedings of the IEEE/ACM 42nd International Conference on Software Engineering Workshops*, June 2020, 456–461.
URL:https://doi.org/10.1145/3387940.3391469

Abstract. We discuss the synergetic connection between quantum computing and artificial intelligence. After surveying current approaches to quantum artificial intelligence and relating them to a formal model for machine learning processes, we deduce four major challenges for the future of quantum artificial intelligence: (i) Replace iterative training with faster quantum algorithms, (ii) distill the experience of larger amounts of data into the training process, (iii) allow quantum and classical components to be easily combined and exchanged, and (iv) build tools to thoroughly analyze whether observed benefits really stem from quantum properties of the algorithm.
Keywords: quantum computing, artificial intelligence, software engineering.

Вопросы этики ИИ

Этические аспекты применения «умных» машин обсуждаются наиболее часто и бурно. Действительно, именно сложность инкорпорирования в формализованную программу моральных норм и ценностей является камнем преткновения и для разработчиков, и для потенциальных заказчиков, и для общественности. Среди авторов этого раздела – философы, социологи, программисты, озабоченные этическими проблемами использования в социальной сфере устройств с искусственным интеллектом. Обсуждаются как принципиальные вопросы возможности наделения машин статусом морального субъекта со свободной волей и эмоциональной эмпатией наравне с людьми, так и острые дилеммы блага и вреда для общества, закономерности взаимодействия общества с технологиями искусственного интеллекта, возможные риски и негативные последствия от применения этих технологий на примере интеллектуальной обработки персональных данных, автономных транспортных и боевых комплексов, коммуникативных и игровых практик.

Li, G., Deng, X., Gao, Zh., Chen F.

Analysis on Ethical Problems of Artificial Intelligence Technology // *ICMET 2019: Proceedings of the 2019 International Conference on Modern Educational Technology*, June 2019, 101-105.

URL:https://doi.org/10.1145/3341042.3341057

Abstract. In recent years, artificial intelligence has been significantly developed. Artificial intelligence has made great contributions to the progress of human society and has changed the traditional production methods and modes of thinking in human society. Artificial intelligence is an emerging technology, but the current policy system is not perfect and the supervision mechanism is not in place. This technology inevitably brings risks such as personal privacy leakage, widening the gap between the rich and the poor, and environmental pollution. It also raises ethical issues such as human rights ethics, information ethics, and responsibility ethics. Artificial intelligence technology is developing rapidly in order to safeguard the fundamental interests of human beings and promote the healthy development of society. We need to strengthen international cooperation, establish sound public policies, and promote the establishment of artificial intelligence ethics and other solutions.
Keywords: artificial intelligence, technology, risk, ethical issues, countermeasures.

Cruz, J.
Shared Moral Foundations of Embodied Artificial Intelligence // *AIES '19: Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society*, January 2019, 139–146.
URL:https://doi.org/10.1145/3306618.3314280

Abstract. Sophisticated AI's will make decisions about how to respond to complex situations, and we may wonder whether those decisions will align with the moral values of human beings. I argue that pessimistic worries about this value alignment problem are overstated. In order to achieve intelligence in its full generality and adaptiveness, cognition in AI's will need to be embodied in the sense of the Embodied Cognition research program. That embodiment will yield AI's that share our moral foundations, namely coordination, sociality, and acknowledgement of shared resources. Consequently, we can expect a broad moral alignment between human beings and AI's. AI's will likely show no more variation in their values than we find amongst human beings.
Keywords: artificial intelligence, moral foundation, embodiment, moral behaviour.

Owe, A., Baum, S.D.
Moral consideration of nonhumans in the ethics of artificial intelligence // *AI and Ethics*, 2021, 1, 517-528.
URL:https://doi.org/10.1007/s43681-021-00065-0

Abstract. This paper argues that the field of artificial intelligence (AI) ethics needs to give more attention to the values and interests of nonhumans such as other biological species and the AI itself. It documents the extent of current attention to

nonhumans in AI ethics as found in academic research, statements of ethics principles, and select projects to design, build, apply, and govern AI. It finds that the field of AI ethics gives limited and inconsistent attention to nonhumans, with the main activity being a line of research on the moral status of AI. The paper argues that nonhumans merit moral consideration, meaning that they should be actively valued for their own sake and not ignored or valued just for how they might benefit humans. Finally, it explains implications of moral consideration of nonhumans for AI ethics research and practice, including for the content of AI ethics principles, the selection of AI projects, the accounting of inadvertent effects of AI systems such as via their resource and energy consumption and potentially certain algorithmic biases, and the research challenge of incorporating nonhuman interests and values into AI system design. The paper does not take positions on which nonhumans to morally consider or how to balance the interests and values of humans vs. nonhumans. Instead, the paper makes the more basic argument that the field of AI ethics should move from its current state of affairs, in which nonhumans are usually ignored, to a state in which nonhumans are given more consistent and extensive moral consideration.
Keywords: ethics, nonhumans, environmental ethics, artificial intelligence, intrinsic value, anthropocentrism.

Cath, C., Wachter, S., Mittelstadt, B., Taddeo, M., Floridi, L.

Artificial Intelligence and the 'Good Society': the US, EU, and UK approach // *Science and Engineering Ethics*, 2018, 24, 505-528.
URL: https://doi.org/10.1007/s11948-017-9901-7

Abstract. In October 2016, the White House, the European Parliament, and the UK House of Commons each issued a report outlining their visions on how to prepare society for the widespread use of artificial intelligence (AI). In this article, we provide a comparative assessment of these three reports in order to facilitate the design of policies favourable to the development of a 'good AI society'. To do so, we examine how each report addresses the following three topics: (a) the development of a 'good AI society'; (b) the role and responsibility of the government, the private sector, and the research community (including academia) in pursuing such a development; and (c) where the recommendations to support such a development may be in need of improvement. Our analysis concludes that the reports address adequately various ethical, social, and economic topics, but come short of providing an overarching political vision and long-term strategy for the development of a 'good AI society'. In order to contribute to fill this gap, in the conclusion we suggest a two-pronged approach.
Keywords: algorithms, artificial intelligence, data ethics, good society, human dignity.

Etzioni, A., Etzioni, O.

Incorporating Ethics into Artificial Intelligence // *The Journal of Ethics*, 2017, 21, 403-418.

URL: https://www.jstor.org/stable/45204573?seq=1

Abstract. This article reviews the reasons scholars hold that driverless cars and many other AI equipped machines must be able to make ethical decisions, and the difficulties this approach faces. It then shows that cars have no moral agency, and that the term 'autonomous', commonly applied to these machines, is misleading, and leads to invalid conclusions about the ways these machines can be kept ethical. The article's most important claim is that a significant part of the challenge posed by equipped machines can be addressed by the kind of ethical choices made by human beings for millennia. Ergo, there is little need to teach machines ethics even if this could be done in the first place. Finally, the article points out that it is a grievous error to draw on extreme outlier scenarios – such as the Trolley narratives – as a basis for conceptualizing the ethical issues at hand.

Keywords: artificial intelligence, autonomy, ethics, self-driving cars, trolley problem.

Разин, А.В.

Этика искусственного интеллекта // *Философия и общество*, 2019, 1, 57-73.

DOI: 10.30884/jfio/2019.01.04.

URL: https://cyberleninka.ru/article/n/etika-iskusstvennogo-intellekta/viewer

Аннотация. В статье очерчивается круг проблем, с которыми человек столкнулся при первых попытках создания искусственного интеллекта, способного в той или иной мере принимать самостоятельные решения. Поднимается вопрос об этических ограничениях, которые могут быть заложены в искусственные интеллектуальные системы при программировании. Далее отмечается, что это само по себе еще не может считаться этикой искусственного интеллекта, так как для того, чтобы решать этические задачи, надо обладать свободой воли. В данной связи рассматривается вопрос о свободе воли у человека, так как наличие таковой подвергается сомнению в некоторых современных аналитических исследованиях. Мы доказываем, что человек обладает свободой воли, он может создавать произвольные образы, связанные с разными уровнями отражения реальности, и манипулировать ими. Это оказывается необходимым для успешного ориентирования. Однако из этого же следует допущение принципиальной возможности ошибки как в рассуждениях, так и в действиях. Этика непосредственно начинается тогда, когда появляется способность реагировать на собственные ошибки, осуществлять рефлексию поведения, учитывая при этом мнения других людей. Такая же принципиальная возможность ошибки должна быть заложена и в работу искусственного интеллекта, чтобы можно было говорить о его этике в собственном смысле слова. Должны быть также выполнены условия

коммуникации машин, их взаимных оценок и наличия у них феноменального опыта.
Ключевые слова: сознание, интеллект, воля, этика, ограничения, ошибка, рефлексия, коммуникация, оценка.

Карпов, В.Э., Готовцев, П.М., Ройзензон, Г.В.
К вопросу об этике и системах искусственного интеллекта // *Философия и общество*, 2018, 2, 84-105.
DOI: 10.30884/jfio/2018.02.07.
URL:https://cyberleninka.ru/article/n/k-voprosu-ob-etike-i-sistemah-iskusstvennogo-intellekta/viewer

Аннотация. Обсуждая проблемы этики в области систем искусственного интеллекта, авторы предлагают вернуться к конструктивной постановке вопроса о соответствии интеллектуальных систем (ИС) этическим нормам. В работе утверждается, что суть этичности ИС заключается в том, что, принимая критически важные для человека решения, ИС должны использовать этические императивы, рассматривая их как некие поисковые эвристики. Также в работе рассматриваются вопросы достаточности современных моделей, методов и технологий для формализации этических понятий и отмечается, что основной проблемой является процедура верификации ИС на соответствие этическим нормам. Делается вывод, что основной формой этой верификации является использование комплексных тестов Тьюринга.
Ключевые слова: И. Кант, мораль, сознание, единство сознания, практический разум, нравственный закон, искусственный интеллект, автономные системы, этика, этический выбор, эвристики, верификация этического соответствия, онтология.

Totschnig, W.
Fully Autonomous AI // *Science and Engineering Ethics*, 2020, 26, 2473-2485.
URL:https://doi.org/10.1007/s11948-020-00243-z

Abstract. In the fields of artificial intelligence and robotics, the term “autonomy” is generally used to mean the capacity of an artificial agent to operate independently of human guidance. It is thereby assumed that the agent has a fixed goal or “utility function” with respect to which the appropriateness of its actions will be evaluated. From a philosophical perspective, this notion of autonomy seems oddly weak. For, in philosophy, the term is generally used to refer to a stronger capacity, namely the capacity to “give oneself the law,” to decide by oneself what one’s goal or principle of action will be. The predominant view in the literature on the long-term prospects and risks of artificial intelligence is that an artificial agent cannot exhibit such autonomy because it cannot rationally change its own final goal, since changing the final goal is counterproductive with respect to that goal and hence undesirable. The aim of this paper is to challenge this view by showing

that it is based on questionable assumptions about the nature of goals and values. I argue that a general AI may very well come to modify its final goal in the course of developing its understanding of the world. This has important implications for how we are to assess the long-term prospects and risks of artificial intelligence.
Keywords: artificial intelligence, autonomy, normativity, goals.

Бахтеев, Д.В.

Риски и этико-правовые модели использования систем искусственного интеллекта // *Юридические исследования*, 2019, 11, doi: 10.25136/2409-7136.2019.11.31333.
URL:https://nbpublish.com/library_read_article.php?id=31333

Аннотация. Предметом исследования выступают закономерности взаимодействия общества и индивидов с технологиями искусственного интеллекта. Составляющими данного предмета являются технологические основы функционирования систем искусственного интеллекта, возможные риски и негативные последствия от применения этой технологии на примере интеллектуальной обработки персональных данных и существования автономных транспортных и боевых комплексов, этические и правовые подходы к её регулированию. Рассматриваются модели позиционирования систем искусственного интеллекта относительно возможности признания их личностей и, соответственно, наделения их правами. В основе исследования лежит метод моделирования, с помощью которого были определены стадии (этапы) этико-правового исследования технологии искусственного интеллекта, предложены модели реакции общества на развитие этой технологии. Основными выводами исследования является формулирование этапов изучения технологии искусственного интеллекта: исследования самой технологии, её рисков, моделей реакции общества и создания этических, а затем и правовых норм её регулирования. Приведён анализ возможных этико-правовых моделей субъектности систем искусственного интеллекта с точки зрения необходимости и возможности наделения их правами, в числе которых рассматриваются инструментальная, толерантная, ксенофобная и эмпатическая. Сформулированы основные положения кодекса этики разработчика и пользователя систем искусственного интеллекта.
Ключевые слова: искусственный интеллект, этика искусственного интеллекта, правосубъектность искусственного интеллекта, регулирование робототехники, кодекс этики, машинное обучение, искусственная нейронная сеть, автономные транспортные средства, большие данные, персональные данные.

Dixon-Román, E., Parisi, L.

Data capitalism and the counter futures of ethics in artificial intelligence // *Communication and the public*, 2020, 5(3–4), 116–121.
URL:https://journals.sagepub.com/doi/abs/10.1177/2057047320972029

Abstract. Ethics in data science and artificial intelligence have gained broader prominence in both scholarly and public discourse. Much of the scholarly engagements have often been based on perspectives of transparency, politics of representation, moral ethical norms, and refusal. In this article, while the authors agree that there is a problem with the universal model of technology, they argue that what these perspectives do not address is the postcolonial epistemology of the machine. Drawing from Mark Fisher's science fiction capital, it is posited that data capitalism doesn't rely on data as a given, but on what data can become; it operates in the future as much as the calculation of probabilities coincides with the predictive extraction of surplus value. The authors argue that in order to address ethical and sociopolitical concerns in artificial intelligence, technosocial systems must be understood in data capitalism. After discussing what they characterize as the three paradigms of prediction, the authors point toward the transformative potential of temporal structures and indeterminacies in automated self-regulating systems. They argue therefore that assumptions of technological determinism that are found in debates about the reproduction of biases in systems of predictive intelligence has nothing to do with the technical machine, but is rather the result of a continuous re-territorialization of the technosocial possibilities of re-inventing epistemological paradigms outside the framework of colonial capital.
Keywords: artificial intelligence, critical theory, ethics, machine learning, postcolonial studies.

Sigg, S.

Position Talk: Ethically aligned voice user interfaces: Risks, Challenges and Opportunities // *2020 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*, 2020, 1-1, doi: 10.1109/PerComWorkshops48775.2020.9156116.
URL:https://ieeexplore.ieee.org/document/9156116

Abstract. This position talk discusses different position, opportunities and challenges posed by upcoming voice user interface platforms. In particular, the presenter will highlight privacy and legislation aspects and give insight into newly forming initiatives towards privacy-preserving speech processing withing the speech processing community. Exemplarily, the speaker will introduce ongoing efforts to address these identified challenges.
Keywords: user interfaces, speech processing, privacy, artificial intelligence, legislation, microphones, indexes.

Burkert, A.

Ethics and the Dangers of Artificial Intelligence // *ATZ worldwide*, 2017, 119, 8-13.
URL:https://link.springer.com/article/10.1007/s38311-017-0141-x

Abstract. Progress due to artificial intelligence will characterise the very essence of the car of the future more than ever before. Even autonomous driving is

certainly possible with machine learning processes – the greatest opportunity for the automotive industry. However, some OEMs in Germany are struggling with major problems, and some are likely to fail. The reason is that they have been taken by surprise by this disruptive development.
Keywords: artificial intelligence, ethics, risks, development.

Nath, R., Vineet, S.
The problem of machine ethics in artificial intelligence // *AI & SOCIETY*, 2020, 35, 103-111. URL:https://link.springer.com/article/10.1007/s00146-017-0768-6

Abstract. The advent of the intelligent robot has occupied a significant position in society over the past decades and has given rise to new issues in society. As we know, the primary aim of artificial intelligence or robotic research is not only to develop advanced programs to solve our problems but also to reproduce mental qualities in machines. The critical claim of artificial intelligence (AI) advocates is that there is no distinction between mind and machines and thus they argue that there are possibilities for machine ethics, just as human ethics. Unlike computer ethics, which has traditionally focused on ethical issues surrounding human use of machines, AI or machine ethics is concerned with the behaviour of machines towards human users and perhaps other machines as well, and the ethicality of these interactions. The ultimate goal of machine ethics, according to the AI scientists, is to create a machine that itself follows an ideal ethical principle or a set of principles; that is to say, it is guided by this principle or these principles in decisions it makes about possible courses of action it could take. Thus, machine ethics task of ensuring ethical behaviour of an artificial agent. Although, there are many philosophical issues related to artificial intelligence, but our attempt in this paper is to discuss, first, whether ethics is the sort of thing that can be computed. Second, if we are ascribing mind to machines, it gives rise to ethical issues regarding machines. And if we are not drawing the difference between mind and machines, we are not only redefining specifically human mind but also the society as a whole. Having a mind is, among other things, having the capacity to make voluntary decisions and actions. The notion of mind is central to our ethical thinking, and this is because the human mind is self-conscious, and this is a property that machines lack, as yet.
Keywords: artificial intelligence, machine ethics, robots, risks, philosophy.

Stark, L., Hoey, J.
The Ethics of Emotion in Artificial Intelligence Systems // *FAccT '21: Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, March 2021, 782-793. URL:https://doi.org/10.1145/3442188.3445939

Abstract. In this paper, we develop a taxonomy of conceptual models and proxy data used for digital analysis of human emotional expression and outline how the combinations and permutations of these models and data impact their incorporation

into artificial intelligence (AI) systems. We argue we should not take computer scientists at their word that the paradigms for human emotions they have developed internally and adapted from other disciplines can produce ground truth about human emotions; instead, we ask how different conceptualizations of what emotions are, and how they can be sensed, measured and transformed into data, shape the ethical and social implications of these AI systems.
Keywords: emotion, affect, artificial intelligence, AI, machine learning, ML, ethics, norms, Basic Emotion Theory, Action Control Theory, affective computing, emotion AI, privacy, fairness, AI ethics.

McStay, A., Rosner, G.

Emotional artificial intelligence in children's toys and devices: Ethics, governance and practical remedies // *Big data & society*, 2021, 8(1), 1-16. URL:https://journals.sagepub.com/doi/full/10.1177/2053951721994877

Abstract. This article examines the social acceptability and governance of emotional artificial intelligence (emotional AI) in children's toys and other child-oriented devices. To explore this, it conducts interviews with stakeholders with a professional interest in emotional AI, toys, children and policy to consider implications of the usage of emotional AI in children's toys and services. It also conducts a demographically representative UK national survey to ascertain parental perspectives on networked toys that utilise data about emotions. The article highlights disquiet about the evolution of generational unfairness, that encompasses injustices regarding the datafication of childhood, manipulation, parental vulnerability, synthetic personalities, child and parental media literacy, and need for improved governance. It concludes with practical recommendations for regulators and the toy industry.
Keywords: emotional artificial intelligence, children, parents, toys, governance, data protection.

Krupiy, T.

A vulnerability analysis: Theorising the impact of artificial intelligence decision-making processes on individuals, society and human diversity from a social justice perspective // *Computer Law & Security Review*, 2020, 38, 1–25. URL:https://doi.org/10.1016/j.clsr.2020.105429

Abstract. The article examines a number of ways in which the use of artificial intelligence technologies to predict the performance of individuals and to reach decisions concerning the entitlement of individuals to positive decisions impacts individuals and society. It analyses the effects using a social justice lens. Particular attention is paid to the experiences of individuals who have historically experienced disadvantage and discrimination. The article uses the university admissions process where the university utilises a fully automated decision-making process to evaluate the capability or suitability of the candidate as a case study. The article posits that the artificial intelligence decision-making process should be

viewed as an institution that reconfigures the relationships between individuals, and between individuals and institutions. Artificial intelligence decision-making processes have institutional elements embedded within them that result in their operation disadvantaging groups who have historically experienced discrimination. Depending on the manner in which an artificial intelligence decision-making process is designed, it can produce solidarity or segregation between groups in society. There is a potential for the operation of artificial intelligence decision-making processes to fail to reflect the lived experiences of individuals and as a result to undermine the protection of human diversity. Some of these effects are linked to the creation of an ableist culture and to the resurrection of eugenics-type discourses. It is concluded that one of the contexts in which human beings should reach decisions is where the decision involves representing and evaluating the capabilities of an individual. The legislature should respond accordingly by identifying contexts in which it is mandatory to employ human decision-makers and by enacting the relevant legislation.

Keywords: artificial intelligence, data science, decision-making process, social justice, human diversity, vulnerability theory, feminism, queer legal theory, critical disability theory.

Du, S., Xie, C.

Paradoxes of artificial intelligence in consumer markets: Ethical challenges and opportunities // *Journal of Business Research*, 2021, 129, 961-974.
URL:https://doi.org/10.1016/j.jbusres.2020.08.024

Abstract. Products and services empowered by artificial intelligence (AI) are becoming widespread in today's marketplace. However, consumers have mixed feelings about AI technologies due to the numerous ethical challenges associated the development and deployment of AI. Drawing upon prior research on the moral significance of technology and the emerging literature on AI, we delineate three key dimensions of AI-enabled products (i.e., multi-functionality, interactivity, and AI intelligence stage) that have relevance for ethical implications and adopt a socio-technical approach to provide a multi-layered ethical analysis of AI products at the product-, consumer-, and society-levels. Some key ethical issues identified in the paper include AI biases, ethical design, consumer privacy, cybersecurity, individual autonomy and wellbeing, and unemployment. Companies need to engage in corporate social responsibility (CSR) to shape the future of ethical AI; drawing upon stakeholder theory and institutional theory, we develop a conceptual framework on AI-related CSR, highlighting the product-, company-, and institutional environment-specific factors that influence firms' socially responsible actions in the domain of AI and discussing the subsequent outcomes for firm, consumers, and the society. We include a section on future research agenda for AI ethics and firm CSR in this important domain.

Keywords: artificial intelligence, moral significance of technology, multi-functionality, interactivity, ethical issues, corporate social responsibility.

Денисов, Э.И.

Роботы, искусственный интеллект, дополненная и виртуальная реальность: этические, правовые и гигиенические проблемы //
Гигиена и санитария, 2019, 98(1), 5-10, doi:10.18821/0016-9900-2019-98-1-5-10.
URL:https://cyberleninka.ru/article/n/roboty-iskusstvennyy-intellekt-dopolnennaya-i-virtualnaya-realnost-eticheskie-pravovye-i-gigienicheskie-problemy

Аннотация. Цифровая революция ставит перед гигиенистами новые задачи. С гигиенических позиций рассмотрена сущность цифровизации экономики и общества, а также этические проблемы и проекты правового регулирования роботизации, систем искусственного интеллекта (ИИ), дополненной и виртуальной реальности (ДВР). Цель работы – анализ цифровизации с позиций информационной гигиены, а также правового регулирования этих новых технологий для их гигиенической регламентации.
Наработки информационной гигиены могут служить инструментом сохранения здоровья работников и населения в цифровую эпоху. Отмечено, что роботы и системы ИИ требуют гигиенической оценки. Особого внимания заслуживают системы ДВР, создающие специфические риски для здоровья, особенно уязвимых групп работников и населения. Необходима разработка методов и критериев оценки киберфизических систем на основе развития информационной гигиены и специализированной гигиенической регламентации.
Ключевые слова: роботы, искусственный интеллект, этика, право, дополненная и виртуальная реальность, медицинские противопоказания, гигиеническая регламентация.

Nallur, V.

Landscape of Machine Implemented Ethics // *Science and Engineering Ethics*, 2020, 26, 2381-2399.
URL:https://doi.org/10.1007/s11948-020-00236-y

Abstract. This paper surveys the state-of-the-art in machine ethics, that is, considerations of how to implement ethical behaviour in robots, unmanned autonomous vehicles, or software systems. The emphasis is on covering the breadth of ethical theories being considered by implementors, as well as the implementation techniques being used. There is no consensus on which ethical theory is best suited for any particular domain, nor is there any agreement on which technique is best placed to implement a particular theory. Another unresolved problem in these implementations of ethical theories is how to objectively validate the implementations. The paper discusses the dilemmas being used as validating ‘whetstones’ and whether any alternative validation mechanism exists. Finally, it speculates that an intermediate step of creating domain-specific

ethics might be a possible stepping stone towards creating machines that exhibit ethical behaviour.
Keywords: artificial intelligence, robotics, machine ethics, autonomous systems, implementation and design.

Nyholm, S., Smids, J.
Can a Robot Be a Good Colleague? // *Science and Engineering Ethics*, 2019, 26, 2169-2188.
URL:https://doi.org/10.1007/s11948-019-00172-6

Abstract. This paper discusses the robotization of the workplace, and particularly the question of whether robots can be good colleagues. This might appear to be a strange question at first glance, but it is worth asking for two reasons. Firstly, some people already treat robots they work alongside as if the robots are valuable colleagues. It is worth reflecting on whether such people (e.g. soldiers giving "fallen" military robots military funerals and medals of honor) are making a mistake. Secondly, having good colleagues is widely regarded as a key aspect of what can make work meaningful. In discussing whether robots can be good colleagues, the paper compares that question to the more widely discussed questions of whether robots can be our friends or romantic partners. The paper argues that the ideal of being a good colleague has many different parts, and that on a behavioral level, robots can live up to many of the criteria typically associated with being a good colleague. Moreover, the paper also argues that in comparison with the more demanding ideals of being a good friend or a good romantic partner, it is comparatively easier for a robot to live up to the ideal of being a good colleague. The reason for this is that the "inner lives" of our friends and lovers are more important to us than the inner lives of our colleagues.
Keywords: robots, colleagues, meaningful work, human–robot interaction, friendship and love.

Ryan, M., Antoniou, J., Brooks, L., et al.
Research and Practice of AI Ethics: A Case Study Approach Juxtaposing Academic Discourse with Organisational Reality // *Science and Engineering Ethics*, 2021, 27, Article number: 16.
URL:https://doi.org/10.1007/s11948-021-00293-x

Abstract. This study investigates the ethical use of Big Data and Artificial Intelligence (AI) technologies (BD + AI) – using an empirical approach. The paper categorises the current literature and presents a multi-case study of 'on-the-ground' ethical issues that uses qualitative tools to analyse findings from ten targeted case-studies from a range of domains. The analysis coalesces identified singular ethical issues, (from the literature), into clusters to offer a comparison with the proposed classification in the literature. The results show that despite the variety of different social domains, fields, and applications of AI, there is overlap and correlation between the organisations' ethical concerns. This more detailed understanding of

ethics in AI + BD is required to ensure that the multitude of suggested ways of addressing them can be targeted and succeed in mitigating the pertinent ethical issues that are often discussed in the literature.
Keywords: smart information systems, big data analytics, artificial intelligence ethics, multiple-case study analysis, philosophy of technology.

02. Правовые аспекты

Наряду с этическими, экономическими, методологическими проблемами разработки и использования машин с искусственным интеллектом, несомненной значимостью обладают юридические дискуссии вокруг этой темы. Вопросы правовой обоснованности и допустимости внедрения интеллектуальных технологий в судопроизводство, страховую систему, наблюдение за гражданами и т.п. нуждаются в аккуратной юридической проработке и осознании последствий законотворчества. Авторы статей, представленных в этом разделе, разбирают, в частности, понятия правосубъектности и деликтоспособность искусственного интеллекта; опасность сакрализации искусственного интеллекта; ответственность за вред, причиненный системами искусственного интеллекта; принятие искусственным интеллектом решений в отношении прав и обязанностей людей; усугубление расслоения и неравенства; проблему массовой безработицы; интеллектуальное превосходство носителей искусственного интеллекта над человеком; отчуждение людей друг от друга, одиночество человека; возможность следования этическим нормам при принятии решений искусственным интеллектом; цену ошибочных действий ИИ и ряд других.

Atabekov, A., Yastrebov, O.

Legal Status of Artificial Intelligence Across Countries: Legislation on the Move // *European Research Studies Journal*, 2018, XXI(4), 773-782. URL:https://www.researchgate.net/publication/332138607_Legal_status_of_artificial_intelligence_across_countries_Legislation_on_the_move

Abstract. The paper explores current legal regulation on Artificial Intelligence (AI) across countries. The research argues that special emphasis should be laid to the prospective of treating AI as an autonomous legal personality, separate subject of law and control.

The article identifies major approaches in legislation and practice on state regulation of AI and explores a number of current options: AI as a subject of law introduced into national legislation without prior background, AI as a subject of law equal to a person, and regulated or not regulated by separate rules of law, etc.

The research rested on qualitative approach to study. The materials included national and international legislation, academic and media data. The study stood on the comparative legal analysis, integrated legal interpretation and modeling.

The research findings laid grounds for preliminary recommendations on legal drafting with regard to AI status as that of autonomous legal personality. They can

be used for national legislation development, further research on legal aspects of robotic AI.
Keywords: AI, Chat bot, legal personality, legal status.

Шестак, В.А., Волеводз, А.Г.

Современные потребности правового обеспечения искусственного интеллекта: взгляд из России // *Всероссийский криминологический журнал*, 2019, 13(2), 197-206.
URL:https://cyberleninka.ru/article/n/sovremennye-potrebnosti-pravovogo-obespecheniya-iskusstvennogo-intellekta-vzglyad-iz-rossii

Аннотация. Искусственный интеллект как технология будущего на современном этапе развития общества активно расширяет свои возможности. В связи с этим возникает проблема применения норм в том числе и международного права при решении вопросов, которые отражают сущность и технический регламент использования искусственного интеллекта. Статья посвящена исследованию проблемных аспектов правового регулирования создания и использования искусственного интеллекта, а также разработки понятийного аппарата и определения искусственного интеллекта согласно общепризнанным научным теориям; анализу доктринальных подходов к пониманию места искусственного интеллекта в правоотношениях; доказыванию правовой необоснованности признания обладания статусом личности искусственного интеллекта; критичному анализу предложений американских исследователей по подчинению искусственного интеллекта напрямую полному спектру законов, применяющихся к его человеческому производителю и оператору. Исследованию подвергнуто законодательство в сфере правового регулирования взаимоотношений между человеком и искусственным интеллектом таких государств, как Республика Корея, Соединенные Штаты Америки, Япония, Китайская Народная Республика, Эстонская Республика, Федеративная Республика Германия и Российская Федерация, а также Европейского союза.
Ключевые слова: искусственный интеллект, электронное лицо, международное право, международные концепции искусственного интеллекта, правовое обеспечение искусственного интеллекта, правовое регулирование автономных систем управления, правосубъектность искусственного интеллекта, участник уголовного судопроизводства.

Малышкин, А.В.

Интегрирование искусственного интеллекта в общественную жизнь: некоторые этические и правовые проблемы // *Вестник Санкт-Петербургского университета. Право*, 2019, 10(3), 444-460.
URL:https://cyberleninka.ru/article/n/integrirovanie-iskusstvennogo-intellekta-v-obschestvennuyu-zhizn-nekotorye-eticheskie-i-pravovye-problemy

Аннотация. Распространение систем искусственного интеллекта порождает

ряд технических, философских, юридических и этических вопросов, связанных как с допустимостью применения таких систем в тех или иных областях, так и с необходимостью соблюдения этических норм при их создании, а также возможностью внедрения этических норм в процесс принятия решений искусственным интеллектом. Поскольку для многих людей религия является основой мировоззрения, присутствуя в общественной жизни именно этикой, а не догматикой, то исследование различных аспектов соотношения религии и искусственного интеллекта также крайне актуально. Автор анализирует этико-религиозные проблемы, связанные с созданием и распространением систем искусственного интеллекта, и предлагает пути правового регулирования общественных отношений, связанных с применением искусственного интеллекта.
Ключевые слова: искусственный интеллект, роботы, религия, этика, нравственные аспекты робототехники, правовое регулирование, социальное регулирование, интегрированная юрисдикция.

Surden, H.

Artificial Intelligence and Law: An Overview // *Georgia State University Law Review*, 2019, 35; *U of Colorado Law Legal Studies Research Paper*, 19-22.
URL:https://ssrn.com/abstract=3411869

Abstract. Much has been written recently about artificial intelligence (AI) and law. But what is AI, and what is its relation to the practice and administration of law? This article addresses those questions by providing a high-level overview of AI and its use within law. The discussion aims to be nuanced but also understandable to those without a technical background. To that end, I first discuss AI generally. I then turn to AI and how it is being used by lawyers in the practice of law, people and companies who are governed by the law, and government officials who administer the law. A key motivation in writing this article is to provide a realistic, demystified view of AI that is rooted in the actual capabilities of the technology. This is meant to contrast with discussions about AI and law that are decidedly futurist in nature.
Keywords: artificial intelligence, AI, law, machine learning, prediction, informatics.

Surden, H.

The Ethics of Artificial Intelligence in Law: Basic Questions // *Forthcoming chapter in Oxford Handbook of Ethics of AI*, 2020; *U of Colorado Law Legal Studies Research Paper*, 19-29.
URL:https://ssrn.com/abstract=3441303

Abstract. Ethical issues surrounding the use of Artificial Intelligence (AI) in law often share a common theme. As AI becomes increasingly integrated within the legal system, how can society ensure that core legal values are preserved? Among the most important of these legal values are: equal treatment under the law; public,

unbiased, and independent adjudication of legal disputes; justification and explanation for legal outcomes; outcomes based upon law, principle, and facts rather than social status or power; outcomes premised upon reasonable, and socially justifiable grounds; the ability to appeal decisions and seek independent review; procedural fairness and due process; fairness in design and application of the law; public promulgation of laws; transparency in legal substance and process; adequate access to justice for all; integrity and honesty in creation and application of law; and judicial, legislative, and administrative efficiency. The use of AI in law may diminish or enhance how these values are actually expressed within the legal system or alter their balance relative to one another. This chapter surveys some of the most important ethical topics involving the use of AI within the legal system itself (but not its use within society more broadly) and examines how central legal values might unintentionally (or intentionally) change with increased use of AI in law.

Keywords: artificial intelligence, AI, law, machine learning, prediction, informatics.

Sartor, G.

Artificial intelligence and human rights: Between law and ethics // *Maastricht Journal of European and Comparative Law*, 2020, 27(6), 705-719, doi:10.1177/1023263X20981566.
URL:https://journals.sagepub.com/doi/abs/10.1177/1023263X20981566

Abstract. The ethics and law of AI address the same domain, namely, the present and future impacts of AI on individuals, society, and the environment. Both are meant to provide normative guidance, proposing rules and values on which basis to govern human action and determine the constrains, structures and functions of AI-enabled socio-technical systems. This article examines the way in which AI is addressed by ethical and legal rules, principles and arguments. It considers the extent to which the demands of law and ethics may pull in different directions or rather overlap, and examines how they can be coordinated, while remaining in a productive dialectical tension. In particular, it argues that human/fundamental rights and social values are central to both ethics and law. Even though they can be framed in different ways, they can provide a useful normative reference for linking ethics and law in addressing the normative issues arising in connection with AI.
Keywords: artificial intelligence, human rights, ethics, regulation, Interest theory, Will theory, face recognition.

Бегишев, И.Р., Хисамова, З.И.

Криминологические риски применения искусственного интеллекта // *Всероссийский криминологический журнал*, 2018, 12(6), 767-775.
URL:https://cyberleninka.ru/article/n/kriminologicheskie-riski-primeneniya-iskusstvennogo-intellekta

Аннотация. В современном цифровом мире тематика искусственного

интеллекта и сфера разработки интеллектуальных технологий являются крайне актуальными и важными. За полувековую историю искусственный интеллект успел перерасти из теоретической концепции в интеллектуальную систему, способную самостоятельно принимать решения. В числе ключевых преимуществ внедрения искусственного интеллекта в первую очередь отмечается возможность освобождения человечества от рутинной работы и переход к творческой деятельности, на которую машины не способны.
Ключевые слова: искусственный интеллект, интеллектуальные технологии, робот, машинное обучение, криминологический риск, криминологическая характеристика, риски применения искусственного интеллекта, угрозы применения искусственного интеллекта, криминальный потенциал искусственного интеллекта, преступления с применением искусственного интеллекта

Грачева, Ю.В., Арямов, А.А.
Роботизация и искусственный интеллект: уголовно-правовые риски в сфере общественной безопасности // *Актуальные проблемы Российского права*, 2020, 6(115), 169-178.
URL:https://cyberleninka.ru/article/n/robotizatsiya-i-iskusstvennyy-intellekt-ugolovno-pravovye-riski-v-sfere-obschestvennoy-bezopasnosti

Аннотация. Широкомасштабная роботизация становится одним из вызовов современного общества. Юридическая наука в целом и уголовное право в частности не могут оставаться в стороне от вызовов, связанных с внедрением искусственного интеллекта во всех сферах общественной жизни. Процесс формирования правового пространства начался, однако отсутствует комплексный подход к решению задачи, поскольку ученые рассматривают роботов в рамках только тех общественных отношений, которые входят в предмет соответствующей отрасли права. В этой связи возникает отставание в разработке, например, уголовно-правовых норм, так как не завершен процесс определения гражданско-правового статуса робота, а от него зависит построение концепции уголовно-правовых рисков в робототехнике и искусственном интеллекте. В статье предпринята попытка описать уголовно-правовые риски использования робототехники и искусственного интеллекта для общественной безопасности, оценить имеющиеся уголовно-правовые средства противодействия наступлению общественно опасных последствий в случае отсутствия адекватных мер, предложить направления совершенствования УК РФ.
Ключевые слова: роботизация, искусственный интеллект, уголовно-правовые риски, преступления, общественная безопасность, дроны, роботы, правовой статус террористический акт, уголовная ответственность.

Alarie, B., Niblett, A., Yoon, A.H.
How artificial intelligence will affect the practice of law // *University of Toronto Law Journal*, 2018, 68(1), 106-124.
URL:https://doi.org/10.3138/utlj.2017-0052

Abstract. Artificial intelligence is exerting an influence on all professions and industries. We have autonomous vehicles, instantaneous translation among the world's leading languages, and search engines that rapidly locate information anywhere on the web in a way that is tailored to a user's interests and past search history. Law is not immune from disruption by new technology. Software tools are beginning to affect various aspects of lawyers' work, including those tasks that historically relied upon expert human judgment, such as predicting court outcomes. These new software tools present new challenges and new opportunities. In the short run, we can expect greater legal transparency, more efficient dispute resolution, improved access to justice, and new challenges to the traditional organization of private law firms delivering legal services on a billable hour basis through a leveraged partner-associate model. With new technology, lawyers will be empowered to work more efficiently, deepen and broaden their areas of expertise, and provide more value to clients. These developments will predictably transform both how lawyers do legal work and resolve disputes on behalf of their clients. In the longer term, it is difficult to predict what the impact of artificially intelligent tools will be, as lawyers incorporate them into their practice and expand their range of services on behalf of clients.
Keywords: law, law firms, legal profession, machine learning, technology.

Hildebrandt, M.
Law as computation in the era of artificial legal intelligence: Speaking law to the power of statistics // *University of Toronto Law Journal*, 2018, 68(1), 12-35.
URL:https://doi.org/10.3138/utlj.2017-0044

Abstract. The idea of artificial legal intelligence stems from a previous wave of artificial intelligence, then called jurimetrics. It was based on an algorithmic understanding of law, celebrating logic as the sole ingredient for proper legal argumentation. However, as Oliver Wendell Holmes has noted, the life of the law is experience rather than merely logic. Machine learning, which determines the current wave of artificial intelligence, is built on data-driven machine experience. The resulting artificial legal intelligence may be far more successful in terms of predicting the content of positive law. In this article, I discuss the assumptions of law and the Rule of Law and confront them with those of computational systems. As a twin article to my Chorley lecture on law as information, this should inform the extent to which artificial legal intelligence provides for responsible innovation in legal decision making.
Keywords: cybernetics, information theory, legal intelligence, legal protection by design, legal services, legal theory, meaning, political economy, Rule of Law, speaking law to power.

Muhlenbach, F., Sayn, I.

Artificial Intelligence and Law: What Do People Really Want?: Example of a French Multidisciplinary Working Group // *ICAIL '19: Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law*, June 2019, 224-228.

URL:https://doi.org/10.1145/3322640.3326722

Abstract. This paper addresses issues related to the ethical consequences of using AI technologies in court decisions. With the prodigious technological leap made in the field of artificial intelligence in recent years, disruptive innovations have affected many business sectors, with economic, social and ethical consequences.

But what do people really want about the application of artificial intelligence technologies in the law system? This article presents a general methodological approach to take into account the ethical aspect of the introduction of a new technology in a given domain. We apply this methodology in the specific case of the introduction of AI technologies in the law system. As a multidisciplinary working group interested in this application in the case of France, we have organized a series of workshops to discuss this topic and highlight the respective values and interests of each stakeholder. The result of this work in presented in the form of an ethical matrix that can be used as a tool by the public authorities to help decision-making on the subject with a prioritization of certain values in order to reflect the respect for fundamental rights.

Keywords: value, ethical matrix, justice, artificial intelligence.

Кашкин, С.Ю., Покровский, А.В.

Искусственный интеллект, робототехника и защита прав человека в Европейском Союзе // *Вестник Университета имени О. Е. Кутафина*, 2019, 4(56), 64-90.

URL:https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-robototehnika-i-zaschita-prav-cheloveka-v-evropeyskom-soyuze

Аннотация. Целью статьи является анализ правовых проблем, связанных с защитой прав и свобод человека при разработке и применении систем искусственного интеллекта в Европейском Союзе. Предметом статьи выступают нормы международного права и права Европейского Союза, направленные на решение указанных проблем. Рассмотрены подход к обеспечению системы гарантий прав и свобод человека в ЕС; роль институтов, органов и учреждений Европейского Союза в данном процессе, в частности роль Европейского омбудсмена. Гарантии прав и свобод человека рассмотрены через призму концепции «хорошего управления». Предлагаются пути обеспечения гарантий прав человека при введении в оборот технологий искусственного интеллекта и раскрываются области в указанной сфере, требующие изменений в правовом регулировании.

Ключевые слова: Европейский союз, искусственный интеллект,

робототехника, Европейский омбудсмен, права человека, защита прав, нарушение порядка управления.

Medvedeva, M., Vols, M., Wieling, M.

Using machine learning to predict decisions of the European Court of Human Rights // *Artificial Intelligence and Law*, 2020, 28, 237–266.
URL:https://doi.org/10.1007/s10506-019-09255-y

Abstract. When courts started publishing judgements, big data analysis (i.e. large-scale statistical analysis of case law and machine learning) within the legal domain became possible. By taking data from the European Court of Human Rights as an example, we investigate how natural language processing tools can be used to analyse texts of the court proceedings in order to automatically predict (future) judicial decisions. With an average accuracy of 75% in predicting the violation of 9 articles of the European Convention on Human Rights our (relatively simple) approach highlights the potential of machine learning approaches in the legal domain. We show, however, that predicting decisions for future cases based on the cases from the past negatively impacts performance (average accuracy range from 58 to 68%). Furthermore, we demonstrate that we can achieve a relatively high classification performance (average accuracy of 65%) when predicting outcomes based only on the surnames of the judges that try the case.
Keywords: machine learning, case law, European Court of Human Rights, natural language processing, judicial decisions.

Dabass, J., Dabass, B.S.

Scope of Artificial Intelligence in Law // *Preprints*, 2018, doi:10.20944/PREPRINTS201806.0474.V1.
URL: https://www.semanticscholar.org/paper/Scope-of-Artificial-Intelligence-in-Law-Dabass-Dabass/516230d30d972eefb98dd8f19435a2929e928316

Abstract. Over the years, artificial intelligence (AI) is spreading its roots in different areas by utilizing the concept of making the computers learn and handle complex tasks that previously require substantial laborious tasks by human beings. With better accuracy and speed, AI is helping lawyers to streamline work processing. New legal AI software tools like Catalyst, Ross intelligence, and Matlab along with natural language processing provide effective quarrel resolution, better legal clearness, and superior admittance to justice and fresh challenges to conventional law firms providing legal services using leveraged cohort correlate model. This paper discusses current applications of legal AI and suggests deep learning and machine learning techniques that can be applied in future to simplify the cumbersome legal tasks.
Keywords: legal artificial intelligence, machine learning, deep learning, image processing, matlab.

Понкин, И.В., Редькина, А.
Искусственный интеллект с точки зрения права // *Вестник РУДН. Серия: Юридические науки*, 2018, 22(1), 91-109.
URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-s-tochki-zreniya-prava

Аннотация. Технологии искусственного интеллекта на настоящий момент интенсивно развиваются, в том числе из-за развития технологий устойчивых нейронных сетей и инфраструктур облачных вычислений, технологий нечетких систем, энтропийного управления, роевого интеллекта, эволюционных вычислений и мн. др. При этом общемировой сегодня является проблема практически полного отсутствия нормативного правового регулирования и нормативного технического регулирования основ, условий и особенностей разработки, запуска в работу, функционирования и деятельности, интеграции в другие системы и контроля применения технологий искусственного интеллекта. Настоящая статья посвящена исследованию специфики правового регулирования использования и разработки искусственного интеллекта. Рассмотрены некоторые подходы к определению искусственного интеллекта и особенностям законодательного обеспечения соответствующей сферы, имеющие место в научной литературе, разработано и приведено авторское понятие искусственного интеллекта через раскрытие его основных признаков. В частности, согласно предложенному определению, искусственный интеллект является искусственной сложной кибернетической компьютерно-программно-аппаратной системой, обладающей свойствами субстантивности, автономности, а также возможностями воспринимать и анализировать данные, самообучаться. Рассмотрен вопрос о позиционировании системы искусственного интеллекта в качестве особой формы личности (например, так называемого «электронного лица»), то есть наделения ее определенной правосубъектностью, в зависимости от различных факторов и сферы функционирования такой системы. В статье также отмечены основные возможные подходы к правовому обеспечению использования и развития систем искусственного интеллекта, в частности, к ним отнесены упреждающее универсально-тотальное правовое регулирование и правовое регулирование, направленное на регламентацию конкретных создаваемых систем искусственного интеллекта. Исследованы основные риски и неопределенности, связанные с искусственным интеллектом и имеющие существенное значение для принятия законодательства в этой области. Сформулированы выводы относительно того, каким образом необходимо формировать законодательное обеспечение использования и развития искусственного интеллекта: последовательно, с учетом специфики конкретных сфер его применения, а также с обеспечением баланса интересов отдельных индивидов, общества и государства, касающихся надлежащего обеспечения безопасности и защиты отдельных прав и интересов, связанных с развитием инноваций на благо всего общества.

Ключевые слова: компьютерное право, информационные технологии, искусственный интеллект, цифровая экономика, информационное право, информатика, постиндустриальное общество, кибернетика, computer law, informational technology, artificial intelligence, digital economy, information law, computer science, post-industrial society, cybernetics.

Bikeev, I., Kabanov, P., Begishev, I., Khisamova Z.
Criminological risks and legal aspects of artificial intelligence implementation // *AIIPCC '19: Proceedings of the International Conference on Artificial Intelligence, Information Processing and Cloud Computing*, December 2019, Article No 20, 1-7.
URL:https://doi.org/10.1145/3371425.3371476

Abstract. The use of AI inevitably leads to the problem of ethical choice, raises legal issues that require prompt intervention. The article presents the results of a detailed study of the opinions of leading scientists involved in the study of social aspects of AI. The key characteristics of AI that carry criminological risks are identified, the types of criminological risks of using AI are identified, the author's classification of these risks is proposed. The results of a detailed analysis of the legal regulation of the legal personality of AI are presented. Formulated options for bringing to justice those responsible for the actions of the AI, having the ability to self-learning, who decided to commit actions / inactions that qualify as a crime. Authors argue the need for a clear, rigorous and effective definition of ethical frameworks in the development, design, production, use and modification of AI. Arguments are made about the need to recognize AI as a source of increased danger. The paper analyzes the content of the resolution of the European Parliament on the possibility of endowing AI with "legal status". Special attention is paid to the question of giving the AI a personality. It is proposed to use legal fiction as a technique in which the specific legal personality of AI can be perceived as a non-standard legal position, different from reality. It is assumed that such a decision can remove a number of legal restrictions that exist today and prevent the active involvement of AI in the legal space.
Keywords: artificial intelligence, intelligent technology, robot, machine learning, criminological risks, criminological features, the risks of the use of artificial intelligence, threat of use of artificial intelligence, the criminal capacity of artificial intelligence.

Ястребов, О.А.
Искусственный интеллект в правовом пространстве // *Вестник Российского университета дружбы народов. Серия: Юридические науки*, 2018, 22(3), 315-328.
URL:https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-v-pravovom-prostranstve

Аннотация. Активное внедрение цифровых технологий во все сферы

общественной жизни, а также стремительное развитие искусственного интеллекта приобретают серьезные масштабы, тем самым требуя особого внимания законодателя. Настоящая статья посвящена исследованию современного состояния правового регулирования искусственного интеллекта. В ней рассмотрена Стратегия развития информационного общества в Российской Федерации на 2017-2030 годы. Приводятся примеры активного внедрения искусственного интеллекта в социальную действительность. Отражены результаты исследования консалтинговой группы McKinsey относительно перспектив замены человеческого труда роботами. В статье отмечается, что вопрос о тотальной компьютеризации и соответствующем вытеснении человека из интеллектуальной сферы деятельности является достаточно дискуссионным. Также обозначены отдельные проблемы, связанные с применением технологий искусственного интеллекта: ответственность, которая может возникнуть при функционировании промышленных роботов; непрерывность цифровой активности, которая оказывает влияние на психоэмоциональное состояние человека, и т.д. С позиций не только права, но и философии рассматривается вопрос о возможности создания роботов с интеллектом, наделенных свойствами личности.

Ключевые слова: искусственный интеллект, цифровые технологии, стратегия развития информационного общества в РФ, роботы, робототехника, «электронное лицо», гражданское законодательство, правовые нормы.

Заплатина, Т.С.

Искусственный интеллект в вопросе вынесения судебных решений, или ИИ-судья // *Вестник Университета имени О. Е. Кутафина*, 2019, 4(56), 160–168.

URL:https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-v-voprose-vyneseniya-sudebnyh-resheniy-ili-ii-sudya

Аннотация. Статья посвящена анализу проблематики использования искусственного интеллекта (ИИ) при вынесении судебных решений. Практика вынесения судебных решений ИИ применяется в ряде стран, например в Великобритании и США, однако она не является однозначной. Так, управление данными, обрабатываемыми роботами, представляет большую проблему не только с точки зрения законодательства об обработке персональных данных, но и с точки зрения типа данных, их объема. Идея ИИ-судей поднимает также важные этические вопросы, связанные с предвзятостью и автономией, в том числе создателей ИИ.

Ключевые слова: искусственный интеллект, вынесение судебных решений, защита информации, информационная безопасность, машинное обучение, США, Великобритания, Европейский союз.

Nikolskaia, K., Naumov, V.

Artificial Intelligence in Law // *International Multi-Conference on Industrial Engineering and Modern Technologies (FarEastCon)*, 2020, 1-4, doi: 10.1109/FarEastCon50210.2020.9271095.
URL:https://ieeexplore.ieee.org/document/9271095

Abstract. Artificial intelligence technologies are increasingly penetrating into various spheres of human life. Modern artificial intelligence algorithms are not capable of fully imitating legal thinking. However, artificial intelligence algorithms are capable of automating some of the routine work of lawyers. This allows professionals to deal with really difficult cases without being distracted by routine complaints. The paper discusses the use of artificial intelligence in the right.
Keywords: artificial intelligence, law, software algorithms, software, legal factors, prediction algorithms, patents.

Hu, S.

The Influence of Artificial Intelligence Development on Patent Legislation // *International Conference on Robots & Intelligent System (ICRIS)*, 2019, 110-113, doi: 10.1109/ICRIS.2019.00036.
URL:https://ieeexplore.ieee.org/document/8806576

Abstract. The artificial intelligence technology has brought unprecedented challenges to today's ethical standards, legal rules, social order and public management systems. In terms of Patent law, the main challenge is the patent eligibility of the artificial intelligence invention. Since inventions in the field of artificial intelligence include methods for implementing mental steps using computers and devices designed to automate mental steps, the implicit requirements for judging patent eligibility may be inconsistent with the nature of artificial intelligence technology. However, due to the importance of artificial intelligence to social development, many countries have begun to revise patent examination guidelines related patent-eligibility criteria to address the challenges of artificial intelligence.
Keywords: patents, artificial intelligence, technological innovation, guidelines, law, Europe.

Wang, L., Hu, S.

Patent Protection for Artificial Intelligence in Europe // *2020 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS)*, 2020, 591–594, doi:10.1109/ICITBS49701.2020.00130.
URL:https://ieeexplore.ieee.org/document/9110088

Abstract. In order to increase the possibility of patent entitled of artificial intelligence related inventions at the European Patent Office, applications should focus on what technical problems the invention are solving or identify the specific technical improvements. From the perspective of patent analysis, European

artificial intelligence technology is leading the world and in this field, the European Patent Office is one of the most important intellectual property offices, and its legislation and practice of patent eligibility examination for artificial intelligence related Inventions have an important impact on the world. the European Patent Office takes the position in the Guidelines that artificial intelligence and machine learning technologies are based on mathematical methods and are therefore generally excluded from patent eligibility unless linked to a technical application. The updated Guidelines did not make substantial changes to the "technical " requirements of the patent eligible subject, but only further clarified and refined it.
Keywords: data protection, learning (artificial intelligence), legislation, mathematical analysis, patents.

Raaijmakers, S.

Artificial Intelligence for Law Enforcement: Challenges and Opportunities // in *IEEE Security & Privacy*, 17(5), 74-77, Sept.-Oct. 2019, doi: 10.1109/MSEC.2019.2925649.
URL:https://ieeexplore.ieee.org/document/8821442

Abstract. Artificial intelligence (AI) – and particularly deep learning – is progressing rapidly from a technical perspective, but, in a number of domains, adoption is still pending over the resolution of important issues. Methods of data analysis and interpretation based on AI are becoming common among law enforcement agencies (LEAs). Typical applications include suspect profiling (e.g., on social media), traffic control (automated license plate detection and vehicle identification), analyzing dark web money flows, child pornography detection, and anomaly detection.
Keywords: machine learning, data models, law enforcement, training data, computer security, computational modeling, artificial intelligence, computer crime, digital forensics.

Kavlak, B., Fakültesi, H.

Consideration of Robots Citizenship in terms of Law // *Innovations in Intelligent Systems and Applications Conference (ASYU)*, 2019, 1-4, doi: 10.1109/ASYU48272.2019.8946402.
URL:https://ieeexplore.ieee.org/document/8946402

Abstract. With the developments in Robotics, the robots have begun to be used in numerous areas of our lives and this may cause several legal problems. In this paper, we will stress on the citizenship of robots which will become a current issue if the legal personality of robots will be recognized. Within the naturalization to robots, determination of the applicable law to the issues pertaining to the operations of the robots takes on a different dimension in this context.
Keywords: robot sensing systems, law, nanoelectromechanical systems, artificial intelligence, Europe.

Erdélyi, O.J., Goldsmith, J.

Regulating Artificial Intelligence: Proposal for a Global Solution // *AIES '18: Proceedings of the 2018 AAAI/ACM Conference on AI, Ethics, and Society*, December 2018, 95-101.
URL:https://doi.org/10.1145/3278721.3278731

Abstract. Given the ubiquity of artificial intelligence (AI) in modern societies, it is clear that individuals, corporations, and countries will be grappling with the legal and ethical issues of its use. As global problems require global solutions, we propose the establishment of an international AI regulatory agency that – drawing on interdisciplinary expertise – could create a unified framework for the regulation of AI technologies and inform the development of AI policies around the world. We urge that such an organization be developed with all deliberate haste, as issues such as cryptocurrencies, personalized political ad hacking, autonomous vehicles and autonomous weaponized agents are already a reality, affecting international trade, politics, and war.
Keywords: transnational legal ordering, international organizations, hard/soft law, international governance.

Dremliuga, R., Prisekina, N.

Artificial Intelligence Legal Policy: Limits of Use of Some Kinds of AI // *ICSCA '19: Proceedings of the 2019 8th International Conference on Software and Computer Applications*, February 2019, 343-346.
URL:https://doi.org/10.1145/3316615.3316627

Abstract. The paper is devoted to analysis of legal issues concerned to development of AI technologies. The main question here: should governments develop rules regulating use of artificial intelligence and a system of licensing like with automobile transport or ban some types of AI? Comprehension of the current and future legal framework is very important. First of all, law is used to govern a society. It implies that examining AI from legal point of view allows to realize what challenges to social security are caused by expansive introduction of autonomous systems. Secondly, for developer of high technology products it is easier to decide what products should not be invested to since they may lead to negative legal consequences.
Keywords: artificial intelligence, legal regulation, dangerous AI.

Hayashi, S., Arai, K.

How Competition Law Should React in the Age of Big Data and Artificial Intelligence // *The antitrust bulletin*, 2019, 64(3), 447-456, doi:10.1177/0003603X19863591.
URL:https://journals.sagepub.com/doi/abs/10.1177/0003603X19863591

Abstract. Information and communication technology (ICT) is evolving at an accelerating pace. Competition law and policy aim to secure an active competition process in the market in order to protect customers in their own countries, regardless of the nationality of the actors, including the ICT industry. As the platforms become more oligopolistic, the Japanese government has established a data portability that enables users to transfer from any specific platform, at any time, to open up an environment where new platform-type businesses are created one after another and where active competition is carried out. In this policy discussion, it is necessary to seek methods that include realistic international cooperation that is not subject to regulation or intervention-oriented measures. In addition, discussion based on economic empirical analysis is particularly needed. From the viewpoints of ensuring innovative research and development (R&D) concerning artificial intelligence (AI) and fair competition generally, the way of the Governance of AI Networking should be a nonregulatory and a nonbinding way, taking technical features and responsibility distribution among stakeholders (developers, providers, end users, and third parties) into account.
Keywords: competition policy, information and communication technology, Japan.

04. Экономика, бизнес, занятость

Одна из первостепенных целей, стоящих перед разработчиками и заказчиками машин с искусственным интеллектом, – это, безусловно, достижение экономической выгодности, финансовой оправданности и экономии разнообразных ресурсов. Внедрение интеллектуальных технологий в такие экономические сферы, как промышленность, сельское хозяйство, банки и сфера финансов, домашнее хозяйство и сфера услуг, с одной стороны, сулит немалые прибыли пользователям, с другой же – чревата новыми социально-экономическими проблемами – ростом безработицы, бедностью, преступностью, необходимостью перераспределения социального капитала, напряженностью на рынке труда. Авторы представленных статей этого раздела подчеркивают неизбежность применения интеллектуальных технологий в современной цифровой экономике, но вместе с тем осмысливают возникающие прогнозируемые или потенциальные проблемы для поиска вариантов снижения их рискогенности для общества.

Makridakis, S.

The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms // *Futures*, 2017, 90, 46-60.

URL:https://doi.org/10.1016/j.futures.2017.03.006

Abstract. The impact of the industrial and digital (information) revolutions has, undoubtedly, been substantial on practically all aspects of our society, life, firms and employment. Will the forthcoming AI revolution produce similar, far-reaching effects? By examining analogous inventions of the industrial, digital and AI

revolutions, this article claims that the latter is on target and that it would bring extensive changes that will also affect all aspects of our society and life. In addition, its impact on firms and employment will be considerable, resulting in richly interconnected organizations with decision making based on the analysis and exploitation of “big” data and intensified, global competition among firms. People will be capable of buying goods and obtaining services from anywhere in the world using the Internet, and exploiting the unlimited, additional benefits that will open through the widespread usage of AI inventions. The paper concludes that significant competitive advantages will continue to accrue to those utilizing the Internet widely and willing to take entrepreneurial risks in order to turn innovative products/services into worldwide commercial success stories. The greatest challenge facing societies and firms would be utilizing the benefits of availing AI technologies, providing vast opportunities for both new products/services and immense productivity improvements while avoiding the dangers and disadvantages in terms of increased unemployment and greater wealth inequalities.
Keywords: Artificial Intelligence (AI), industrial revolution, digital revolution, AI revolution, impact of AI revolution, benefits and dangers of AI technologies.

Naidoo, J., Dulek, R.E.

Artificial Intelligence in Business Communication: A Snapshot // *International journal of business communication*, 2018, 126-147, doi:10.1177/2329488418819139.
URL:https://journals.sagepub.com/doi/abs/10.1177/2329488418819139?journalCode=jobd

Abstract. Despite artificial intelligence’s far-reaching influence in the financial reporting and other business domains, there is a surprising dearth of accessible descriptions about the assumptions underlying the software’s development along with an absence of empirical evidence assessing the viability and usefulness of this communication tool. With these observations in mind, the purposes of this study are to explain how automated text summarization applications work from an overarching, semitechnical, modestly theoretical perspective and, using ROUGE-1 (Recall-Oriented Understudy for Gisting Evaluation–1) evaluation metrics, assess how effective the summarization software is when summarizing complex business reports. The results of this study show that the extraction-based summarization system produced moderately satisfactory results in terms of extracting relevant instances of the text from the business reports. Much work still needs to be accomplished in the area of precision and recall in extraction-based systems before the software can match a human’s ability to capture the gist of a body of text.
Keywords: ROUGE-1, automatic text summarization, artificial intelligence, company annual reports.

Солнцева, О.Г.

Аспекты применения технологий искусственного интеллекта // *E-Management*, 2018, 1 (1), 43-51, doi: 10.26425/2658-3445-2018-1-43-51.

URL:https://cyberleninka.ru/article/n/aspekty-primeneniya-tehnologiy-iskusstvennogo-intellekta

Аннотация. В настоящее время наблюдается влияние инноваций на технологические процессы в различных сферах деятельности, а применение технологий искусственного интеллекта оказывает непосредственное влияние на развитие общества. В статье исследованы основные тенденции развития искусственного интеллекта, в ходе исследования выявлено, что на сегодняшний момент область искусственного интеллекта можно рассматривать как сочетание когнитивной информатики, лингвистики, психологии и математики. Рассмотрены аспекты использования искусственного интеллекта в различных сферах жизнедеятельности, таких, как промышленность, сельское хозяйство, государственная служба, образование, банки и сфера финансов, медицина, транспорт и транспортная система, домашнее хозяйство и сфера услуг.
Ключевые слова: искусственный интеллект, технологии, робот, андроид, человеческий фактор, безопасность.

Околышев, Д.А., Сираждинов, Р.Ж.
Проблемы использования искусственного интеллекта в современной экономике // *Шаг в будущее: искусственный интеллект и цифровая экономика, Материалы 1-й Международной научно-практической конференции. Государственный университет управления*, 2017, 201-206.
URL:https://elibrary.ru/item.asp?id=32786328

Аннотация. В статье представлены проблемы использования искусственного интеллекта на современном этапе социально-экономического развития общества. Целью проведения исследования является разработка предложений по совершенствованию внедрения искусственного интеллекта в экономические процессы. Результаты исследования могут послужить основанием для создания территориальных координирующих центров внедрения искусственного интеллекта в реальные сектора экономики в целях эффективного использования искусственного интеллекта в социально-экономическом развитии общества.
Ключевые слова: искусственный интеллект, проблемы, экономика, население, общество.

Савина, С.В.
О применении искусственного интеллекта в экономической сфере // *Самоуправление*, 2019, Т. 2, 4 (117), 297-299.
URL:https://elibrary.ru/item.asp?id=42432319

Аннотация. Статья посвящена анализу возможности использования искусственного интеллекта в экономической сфере. В статье рассмотрены направления развития искусственного интеллекта, а также различные

подходы к его разработке. Анализируются различные системы создания искусственного интеллекта и их влияние на экономическую сферу.
Ключевые слова: искусственный интеллект, информационные технологии, экономика, машинное обучение, artificial intelligence, information technology, economics, machine learning.

Дадашев, З.Ф., Устинова, Н.Г.
Влияние искусственного интеллекта на экономику // *Эпоха науки*, 2019, 18, 53-57, doi:10.24411/2409-3203-2019-00042.
URL:https://cyberleninka.ru/article/n/vliyanie-iskusstvennogo-intellekta-na-ekonomiku

Аннотация. На сегодняшний день актуальной становится проблема внедрения новых технологий и формирования цифровой экономики. В статье раскрывается понятие искусственного интеллекта как науки или технологии создания интеллектуальных машин, в частности интеллектуальных компьютерных программ, которые внедряются в экономику. Рассмотрена роль искусственного интеллекта в экономике.
Ключевые слова: искусственный интеллект, цифровая экономика, мировая экономика, информационные технологии, экономический эффект.

Acemoglu, D., Restrepo, P.
Automation and New Tasks: How Technology Displaces and Reinstates Labor // *The Journal of Economic Perspectives*, 2019, 33(2), 3-30, doi:10.1257/jcp.33.2.3.
URL:https://www.jstor.org/stable/26621237

Abstract. We present a framework for understanding the effects of automation and other types of technological changes on labor demand, and use it to interpret changes in US employment over the recent past. At the center of our framework is the allocation of tasks to capital and labor – the task content of production. Automation, which enables capital to replace labor in tasks it was previously engaged in, shifts the task content of production against labor because of a displacement effect. As a result, automation always reduces the labor share in value added and may reduce labor demand even as it raises productivity. The effects of automation are counterbalanced by the creation of new tasks in which labor has a comparative advantage. The introduction of new tasks changes the task content of production in favor of labor because of a reinstatement effect, and always raises the labor share and labor demand. We show how the role of changes in the task content of production – due to automation and new tasks – can be inferred from industry-level data. Our empirical decomposition suggests that the slower growth of employment over the last three decades is accounted for by an acceleration in the displacement effect, especially in manufacturing, a weaker reinstatement effect, and slower growth of productivity than in previous decades.
Keywords: artificial intelligence, automation, labor, influence, productivity unemployment.

Agrawal, A., Gans, J.S., Goldfarb, A.
Artificial Intelligence: The Ambiguous Labor Market Impact of Automating Prediction // *The Journal of Economic Perspectives*, 2019, 33(2), 31-50, doi: 10.1257/jcp.33.2.31.
URL:https://www.jstor.org/stable/26621238

Abstract. Recent advances in artificial intelligence are primarily driven by machine learning, a prediction technology. Prediction is useful because it is an input into decision-making. In order to appreciate the impact of artificial intelligence on jobs, it is important to understand the relative roles of prediction and decision tasks. We describe and provide examples of how artificial intelligence will affect labor, emphasizing differences between when the automation of prediction leads to automating decisions versus enhancing decision-making by humans.
Keywords: artificial intelligence, economic system, labor market, influence, prediction.

Урунов, А.А., Родина, И.Б.
Влияние искусственного интеллекта и интернет-технологий на национальный рынок труда // *Фундаментальные исследования*, 2018, 1, 138-142, doi:10.17513/fr.42064.
URL:https://fundamental-research.ru/ru/article/view?id=42064

Аннотация. В статье представлен краткий анализ социально-экономических последствий применения искусственного интеллекта и продуктов в сфере интернет-технологий в экономике и в обществе в целом. Искусственный интеллект – наука и технология создания интеллектуальных машин, особенно интеллектуальных компьютерных программ. Искусственный интеллект связан со сходной задачей использования компьютеров для понимания человеческого интеллекта, но не обязательно ограничивается биологически правдоподобными методами. По нашим прогнозам, по мере внедрения искусственного интеллекта отдельные профессии прекратят существование со скоростью как минимум от 1 до 3 профессий ежегодно. В этих условиях будет сложнее адаптировать социум как явление, приносящее всему обществу и благо и одновременно зло. Безработица и низкая заработная плата бьет по экономике дважды: во-первых, ограничивает так необходимое для экономического роста расширение внутреннего рынка, пострадает спрос и, как следствие – снижается выпуск; во-вторых, порождает тенденцию «голландской» болезни, поскольку большая часть прибавочного труда будет находиться в руках узкого количества капиталистов, направляющих далее эти средства на те инвестиционные проекты, которые обеспечивают лишь экономию на заработной плате и сверхприбыли. Кроме того, пострадает бюджет по части налогообложения физических лиц и от сокрытия истинного дохода роботовладельцев. Исследования показывают, что в целом по России ожидается рост безработицы от естественного его

уровня 5–6 % до обычного уровня в условиях использования робототехники до 15–20 %, а в мире до 30 %. Уже сегодня надо усовершенствовать законодательства по поводу организации и управления оплаты пособий по безработице. Для этого в Правительстве РФ необходимо сформировать фонд компенсации от применения искусственного интеллекта, где должна аккумулироваться безвозмездно определенная часть (не менее 25 %) высвободившихся средств предприятий от применения искусственного интеллекта для выплаты будущих пособий безработным.
Ключевые слова: труд, робот, искусственный интеллект, рынок труда, безработица, средней слой, фонд компенсаций.

Акьюлов, Р.И., Сковпень, А.А.

Роль искусственного интеллекта в трансформации современного рынка труда // *Дискуссия*, 2019, 3 (94), 30-40, doi: 10.24411/2077-7639-2019-10029.
URL:https://cyberleninka.ru/article/n/rol-iskusstvennogo-intellekta-v-transformatsii-sovremennogo-rynka-truda

Аннотация. Рассматриваются актуальные для всего мира проблемы, связанные с развитием искусственного интеллекта и все более широким внедрением данных технологий в экономическую сферу; анализируются возникающие барьеры становления цифровой экономики, характерные непосредственно для России, проводится аналогия по степени влияния цифровых технологий на цивилизационное развитие с происходившими ранее аграрной и промышленной революциями. Отмечается, что во многих развитых странах с каждым годом все больше операций технологического процесса в различных видах деятельности передается роботизированным комплексам, которые осуществляют рутинную работу, высвобождая занимавшихся этим работников. Представлены последствия роботизации, которые скажутся непосредственно на рынке труда и в целом на ситуации в обществе. В завершение предлагается ряд мер и направлений деятельности по минимизации негативных последствий распространения искусственного интеллекта и робототехники в экономике. Несмотря на негативные эффекты роботизации для рынка труда, обосновывается необходимость дальнейшего развития и внедрения технологий искусственного интеллекта, которые являются неотъемлемой составляющей наступающей цифровой экономики.
Ключевые слова: искусственный интеллект, робототехника, рынок труда, промышленные роботы, инновации, суперкапитализм, неравенство доходов, шестой технологический уклад.

Webb, M.

The Impact of Artificial Intelligence on the Labor Market // *SSRN*, 2019, 61.
URL:https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3482150

Abstract. I develop a new method to predict the impacts of any technology on occupations. I use the overlap between the text of job task descriptions and the text

of patents to construct a measure of the exposure of tasks to automation. I first apply the method to historical cases such as software and industrial robots. I establish that occupations I measure as highly exposed to previous automation technologies saw declines in employment and wages over the relevant periods. I use the fitted parameters from the case studies to predict the impacts of artificial intelligence. I find that, in contrast to software and robots, AI is directed at high-skilled tasks. Under the assumption that historical patterns of long-run substitution will continue, I estimate that AI will reduce 90:10 wage inequality, but will not affect the top 1%.
Keywords: artificial intelligence, robotics, technology, patents, occupations.

Zhou, G., Chu, G., Li, L., Meng, L.
The effect of artificial intelligence on China's labor market // *China economic journal*, 2019, 13:1, 24-41, doi: 10.1080/17538963.2019.1681201.
URL:https://www.tandfonline.com/doi/full/10.1080/17538963.2019.1681201

Abstract. Automation and artificial intelligence technology have played a pivotal role in today's economic and social development. They represent a labor-substituted technological progress, featuring more and more jobs to be replaced by AI. Based on the adoption rate calculated in our paper and theoretical substitution probability estimated by existing studies, our research estimates the actual substitution probability by AI for various occupations in China. By using this actual substitution probability on occupation level, we also explore the substitution effects on labor force with different characteristics and find that AI has larger substitution impacts on labors of female, old age, low education and low income. We also predict the number of employed people that would be replaced by AI in each industry, and the results show that China will have 278 million labors (201 ~ 333 million under different adoption rates) replaced by AI by 2049, representing 35.8% of the current employment in China.
Keywords: artificial intelligence, substitution effect, substituted employment.

Борталевич, С.И., Лапин, А.В., Харитонов, С.С.
Искусственный интеллект в системе обеспечения экономической безопасности // *Вестник МИРБИС*, 2019, 2(18), 18-27.
URL:https://cs.journal-mirbis.ru/-/XaiE7OPrSQwj6lm4MxSvww/sv/document/9e/62/7b/521295/583/2_2019_VM.pdf?1565954356#page=18

Аннотация. Предметом исследования выступает искусственный интеллект как потенциальный элемент экономической безопасности. Авторы статьи, используя многочисленные наработки ученых в области экономики, развития промышленности и права, выявили необходимость исследования возможностей использования искусственного интеллекта в целях обеспечения экономической безопасности. В статье раскрыты имеющиеся трактовки ученых о сущности искусственного интеллекта, его задачах для

развития экономики и финансов. На основе экспертного анализа и имеющихся нормативных правовых актов в области государственного регулирования развития и внедрения искусственного интеллекта приведены авторские взгляды на необходимость включения искусственного интеллекта в систему экономической безопасности России.
Ключевые слова: экономическая безопасность, искусственный интеллект, цифровая экономика, объект экономической безопасности, робототехника, технологии, государственное регулирование, киберфизические системы.

Huang, Ch., Wang, X.
Financial Innovation Based on Artificial Intelligence Technologies // *AICS 2019: Proceedings of the 2019 International Conference on Artificial Intelligence and Computer Science*, July 2019, 750-754.
URL:https://doi.org/10.1145/3349341.3349504

Abstract. Nowadays, the degree of the heated topic of artificial intelligence in the world reaches a new height. Due to the breakthrough of deep learning algorithm based on neural network, the level of artificial intelligence technologies has been enhanced significantly. The global financial industry is quietly changing under the catalysis of artificial intelligence. The frontier artificial intelligence technologies, such as the technology of expert system, machine learning and knowledge discovery in database are combed to explore the financial applications of artificial intelligence. Based on these key technologies, this paper proposed three applications of artificial intelligence in the financial field, including intelligent investment adviser, transaction forecast and financial regulation, discusses the key technologies of artificial intelligence and financial innovation products based on these technologies, such as the functions of the transaction prediction system based on artificial intelligence technologies include forecast analysis, index statistics, stock analysis and information retrieval, etc. The structures of the systems are drawn and the design principles are provided. Finally, to guard the safety of the applications of artificial intelligence, the paper gives the suggestions of enhancing identity authentication, introducing monitoring measures and limiting autonomy degree.
Keywords: intelligent investment adviser, transaction forecast, financial regulation, machine learning, deep learning.

Andreeva, A., Yolova, G., Dimitrova, D.
Artificial intellect: Regulatory Framework and Challenges Facing the Labour Market // *CompSysTech '19: Proceedings of the 20th International Conference on Computer Systems and Technologies*, 2019, July 2019, 74-77.
URL:https://doi.org/10.1145/3345252.3345261

Abstract. The paper analyses the impact of artificial intelligence on employment relationships and the ensuing need for adaptation of labour law principles and constructs to new social realities arising from the digitalization of social processes.

The analysis outlines the challenges facing the labour market and the responsibility of institutions for adoption of a regulatory framework.
Keywords: artificial intelligence, labour market, responsibility, challenges, labour law.

Balasubramanian, G.
When Artificial Intelligence Meets Behavioural Economics // *Indian Institute of Management Lucknow*, 2020, 14(2), 216-277, doi:10.1177/2631454120974810.
URL:https://journals.sagepub.com/doi/abs/10.1177/2631454120974810

Abstract. Behavioural economics has its roots in the problems of rationality and optimising the expected utility, specially the empirical evidence of individuals acting against expected norms. Artificial intelligence (AI), on the other hand, is premised on the dominant idea being that because of the dispositional factors, the human being often might be akin to a disturbance to an otherwise smooth system. Thus, the intersection of both these areas is decision-making under uncertainty. Both these concepts put together have interesting implications for organisations. This article explores the impact of AI and Behavioural Economics on the human resources (HR) function of an organisation. Some of the contemporary applications of AI augmenting decision-making have been presented using the lens of the HR Value Chain. Based on these applications, implications for organisations are discussed. Despite limitations, AI, as a technology, is soon going to be embraced by the firms, leading to hybrid organisations. As a result, organisations need to redesign their processes and policies.
Keywords: behavioural economics, artificial intelligence, meta-organisations, hybrid organizations.

Kumar ,V., Rajan, B., Venkatesan, R., Lecinski, J.
Understanding the Role of Artificial Intelligence in Personalized Engagement Marketing // *California Management Review*, 2019; 61(4), 135-155, doi:10.1177/0008125619859317.
URL:https://journals.sagepub.com/doi/abs/10.1177/0008125619859317

Abstract. This article explores the role of artificial intelligence (AI) in aiding personalized engagement marketing – an approach to create, communicate, and deliver personalized offerings to customers. It proposes that consumers are ready for a new journey in which AI is a tool for endless options and information that are narrowed and curated in a personalized way. It also provides predictions for managers regarding the AI-driven environment on branding and customer management practices in both developed and developing countries.
Keywords: artificial intelligence, CRM technology, customer relationship management, customization, marketing, personalization.

Lim, Tai Wei

North Korea's Artificial Intelligence (A.I.) Program // *North Korean Review*, 2019, 15(2), 97-103.
URL:https://www.jstor.org/stable/26915828

Abstract. The purpose of this paper is to examine the progress of North Korea's Artificial Intelligence (A.I.) program and analyze its impact. In studying the North Korean example, three important and significant ideas are examined. First, a concerted highly centralized state-sponsored A.I. development program is able to overcome resource scarcity and skills deficiency by mobilizing the entire state's resources behind the program's development. Second, states have discovered the enormous potential of A.I. Even those that have an impoverished economy (like North Korea) are prepared to institute an expensive A.I. development program. Third, while A.I. is often discussed in the context of advanced economies (especially the U.S. and its leading technologies) and rapidly developing and emerging economies like China, the A.I. program of other smaller economies, including those perceived to be lagging, are often de-privileged in such analyses.
Keywords: artificial intelligence, North Korea, program, risks, advantages, economy.

Levy, F.

Computers and populism: artificial intelligence, jobs, and politics in the near term // *Oxford Review of Economic Policy*, 2018, 34(3), 393-417.
URL:https://doi.org/10.1093/oxrep/gry004

Abstract. I project the near-term future of work to ask whether job losses induced by artificial intelligence will increase the appeal of populist politics. The paper first explains how computers and machine learning automate workplace tasks. Automated tasks help to both create and eliminate jobs and I show why job elimination centres in blue-collar and clerical work—impacts similar to those of manufactured imports and offshored services. I sketch the near-term evolution of three technologies aimed at blue-collar and clerical occupations: autonomous long-distance trucks, automated customer service responses, and industrial robotics. I estimate that in the next 5–7 years, the jobs lost to each of these technologies will be modest but visible. I then outline the structure of populist politics. Populist surges are rare but a populist candidate who pits ‘the people’ (truck drivers, call centre operators, factory operatives) against ‘the elite’ (software developers, etc.) will be mining many of the US regional and education fault lines that were part of the 2016 presidential election.
Keywords: populism, artificial intelligence, computers, future of work.

Jarrahi, M.H.

Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making // *Business Horizons*, 2018, 61(4), 577-586.
URL:https://doi.org/10.1016/j.bushor.2018.03.007

Abstract. Artificial intelligence (AI) has penetrated many organizational processes, resulting in a growing fear that smart machines will soon replace many humans in decision making. To provide a more proactive and pragmatic perspective, this article highlights the complementarity of humans and AI and examines how each can bring their own strength in organizational decision-making processes typically characterized by uncertainty, complexity, and equivocality. With a greater computational information processing capacity and an analytical approach, AI can extend humans' cognition when addressing complexity, whereas humans can still offer a more holistic, intuitive approach in dealing with uncertainty and equivocality in organizational decision making. This premise mirrors the idea of intelligence augmentation, which states that AI systems should be designed with the intention of augmenting, not replacing, human contributions.
Keywords: artificial intelligence, organizational decision making, human-machine symbiosis, human augmentation, analytical and intuitive decision making.

Ivanov, S.H., Webster, C.

Adoption of Robots, Artificial Intelligence and Service Automation by Travel, Tourism and Hospitality Companies – A Cost-Benefit Analysis // *International Scientific Conference "Contemporary Tourism – Traditions and Innovations"*, Sofia University, 2017, 168.
URL:https://ssrn.com/abstract=3007577

Abstract. Travel, tourism and hospitality companies have started to adopt robots, artificial intelligence and service automation (RAISA) in the form of chatbots, delivery robots, robot-concierge, conveyor restaurants, self-service information/check-in/check-out kiosks, and many others. Despite the huge advancements in social robotics, the research on robots in tourism has been extremely limited – a gap that is partially filled by this paper. It investigates the costs and benefits of the adoption of RAISA by travel, tourism, and hospitality companies (hotels, restaurants, event organizers, theme and amusement parks, airports, car rental companies, travel agencies and tourist information centers, museums and art galleries and others). Specifically the paper looks at how RAISA influence the competitiveness, service quality, human resource management, service operations processes and standards, hospitality facilities layout, operating costs and revenues, and investigates the conditions under which the adoption of RAISA would be of benefit of the company. The paper acknowledges that the adoption of RAISA is dependent on the labour and technology costs, customers' readiness and willingness to be served by a robots, cultural characteristics of both customers and service providers, the technological characteristics of RAISA solutions and other factors. The paper elaborates on the practical challenges to be faced by tourist companies when introducing RAISA (e.g. related to resistance to change, reengineering of service processes) and provide recommendations to both tourism companies and robot manufacturers how to deal with these challenges.

Keywords: robots, artificial Intelligence, service automation, self-service technology, tourism, cost-benefit analysis.

Frank, M. R., Autor, D., et al.
Toward understanding the impact of artificial intelligence on labor // *Proceedings of the National Academy of Sciences*, 2019, 116 (14), 6531-6539.
URL:https://doi.org/10.1073/pnas.1900949116

Abstract. Rapid advances in artificial intelligence (AI) and automation technologies have the potential to significantly disrupt labor markets. While AI and automation can augment the productivity of some workers, they can replace the work done by others and will likely transform almost all occupations at least to some degree. Rising automation is happening in a period of growing economic inequality, raising fears of mass technological unemployment and a renewed call for policy efforts to address the consequences of technological change. In this paper we discuss the barriers that inhibit scientists from measuring the effects of AI and automation on the future of work. These barriers include the lack of high-quality data about the nature of work (e.g., the dynamic requirements of occupations), lack of empirically informed models of key microlevel processes (e.g., skill substitution and human–machine complementarity), and insufficient understanding of how cognitive technologies interact with broader economic dynamics and institutional mechanisms (e.g., urban migration and international trade policy). Overcoming these barriers requires improvements in the longitudinal and spatial resolution of data, as well as refinements to data on workplace skills. These improvements will enable multidisciplinary research to quantitatively monitor and predict the complex evolution of work in tandem with technological progress. Finally, given the fundamental uncertainty in predicting technological change, we recommend developing a decision framework that focuses on resilience to unexpected scenarios in addition to general equilibrium behavior.
Keywords: automation, employment, economic resilience, future of work.

Mutascu, M.
Artificial intelligence and unemployment: New insights // *Economic Analysis and Policy*, 2021, 69, 653-667.
URL:https://doi.org/10.1016/j.eap.2021.01.012

Abstract. This paper investigates the impact of artificial intelligence on unemployment in the most high-tech and developed countries, using a theoretical model that is also supported empirically. The empirical methodology follows a nonlinear approach by using panel threshold and GMM-system estimations. The dataset covers the period 1998–2016, and includes 23 countries. The main results show that artificial intelligence has a nonlinear impact on unemployment, with the acceleration of the use of artificial intelligence reducing unemployment, but only occurring at low levels of inflation. In this case, no “switch effect” between

“displacement effect” and “replacement effect” is registered. Otherwise, the contribution of artificial intelligence to unemployment is rather neutral.
Keywords: artificial intelligence, unemployment, implications, high-tech countries.

Guha A., et al.
How artificial intelligence will affect the future of retailing // *Journal of Retailing*, 2021, 97(1), 28-41.
URL:https://doi.org/10.1016/j.jretai.2021.01.005

Abstract. Artificial intelligence (AI) will substantially impact retailing. Building on past research and from interviews with senior managers, we examine how senior retailing managers should think about adopting AI, involving factors such as the extent to which an AI application is customer-facing, the amount of value creation, whether the AI application is online, and extent of ethics concerns. In addition, we highlight that the near-term impact of AI on retailing may not be as pronounced as the popular press might suggest, and also that AI is likely to be more effective if it focuses on augmenting (rather than replacing) managers’ judgments. Finally, while press coverage typically involves customer-facing AI applications, we highlight that a lot of value can be obtained by adopting non-customer-facing applications. Overall, we remain very optimistic as regards the impact of AI on retailing. Finally, we lay out a research agenda and also outline implications for practice.
Keywords: artificial intelligence, retailing, ethics, privacy, bias.

Филипова, И.А.
Искусственный интеллект и трудовые отношения: социальные перспективы и тенденции правового регулирования // *Российская юстиция*, 2017, 11, 65-67.
URL:https://elibrary.ru/item.asp?id=30455304

Аннотация. Современное общество находится «на пороге» четвертой промышленной революции, связанной с внедрением искусственного интеллекта в повседневную жизнь человека. Уровень развития робототехники, нейронных сетей, облачных и квантовых технологий позволяет эффективно использовать их в различных отраслях экономики. Изменения затронут все сферы общественной жизни, в том числе сферу труда. К настоящему моменту в ряде производств уже применяется труд роботов, что влечет сокращение рабочих мест для людей. По прогнозам специалистов, в ближайшие 5-10 лет такое замещение станет распространенным явлением. Структурное изменение экономики, трансформация рынка труда потребуют внесения серьезных поправок в законодательство. С одной стороны, эти поправки должны позволить использовать экономические преимущества от высокого уровня развития технологий, с другой стороны, гарантировать эффективную социальную

защиту для всех членов общества. Значительное число исследователей настаивает на необходимости превентивного регулирования вопроса. Решение задачи «переформатирования» трудового законодательства осложняется большой степенью неопределенности последствий внедрения искусственного интеллекта в сферу труда. Поиск мер правового регулирования ведется как на национальном, так и на международном уровнях.

Ключевые слова: искусственный интеллект, робот, рынок труда, рабочее место, трудовые отношения, трудовое законодательство.

Danaher, J., Nyholm, S.

Automation, work and the achievement gap // *AI and Ethics*, 2021, 1, 227-237.
URL:https://doi.org/10.1007/s43681-020-00028-x

Abstract. Rapid advances in AI-based automation have led to a number of existential and economic concerns. In particular, as automating technologies develop enhanced competency, they seem to threaten the values associated with meaningful work. In this article, we focus on one such value: the value of achievement. We argue that achievement is a key part of what makes work meaningful and that advances in AI and automation give rise to a number achievement gaps in the workplace. This could limit people's ability to participate in meaningful forms of work. Achievement gaps are interesting, in part, because they are the inverse of the (negative) responsibility gaps already widely discussed in the literature on AI ethics. Having described and explained the problem of achievement gaps, the article concludes by identifying four possible policy responses to the problem.

Keywords: automation, achievement, meaningful work, artificial intelligence, responsibility gap, autonomy, mastery, community.

Ferreira, M.B., et al.

Using artificial intelligence to overcome over-indebtedness and fight poverty // *Journal of Business Research*, 2020, 131, 411-425.
URL:https://doi.org/10.1016/j.jbusres.2020.10.035

Abstract. This research examines how artificial intelligence may contribute to better understanding and to overcome over-indebtedness in contexts of high poverty risk. This research uses Automated Machine Learning (AutoML) in a field database of 1654 over-indebted households to identify distinguishable clusters and to predict its risk factors. First, unsupervised machine learning using Self-Organizing Maps generated three over-indebtedness clusters: low-income (31.27%), low credit control (37.40%), and crisis-affected households (31.33%). Second, supervised machine learning with exhaustive grid search hyperparameters (32,730 predictive models) suggests that Nu-Support Vector Machine had the best accuracy in predicting families' over-indebtedness risk factors (89.5%). By proposing an AutoML approach on over-indebtedness, our research adds both

theoretically and methodologically to current models of scarcity with important practical implications for business research and society. Our findings also contribute to novel ways to identify and characterize poverty risk in earlier stages, allowing customized interventions for different profiles of over-indebtedness.
Keywords: over-indebtedness, poverty risk, economic austerity, credit control, artificial intelligence, automated machine learning.

Mhlanga, D.
Artificial Intelligence (AI) and Poverty Reduction in the Fourth Industrial Revolution (4IR) // *Preprints*, 2020, 2020090362 (doi: 10.20944/preprints202009.0362.v1).
URL: https://www.preprints.org/manuscript/202009.0362/v1

Abstract. Though the share of the world population living in extreme poverty declined to 10 percent in 2015, from 16 percent in 2010 and 36 percent in 1990, data shows that the world is not on track in achieving the target of less than 3 percent of people living in extreme poverty by 2030. Hence the study sought to investigate the influence of AI on poverty reduction. Using content analysis one of the unobtrusive research techniques, the study found out that, the availability of relevant data is making AI be able to deliver value to humanity and AI has a strong influence on poverty in areas of relevant data collection through poverty maps, its ability to revolutionize agriculture, education, and the financial sector through digital financial inclusion. The study also discovered that many countries especially developing nations are not collecting as much data to identify the number of poor people and the regions where these people are located. However, the existence of AI is assisting to change this, or instance the study discovered that the research team at Stanford University is using satellite images to provide an alternative to map poverty, to identify the regions where poverty is more concentrated. Also, various robotics and AI programs such as Google and Stanford University's Sustainability and Artificial Intelligence Lab, are coming forth with AI programs in agriculture which are doing a lot to improve farming, through the identification of diseases, prediction of crop yields, and location of areas prone to a scarcity among several other notable signs of progress in education. Therefore, the study recommends that governments, development institutions and other organizations that are striving to fight poverty to invest more in AI as well as adopting and scaling up its use as it presents benefits in the quest to ensure that poverty is reduced.
Keywords: artificial intelligence, fourth industrial revolution, poverty.

Клочков, В.В.
Искусственный интеллект и цифровая экономика: социальные аспекты // *Материалы 1-й Международной научно-практической конференции. Государственный университет управления "Шаг в будущее: искусственный интеллект и цифровая экономика"*, 2017, 26-33.
URL:https://www.elibrary.ru/item.asp?id=32772288&pff=1

Аннотация. Происходящие и ожидаемые технологические изменения направлены на замену человека во многих производственных процессах. С одной стороны, это снижает трудоемкость общественного производства, но, с другой стороны, может вызвать значительное снижение роли живого труда в экономике, рост безработицы и социального расслоения. В работе предлагается подход к анализу соответствующих рисков и определению социально эффективных путей инновационного развития технологий. **Ключевые слова:** роботизация, трудоемкость, прогресс, риски, расслоение.

Mellado, S.R., Blanco, L.M.T., Faúndez, U.A., De La Fuente M. Hanns
Support to the learning of the Chilean tax system using artificial intelligence through a chatbot // *38th International Conference of the Chilean Computer Science Society (SCCC)*, 2019, 1-8, doi:10.1109/SCCC49216.2019.8966410.
URL:https://ieeexplore.ieee.org/document/8966410

Abstract. Effective student learning has become a challenge for teachers in recent years. In the case of the teaching of regulations related to corporate taxes, this challenge is even greater due to the inclusion of external variables that hinder the learning process, such as the high complexity of tax systems, the variability of legislation, among others. In view of the above, different alternatives have been provided to support the teaching process both outside and inside the classroom, ranging from recreational activities to active learning. Artificial intelligence in the last decade has begun to be used in different spheres, from image recognition to decision making; thus, in this research the experience resulting from using artificial intelligence through a chatbot to support the learning of the regulations related to corporate taxes in the Chilean tax system will be appreciated. To this end, an experiment was conducted with two sample groups, called experimental and control groups, to a total of 34 students, where the results obtained are promising in comparison with other methodologies.
Keywords: chatbot, finance, learning (artificial intelligence), education, regulation, software.

Mellado-Silva, R., Faúndez-Ugalde, A., Blanco-Lobos M.
Effective Learning of Tax Regulations using Different Chatbot Techniques // *Advances in Science, Technology and Engineering Systems Journal*, 2020, 5(6), 439-446, doi:10.25046/aj050652
URL:https://astesj.com/v05/i06/p52/

Abstract. Teaching tax-related regulations have always been a challenge due to the inclusion of external variables that hinder the learning process, such as the high complexity of tax systems and legislation variability. Universities have sought different alternatives to support the teaching process both outside and inside the classroom, ranging from recreational activities to active learning. This article will show the experience resulting from using a chatbot to support learning in

accounting students for the teaching of tax regulations related to the Chilean tax system, comparing two types of tools, on the one hand, a free conversation chatbot using natural language processing versus a rule-based chatbot driven by a decision tree. The experimentation process was carried out with 50 higher education students, divided into an experimental group and a control group, in two different courses. The results obtained demonstrated in both cases greater effectiveness of the use of the chatbot in learning the tax matter, both in the free conversation chatbot where the experimental group obtained a 15.7% improvement versus the control group that obtained a 1.05% improvement, as in the chatbot that applied decision tree where the experimental group obtained a 32% improvement versus the control group with 5.2%. Considering the complexity of the content in tax matters and the little innovation in the existing teaching subjects in the area and that the students improve learning using both chatbot tools compared to other learning techniques, is considered a relevant contribution to teaching innovation.
Keywords: chatbot, tax learning, automation, decision tree.

05. Политика, государственное управление, безопасность

Использование интеллектуальных устройств в целях эффективного государственного управления – одно из приоритетных направлений современной политики. Авторами проанализировано применение технологий искусственного интеллекта в сфере внутренней и внешней политики и обеспечения национальной безопасности. В этом разделе авторы представленных статей разбирают проблемы кибербезопасности, разработки автономных боевых систем, комплексного анализа текущей мировой ситуации в сфере определения перспектив и опасностей применения технологий ИИ в вооруженных силах и в сфере обеспечения национальной безопасности современных государств. А также выделяются социальные риски, связанные с внедрением технологий, ограничивающих некоторые гражданские права и свободы, воспринимаемые часто как угроза современному демократическому устройству общества.

Lau, C.G., Haugh, B.A.
Megatrend Issues in Artificial Intelligence and Autonomous Systems. Institute for Defense Analyses, 2018, 22 p.
URL:https://www.jstor.org/stable/resrep22645

Abstract. Megatrends are sustained developments that fundamentally impact business, economy, society, cultures, and personal lives. Recent advances in artificial intelligence (AI) will enable autonomous systems (AS), with far-reaching implications in both the civilian sector and defense. AI-enabled robots will perform difficult and dangerous tasks that require human-like intelligence. Self-driving cars will revolutionize automobile transportation systems and reduce traffic fatalities. Big-data analytics using AI techniques will make human-like decisions to improve governmental social services, health care, criminal justice, and the environment, Al-enabled autonomous robotic soldiers, aerial drones, and underwater and land

vehicles will perform military missions. These revolutionary technological advances will have significant impacts on the economy, military, and society. We are seeing a whole new generation of AI and AS that will change, in unforeseen ways, how we live, work, play, and fight wars. However, for the public and military to adopt AI and AS, society and military must have confidence that these systems are trustworthy and safe. A number of important issues are awaiting policymakers, including research and development, workforce development, safety, cybersecurity, ethics, regulations, and automated warfare.
Keywords: artificial intelligence, security, risks, cybersecurity, autonomous systems, impact.

Efthymiou Egleton, I-P., Efthymiou Egleton, T-W., Sidiropoulos, S.
Artificial Intelligence (AI) in Politics: Should Political AI be Controlled? // *International Journal of Innovative Science and Research Technology*, 2020, 5(2).
URL:https://ssrn.com/abstract=3724567

Abstract. Artificial Intelligence is being applied in many areas of science, technology, and everyday life. At the same time, a debate around its applications, safety, and privacy is raging. In this paper, we explore AI and specifically AI and its recent applications in politics, under the current Internet-run world, and major points to be addressed in the future.
Keywords: artificial intelligence, politics, safety, ethics.

Helbing, D. et al.
Will Democracy Survive Big Data and Artificial Intelligence? In: Helbing D. (eds) Towards Digital Enlightenment. Springer, Cham, 2019.
URL:https://doi.org/10.1007/978-3-319-90869-4_7

Abstract. We are in the middle of a technological upheaval that will transform the way society is organized. We must make the right decisions now.
Enlightenment is man's emergence from his self-imposed immaturity. Immaturity is the inability to use one's understanding without guidance from another.
– Immanuel Kant, "What is Enlightenment?" (1784).
Keywords: intelligent beings, automatic control strategy, cybernetic loop, applicable data protection law, collective intelligence.

Nemitz P.
Constitutional democracy and technology in the age of artificial intelligence // *Philosophical Transactions of the Royal Society A*, 2018, 376(2133).
URL:https://doi.org/10.1098/rsta.2018.0089

Abstract. Given the foreseeable pervasiveness of artificial intelligence (AI) in modern societies, it is legitimate and necessary to ask the question how this new technology must be shaped to support the maintenance and strengthening of constitutional democracy. This paper first describes the four core elements of

today's digital power concentration, which need to be seen in cumulation and which, seen together, are both a threat to democracy and to functioning markets. It then recalls the experience with the lawless Internet and the relationship between technology and the law as it has developed in the Internet economy and the experience with GDPR before it moves on to the key question for AI in democracy, namely which of the challenges of AI can be safely and with good conscience left to ethics, and which challenges of AI need to be addressed by rules which are enforceable and encompass the legitimacy of democratic process, thus laws. The paper closes with a call for a new culture of incorporating the principles of democracy, rule of law and human rights by design in AI and a three-level technological impact assessment for new technologies like AI as a practical way forward for this purpose.

Keywords: artificial intelligence, ethics, rule of law, digital power, law, democracy, GDPR.

Allan, D.

Global politics and the governance of artificial intelligence // *Journal of International Affairs*, 2018, 72(1), 121-126.
www.jstor.org/stable/26588347

Abstract. The Governance of Artificial Intelligence (AI) Program at the University of Oxford's Future of Humanity Institute focuses on the political challenges associated with rapid development of artificial intelligence. The Journal of International Affairs spoke to Allan Dafoe, the Director of the AI Program, about the AI governance problem, the risks and challenges involved, and the role that governments and the private sector will have in establishing a comprehensive AI governance framework.

Fatima, S., Desouza, K.C., Dawso,n G.S.

National strategic artificial intelligence plans: A multi-dimensional analysis // *Economic Analysis and Policy*, 2020, 67,178-194.
URL:https://doi.org/10.1016/j.eap.2020.07.008

Abstract. Nations have recognized the transformational potential of artificial intelligence (AI). Advances in AI will impact all facets of society. A spate of recently released national strategic AI plans provides valuable insights into how nations are considering their future trajectories. These strategic plans offer a rich source of evidence to understand national-level strategic actions, both proactive and reactive, in the face of rapid technological innovation. Based on a comprehensive content analysis of thirty-four national strategic plans, this article reports on (1) opportunities for AI to modernize the public sector and enhance industry competitiveness, (2) the role of the public sector in ensuring that the two most critical elements of AI systems, data and algorithms, are managed responsibly, (3) the role of the public sector in the governance of AI systems, and

(4) how nations plan to invest in capacity development initiatives to strengthen their AI capabilities.
Keywords: artificial intelligence, strategic plans, technological innovation, public agencies, autonomous systems, intelligent systems, science and technology policy.

Sharma, G. D., Yadav, A., Chopra, R.
Artificial intelligence and effective governance: A review, critique and research agenda // *Sustainable Futures*, 2020, 2, 100004.
URL:https://doi.org/10.1016/j.sftr.2019.100004

Abstract. The paper provides an overview of how Artificial Intelligence (AI) is applied in different government sectors. Our methodology is based on a systematic review of 74 papers retrieved from Web of Science and Scopus databases. We find that the extant literature is less focused on healthcare, ICT, education, social and cultural services, and fashion sector; while ignoring the practical implementation of AI in these sectors. We present an organizing framework stating different areas related to governance and throws light on research gaps in the extant literature that can be further worked upon for promoting the research in digital governance.
Keywords: artificial intelligence, environmental sustainability, governance, policy-making, public administration, ICT.

Vesnic-Alujevic, L., Nascimento, S., Pólvora, A.
Societal and ethical impacts of artificial intelligence: Critical notes on European policy frameworks // *Telecommunications Policy*, 2020, 44(6), 101961.
URL:https://doi.org/10.1016/j.telpol.2020.101961

Abstract. This paper offers a critical review on conditions and impacts of AI/ML in society, with a dedicated overview of the European AI policy framework. Through the analysis of policy papers produced by European institutions, European national governments and other organisations situated between research and policy-making, we bring an overarching outlook of key ethical and societal issues currently under discussion at the intersection of European policy agendas and recent literature on the topic. Our findings show that 21 analysed documents look both at individual and societal impacts, with their understanding generally aligned in calls for more responsibility, accountability, transparency, safety or trust. Furthermore, our findings also point to the necessity of more integrated approaches between governments, industry and academia stakeholders, and above all, to the need of applied multidisciplinary frameworks, supported by both anticipatory outlooks and public engagement exercises able to tackle the often excessive technicality of the debate.

Алексеев Р.А.
Искусственный интеллект на службе государства: аргументы "за" и "против" // *Журнал политических исследований*, 2020, 4(2), 58-69.

URL:https://elibrary.ru/item.asp?id=43090688

Аннотация. Целью статьи является выявление достоинств внедрения искусственного интеллекта в государственную сферу и потенциальных угроз его использования на примере стран-лидеров в данной области - США, Китая и Великобритании. В качестве основных избраны такие методы исследования, как кейс-стади и компаративистика. С их помощью проанализировано применение технологий искусственного интеллекта в сфере политики и государственного управления, внутренней и внешней политики и обеспечения национальной безопасности. Указаны цели использования технологий искусственного интеллекта во властно-управленческой сфере разных стран. Рассмотрены сферы применения технологий искусственного интеллекта. Отмечена роль Национальной стратегии развития искусственного интеллекта в России, принятой в 2019 г. Сформулированы аргументы «за» и «против» применения искусственного интеллекта. Констатируется, что в настоящее время искусственный интеллект стал неотъемлемым элементом государственного и общественного развития. Со временем он только будет набирать обороты и в очередной раз становиться темой для дискуссий ученых, политиков и общественных деятелей, так как технологии искусственного интеллекта постепенно становятся частью жизни социума.
Ключевые слова: искусственный интеллект, боты, машинные технологии, стратегия развития искусственного интеллекта, информационное общество, artificial intelligence, bots, machine technologies, artificial intelligence development strategy, information society.

Горохова, С.С.
Искусственный интеллект в контексте обеспечения национальной безопасности // *Национальная безопасность*, 2020, 3, 15-31, doi: 10.7256/2454-0668.2020.3.33465
URL:https://nbpublish.com/library_read_article.php?id=33465

Аннотация. Предметом исследования являются наиболее перспективные технологические решения с использованием искусственного интеллекта и мировые тренды их использования вооруженными силами технологически передовых государств мира. Выявляются основные направления применения технологий ИИ рядом стран, в том числе и Российской Федерацией. Проблема исследования заключается в недостаточной степени сбалансированности подхода к применению технологических решений на основе ИИ, определяемого повышенной степенью опасности использования искусственных интеллектуальных систем для обеспечения безопасности и обороны государств, с одной стороны, и невозможностью отказа от них на современном этапе в силу имеющихся международных тенденций – с другой. Научная новизна работы заключается в попытке проведения комплексного анализа текущей мировой ситуации в сфере определения перспектив и

опасностей применения технологий ИИ в вооруженных силах и в сфере обеспечения национальной безопасности современных государств. В качестве основных выводов работы можно отметить следующее. Технологии ИИ являются наиболее перспективным направлением переоснащения вооруженных сил ведущих военных держав современного мира. Разработки ведутся в различных направлениях, варьирующихся от беспилотных транспортных средств до смертельного автономного оружия. Специалисты отмечают как ярко выраженные положительные перспективы использования ИИ в сфере обеспечения национальной безопасности, так и возможные негативные последствия от его использования.

Ключевые слова: искусственный интеллект, робот, беспилотное транспортное средство, смертельное автономное оружие, национальная безопасность, вооруженные силы, оборона, рой, информационная безопасность, активная безопасность.

Verhelst, H.M., Stannat, A.W., Mecacci, G.

Machine Learning Against Terrorism: How Big Data Collection and Analysis Influences the Privacy-Security Dilemma // *Science and Engineering Ethics*, 2020, 26, 2975–2984.

URL:https://doi.org/10.1007/s11948-020-00254-w

Abstract. Rapid advancements in machine learning techniques allow mass surveillance to be applied on larger scales and utilize more and more personal data. These developments demand reconsideration of the privacy-security dilemma, which describes the tradeoffs between national security interests and individual privacy concerns. By investigating mass surveillance techniques that use bulk data collection and machine learning algorithms, we show why these methods are unlikely to pinpoint terrorists in order to prevent attacks. The diverse characteristics of terrorist attacks – especially when considering lone-wolf terrorism – lead to irregular and isolated (digital) footprints. The irregularity of data affects the accuracy of machine learning algorithms and the mass surveillance that depends on them which can be explained by three kinds of known problems encountered in machine learning theory: class imbalance, the curse of dimensionality, and spurious correlations. Proponents of mass surveillance often invoke the distinction between collecting data and metadata, in which the latter is understood as a lesser breach of privacy. Their arguments commonly overlook the ambiguity in the definitions of data and metadata and ignore the ability of machine learning techniques to infer the former from the latter. Given the sparsity of datasets used for machine learning in counterterrorism and the privacy risks attendant with bulk data collection, policymakers and other relevant stakeholders should critically re-evaluate the likelihood of success of the algorithms and the collection of data on which they depend.

Keywords: privacy-security dilemma, mass surveillance, metadata collection, machine learning, national security.

Zachary, D.

Artificial Intelligence on the Battlefield: Implications for Deterrence and Surprise // *PRISM*, 2019, 8(2), 114-131.
URL:https://www.jstor.org/stable/26803234

Abstract. Predicting the future of technology is a risky business. We know with certainty that AI is being incorporated into an array of military missions with the intent of improving our knowledge of the operational environment, adversary capabilities, and the speed and precision of offensive and defensive weapons. We can usefully speculate about how these developments are poised to change the face of modern warfare and how those changes might affect regional and strategic deterrence stability, based on our understanding of established political and military realities. More elusive, however, is a clear picture of how AI might converge with other technologies to produce unexpected outcomes, or "unknown unknowns." Nevertheless, there are a few possibilities that could have major strategic consequences and alter the underlying realities on which regional and strategic stability are founded.
Keywords: military implications, artificial intelligence, weapons, army, security.

Hurley, J.S.

Enabling Successful Artificial Intelligence Implementation in the Department of Defense // *Journal of Information Warfare*, 2018, 17(2), 65-82.
URL:https://www.jstor.org/stable/26633155

Abstract. The Pentagon sees Artificial Intelligence (AI) as a key enabler of future military operations. However, to secure the potential promise of AI, the Department of Defense (DoD) must address a number of challenges including technological diversity, cultural silos, and insufficient skillsets. The onset of what is perceived to be the next global ‘arms’ race will position ’the winner’ as the top superpower that could define and dictate future directions and priorities across the globe. One of the key areas of concern is in the area of cyber—the next major cyberattack is predicted to involve AI systems. There is growing concern that cyberattacks that utilise AI will be more efficient, more powerful, and more damaging in their impact. As a result, there is a great deal of concern among senior leaders on how to best position the DoD for the inevitable threats and expected attacks. This paper focuses on ways in which the DoD can use AI to better position itself for cyber events and challenges in the future.
Keywords: artificial intelligence, cyberattack, DoD, arms, military operations.

Franke, U.E.

Not smart enough: the poverty of European military thinking on artificial intelligence. European Council on Foreign Relations, 2019, 21 p.
URL:https://www.jstor.org/stable/resrep21650

Abstract. There is currently too little European thinking about what artificial

intelligence means for the military. AI experts tend to overlook Europe, focusing on the US and China. But AI will play an important role for Europe's defence capabilities, and its funding and development decisions will influence the future of military AI.
France and Germany stand at opposite ends of the Al spectrum in Europe: France considers AI a part of geopolitical competition and shows clear interest in military AI, while Germany sees AI only as an economic and societal issue. The new European Commission's stated goal of achieving "European technological sovereignty" should lead it to include engagement on the topic of military AI, and help EU member states harmonise their approaches. Failing to coordinate properly in this area could threaten future European defence cooperation, including PESCO and the European Defence.
Keywords: European Union, military, artificial intelligence, technological sovereignty.

Fiott, D., Lindstrom, G.
Artificial Intelligence: What implications for EU security and defence? European Union Institute for Security Studies (EUISS), 2018, 8 p.
URL:https://www.jstor.org/stable/resrep21476

Abstract. Artificial Intelligence enabled platforms will take time to mature, so AI will remain a strategic enabler for the time being. Before AI reaches a more substantial level of autonomy, human operators will continue to exert control over AI-enabled systems and technologies.
Although AI could enhance the EUs Common Security and Defence Policy, a number of unintended legal, ethical and operational consequences could occur. The implications of AI for EU security and defence are largely unknown, but it could help the EU enhance its security and defence threat and risk detection, protection and preparation capabilities, as well as improve the Union's defence production capacities.
While the EU is collectively one of the world leaders on academic research about AI, more attention is needed on translating basic research into applied research and innovation in the civil and defence sectors.
Keywords: artificial intelligence, security, European Union, defence.

Kasapoğlu, C., Kırdemir, B.
Wars of none: Artificial intelligence and the future of conflict. Centre for Economics and Foreign Policy Studies, 2019, 26 p.
URL:https://www.jstor.org/stable/resrep21050

Abstract. The first part of the report explains why the current artificial intelligence (AI) and robotics development are likely to exacerbate a Cambrian Explosion' that brought about an unprecedented bio-diversity to the Earth millions of years ago. The second part assesses near-term policy implications of the AI revolution. The third part sheds light on geopolitics of artificial intelligence' and the new great

power competition in this respect. The fourth part presents in depth analysis of the evolving characteristics of armed conflict and the future of warfare precipitated by AI-enabled technologies and concepts. This section divides the battle-opace of network-centric warfare into physical, informational, and cognitive battlefield, and explores each part's interaction with artificial intelligence. The fifth part focuses on the transatlantic alliance's AI agenda and future security environment in which allied leaders will have to operate.

Keywords: artificial intelligence, military forces, geopolitics, robotics development, armed conflict.

Hunter, A.P., Sheppard, L.R., Karlen, R., Balieiro, L.

Artificial intelligence and national security: the importance of the AI ecosystem. Center for Strategic and International Studies (CSIS), 2018, 78 p.
www.jstor.org/stable/resrep22492

Abstract. Artificial intelligence has profound potential to affect the balance of power in both the global economy and in military competition. While AI has a long his- tory, AI has begun to deliver results within the last decade, particularly with the recent rapid progress in machine learning and the increased availability of data and computing power. As impactful as the recent progress has been, AI remains highly problem-specific and context-dependent. It has proven extremely challenging to translate the progress in some fields to others, even those that are closely related.

This study presents the key steps to be taken to facilitate the successful integration of AI into national security applications based on an accurate understanding of where the AI field currently stands and what key factors are involved in successful AI adoption and management.

Keywords: artificial intelligence, national security, AI adoption, integration.

Sweijs, T.

Artificial Intelligence and Its Future Impact on Security. Hague Centre for Strategic Studies, 2018, 8 p.
URL:https://www.jstor.org/stable/resrep19348

Abstract. The past few years there has been rapid progress in various fields that are generally identified under the header of Artificial Intelligence or AI. That progress has largely taken off because of advances in deep learning based on neural network pattern recognition. These advances have been driven by a combination of massive investment from predominantly private actors in AI, persistent increases in computing power, and the availability of large datasets. AI is predicted to radically disrupt and transform industries, labor markets and societies.

Keywords: artificial intelligence, security, actors, data, influence, risks.

Modern conflict and artificial intelligence
Centre for International Governance Innovation, 2021, 60 p.
www.jstor.org/stable/resrep27510

Abstract. Policy makers around the world are leaning on historical analogies to try to predict how artificial intelligence, or AI-which, ironically, is itself a prediction technology- will develop. They are searching for clues to Inform and create appropriate policies to help foster innovation while addressing possible security risks. Much in the way that electrical power completely changed our world more than a century ago - transforming every industry from transportation to health care to manufacturing – AI's power could effect similar, if not even greater, disruption. Whether it is the "next electricity or not, one fact all can agree on is that AI is not a thing in itself. Most authors contributing to this essay serien focus on the concept that AI is a general- purpose technology-or GPT-that will enable many applications across a variety of sectors. While AI applications are expected to have a significantly positive impact on our lives, those same applications will also likely be alused or manipulated by bad atorn. Setting rules at both the national and the international level - in careful consultation with industry - will be crucial for ensuring that AI offers new capabilities and efficiencies safely.
Keywords: artificial intelligence, security, conflict, impact, risks

Franke, U.
Harnessing artificial intelligence. European Council on Foreign Relations, 2019, 9 p.
URL:https://www.jstor.org/stable/resrep21491

Abstract. Artificial intelligence is impossible to disregard - it is set to transform society, the economy, and politics. Europe has not yet taken all the steps it needs benefit from these advances or to protect itself from AI's potentially dangerous aspects. The US, China, and Russia are alert to AI's power to change modem warfare: they grasp the geopolitics of AI and may pursue techno-nationalist agendas in recognition of this. Europe can develop sovereignty in AI by beefing up the talent, data, and hardware it draws on; and as a "regulatory superpower" it can set standards the rest of the world will have to follow. If Europe does not address these difficult questions soon it will find itself surrounded by more powerful rivals deploying AI against it.
Keywords: artificial intelligence, European Union, geopolitics, risks, impact, implementation.

Виловатых, А.В.
Искусственный интеллект как фактор военной политики будущего // *Проблемы национальной стратегии*, 2019, 1(52), 177-192.
URL:https://www.elibrary.ru/item.asp?id=37031019

Аннотация. На текущий момент потенциал искусственного интеллекта (ИИ)

до конца не раскрыт, но его уже сейчас называют "новым электричеством". Ожидается, что технологии ИИ позволят укрепить национальную безопасность, нарастить эффективность многих секторов экономики, повысить уровень благосостояния населения. Одновременно с прорывными разработками в отдельных отраслях развитие искусственного интеллекта будет, видимо, сопровождаться и увеличением рисков. Учёные указывают на вероятность переформатирования рынка труда, снижения человеческого контроля за принятием решений, возникновения новой гонки вооружений и пр.

Обозначенные обстоятельства неизбежно спровоцируют изменение позиций государств на международной арене и, соответственно, усиление конкурентной борьбы между новыми и уже утвердившимися "центрами силы". В данной связи представляется важным обратить внимание на развитие технологий искусственного интеллекта как фактора, способного существенным образом повлиять на геополитические процессы будущего, в частности на перспективы военного дела.

Ключевые слова: технологии и искусственный интеллект, военное дело, безопасность, США, Китай, мировое господство.

Tadapaneni, N.R.

Artificial Intelligence Security and Its Countermeasures // *International Journal of Advanced Research in Computer Science & Technology*, 2020.
URL:https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3553065

Abstract. Artificial intelligence is a leading technology that helps companies to manage complex tasks effectively and enhance the level of productivity. In this generation, many business communities are using AI-based networks for enhancing organizational performance but they are also facing security risks and threats. Security and privacy both are major concerns linked with the AI technology that impact on the privacy of data and lead hacking issues. This proposed research focuses on the security issues of AI technology and evaluated effective countermeasures for enhancing the privacy of data. There are various methodologies adopted including qualitative design, inductive approach, content analysis method and many more. The conducted literature search helped to solve research questions and obtain reliable information about artificial intelligence security. It is found that a lack of awareness and unauthorized networks are major factors that lead to malware and DoS related attacks in the AI networks. Therefore, it is suggested that companies should implement firewall and encryption based networks for protecting data against malware signals and provide complete training to the employees while using AI-based networks.

Keywords: artificial intelligence, security issues, malware, firewall, encryption.

Qi, M., Tang W.

Analysis on Artificial Intelligence Security and Its Countermeasures // *Proceedings of the 3rd International Conference on Contemporary Education, Social Sciences and Humanities (ICCESSH 2018).*
URL:https://doi.org/10.2991/iccessh-18.2018.242

Abstract. The rapid development of artificial intelligence technology has aroused widespread concern about its security. The artificial intelligence may surpass human intelligence, and it is very necessary to study the security of artificial intelligence. Viewing from the internal approach to solve the security problem of artificial intelligence, we have ethical design at least, limited scope of application, limited degree of autonomy and intelligence, and so on. From the perspective of external approach, we should emphasize the social responsibility of scientists and international cooperation. It should guide people to accept artificial intelligence, as well as the way of safety evaluation and management of artificial intelligence. Only by taking practical and effective measures to ensure the safety of artificial intelligence can it bring happiness to human beings instead of harm.
Keywords: artificial intelligence; security; solving ideas.

Bazarkina, D.Yu., Pashentsev, Y.N.
Artificial Intelligence and New Threats to International Psychological Security // *RUSSIA IN GLOBAL AFFAIRS*, 2019, 17(1), 147-170, doi:10.31278/1810-6374-2019-17-1-147-170
URL:https://eng.globalaffairs.ru/wp-content/uploads/2020/02/19993.pdf

Abstract. This article analyzes new threats to international psychological security (IPS) posed by the malicious use of artificial intelligence (MUAI) by aggressive actors in international relations and discusses international terrorism as such an actor. Compared with the positive applications of AI, MUAI as related to security threats is a much less studied area. This study is based on a system analysis. To identify the MUAI-related threats terrorist organizations pose, the authors actively used scenario analysis and, in particular, case analysis.
Keywords: big data, artificial intelligence, Internet, terrorism, sophisticated technologies.

Johnson, J.
Artificial intelligence & future warfare: implications for international security // *Defense & Security Analysis*, 2019, 35(2), 147-169.
URL:https://www.tandfonline.com/doi/abs/10.1080/14751798.2019.1600800

Abstract. Recent developments in artificial intelligence (AI) suggest that this emerging technology will have a deterministic and potentially transformative influence on military power, strategic competition, and world politics more broadly. After the initial surge of broad speculation in the literature related to AI this article provides some much needed specificity to the debate. It argues that left unchecked the uncertainties and vulnerabilities created by the rapid proliferation

and diffusion of AI could become a major potential source of instability and great power strategic rivalry. The article identifies several AI-related innovations and technological developments that will likely have genuine consequences for military applications from a tactical battlefield perspective to the strategic level.
Keywords: artificial intelligence, international security, US-China relations, future warfare.

Hoadley, D.S., Lucas, N.J.
Artificial Intelligence and National Security. CRS Report. Congressional research service, 2018, 42 p.
URL:https://a51.nl/sites/default/files/pdf/R45178.pdf

Abstract. Artificial Intelligence (AI) is a rapidly growing field of technological development with potentially significant implications for national security. As such, the U.S. Department of Defense (DOD) is developing AI applications for a range of military functions. AI research is underway in the fields of intelligence collection and analysis, logistics, cyberspace operations, command and control, and a variety of military autonomous vehicles. AI applications are already playing a role in operations in Iraq and Syria, with algorithms designed to speed up the target identification process. Congressional action has the potential to shape the technology's trajectory, with fiscal and regulatory decisions potentially influencing growth of national security applications and the standing of military AI development versus international competitors.
Keywords: artificial intelligence, security, DoD, international competition, impact.

Khisamova, Z.I., Begishev, I.R., Sidorenko, E.L.
Artificial Intelligence and Problems of Ensuring Cyber Security // *International Journal of Cyber Criminology*, 2019, 13(2), (Jul-Dec 2019), 564-577, doi:10.5281/zenodo.3709267
URL:https://search.proquest.com/openview/a0f125d3f2115d338e180961818a409d/1?pq-origsite=gscholar&cbl=55114

Abstract. The active use of artificial intelligence leads to the need to resolve a number of ethical and legal problems. The ethical framework for the application and use of data today is highly blurred, which poses great risks in ensuring data confidentiality. In the article, the authors analyzed in detail the main problems in the field of cybersecurity in connection with the active use of AI. The study identified the main types of criminological risks associated with the active implementation of AI. By a separate question, the authors investigated the issues of bringing to responsibility and compensation for damage caused by AI. The authors argue the position about the need to recognize AI as a source of increased danger. It is proposed to use the legal fictitious as a method in which a particular legal personality of AI can be perceived as a non-standard legal position, different from reality.

Keywords: artificial intelligence, machine learning, criminological risks, the risks of the use of artificial intelligence, threat of use of artificial intelligence, ethical issues, cyber security.

Федорченко, С.Н.
Значение искусственного интеллекта для политического режима России: проблемы легитимности, информационной безопасности и «мягкой силы» // *Вестник Московского государственного областного университета. Серия: История и политические науки*, 2020, 1, 41-53.
URL:https://cyberleninka.ru/article/n/znachenie-iskusstvennogo-intellekta-dlya-politicheskogo-rezhima-rossii-problemy-legitimnosti-informatsionnoy-bezopasnosti-i-myagkoy

Аннотация. Цель исследования – комплексный анализ перспектив и угроз технологий искусственного интеллекта для политического режима современной России, осмысление тесной взаимосвязи технологий искусственного интеллекта с легитимностью и информационной безопасностью политического режима.
Ключевые слова: искусственный интеллект, информационная безопасность, Россия, «мягкая сила», политический режим, легитимность.

Jachim, P., Sharevski, F., Pieroni, E.
TrollHunter2020: Real-time Detection of Trolling Narratives on Twitter During the 2020 U.S. Elections // *IWSPA '21: Proceedings of the 2021 ACM Workshop on Security and Privacy Analytics*, April 2021, 55-65.
URL:https://doi.org/10.1145/3445970.3451158

Abstract. This paper presents TrollHunter2020, a real-time detection mechanism we used to hunt for trolling narratives on Twitter during and in the aftermath of the 2020 U.S. elections. Trolling narratives form on Twitter as alternative explanations of polarizing events with the goal of conducting information operations or provoking emotional responses. Detecting trolling narratives thus is an imperative step to preserve constructive discourse on Twitter and remove the influx of misinformation. Using existing techniques, the detection of such content takes time and a wealth of data, which, in a rapidly changing election cycle with high stakes, might not be available. To overcome this limitation, we developed TrollHunter2020 to hunt for trolls in real-time with several dozen trending Twitter topics and hashtags corresponding to the candidates' debates, the election night, and the election aftermath. TrollHunter2020 utilizes a correspondence analysis to detect meaningful relationships between the top nouns and verbs used in constructing trolling narratives while they emerge on Twitter. Our results suggest that the TrollHunter2020 indeed captures the emerging trolling narratives in a very early stage of an unfolding polarizing event. We discuss the utility of TrollHunter2020 for early detection of information operations or trolling and the

implications of its use in supporting a constrictive discourse on the platform around polarizing topics.
Keywords: real-time troll detection, twitter, 2020 U.S. Elections, correspondence analysis, Natural Language Processing (NLP).

Verhelst, H. M., Stannat, A. W., Mecacci, G.
Machine Learning Against Terrorism: How Big Data Collection and Analysis Influences the Privacy-Security Dilemma // *Science and Engineering Ethics*, 2020, 26, 2975-2984.
URL:https://doi.org/10.1007/s11948-020-00254-w

Abstract. Rapid advancements in machine learning techniques allow mass surveillance to be applied on larger scales and utilize more and more personal data. These developments demand reconsideration of the privacy-security dilemma, which describes the tradeoffs between national security interests and individual privacy concerns. By investigating mass surveillance techniques that use bulk data collection and machine learning algorithms, we show why these methods are unlikely to pinpoint terrorists in order to prevent attacks. The diverse characteristics of terrorist attacks – especially when considering lone-wolf terrorism – lead to irregular and isolated (digital) footprints. The irregularity of data affects the accuracy of machine learning algorithm sand the mass surveillance that depends on them which can be explained by three kinds of known problems encountered in machine learning theory: class imbalance, the curse of dimensionality, and spurious correlations. Proponents of mass surveillance often invoke the distinction between collecting data and metadata, in which the latter is understood as a lesser breach of privacy. Their arguments commonly overlook the ambiguity in the definitions of data and metadata and ignore the ability of machine learning techniques to infer the former from the latter. Given the sparsity of datasets used for machine learning in counterterrorism and the privacy risks attendant with bulk data collection, policymakers and other relevant stakeholders should critically re-evaluate the likelihood of success of the algorithms and the collection of data on which they depend.
Keywords: privacy-security dilemma, mass surveillance, metadata collection, machine learning, national security.

Stix, C.
Actionable Principles for Artificial Intelligence Policy: Three Pathways // *Science and Engineering Ethics*, 2021, 27, Article number: 15.
URL:https://doi.org/10.1007/s11948-020-00277-3

Abstract. In the development of governmental policy for artificial intelligence (AI) that is informed by ethics, one avenue currently pursued is that of drawing on "AI Ethics Principles". However, these AI Ethics Principles often fail to be actioned in governmental policy. This paper proposes a novel framework for the development of 'Actionable Principles for AI'. The approach acknowledges the

relevance of AI Ethics Principles and homes in on methodological elements to increase their practical implementability in policy processes. As a case study, elements are extracted from the development process of the Ethics Guidelines for Trustworthy AI of the European Commission's "High Level Expert Group on AI". Subsequently, these elements are expanded on and evaluated in light of their ability to contribute to a prototype framework for the development of 'Actionable Principles for AI'. The paper proposes the following three propositions for the formation of such a prototype framework: (1) preliminary landscape assessments; (2) multi-stakeholder participation and cross-sectoral feedback; and, (3) mechanisms to support implementation and operationalizability.
Keywords: artificial intelligence policy, actionable principles, ethics, ethics of artificial intelligence, governance of artificial intelligence.

06. Здравоохранение, медицина
В данном разделе собраны публикации, посвященные проблемам развития искусственного интеллекта в медицинских науках: от сбора личной информации о пациенте до рисков использования высокоточных роботов-нейрохирургов. Авторы поднимают ряд крайне острых проблем, возникающих в связи с использованием новых информационных технологий с функцией ИИ. Так, существует проблема несанкционированного доступа к медицинским документам, чреватого экономическими, психологическими и репутационными угрозами; проблема неверно проанализированной информации с угрозой неправильного диагноза; проблема дистанционного управления личными медицинскими устройствами и намеренные сбои в их работе; фундаментальная проблема создания Homo technicus и др.

Liu, J.
Artificial Intelligence and Data Analytics Applications in Healthcare General Review and Case Studies // *CAIH2020: Proceedings of the 2020 Conference on Artificial Intelligence and Healthcare*, October 2020, 49-53. URL:https://dl.acm.org/doi/10.1145/3433996.3434006

Abstract. Artificial intelligence (AI) and analytics are evolving as innovative tools in a wide range of areas, from economic activity to public policy, and from individual safety to national security. The healthcare industry and medical practices have also undergone remarkable changes using AI /analytics technologies and learning algorithms. Indeed, artificial intelligence and analytics have yielded a bunch of promising results, not only in the numerous academic works published every year, but also in impressive applications being implemented worldwide. The paper sums up the publications related to AI in healthcare in the past five years and summarizes the latest progress in its applications of this advanced technology. The paper also discusses the current challenges and ethical concerns being faced by the healthcare industry as well as the governments. The purpose of this article is to analyze the trends of the latest scientific developments, to understand the enormous potential of AI and data analytics in healthcare, and to put forward

suggestions to cope with the healthcare problems as well as predict futuristic artificial intelligence and analytics applications. Two case studies are provided to showcase the applications of AI and data analytics.
Keywords: artificial intelligence, data analytics, healthcare applications, medical research.

Benke, K., Benke, G.

Artificial Intelligence and Big Data in Public Health // *International Journal of Environmental Research and Public Health*, 2018, 15(12), 2796.
URL:https://doi.org/10.3390/ijerph15122796

Abstract. Artificial intelligence and automation are topics dominating global discussions on the future of professional employment, societal change, and economic performance. In this paper, we describe fundamental concepts underlying AI and Big Data and their significance to public health. We highlight issues involved and describe the potential impacts and challenges to medical professionals and diagnosticians. The possible benefits of advanced data analytics and machine learning are described in the context of recently reported research. Problems are identified and discussed with respect to ethical issues and the future roles of professionals and specialists in the age of artificial intelligence.
Keywords: algorithms, Big Data, machine learning, deep learning, data mining, visualization, epidemiology, predictive analytics, precision medicine, vision, wearable AI.

Zhua, L., Chen, P, Dong, D, Wang, Zh.

Can artificial intelligence enable the government to respond more effectively to major public health emergencies? Taking the prevention and control of Covid-19 in China as an example // *Socio-Economic Planning Sciences*, 2021, 101029.
URL:https://doi.org/10.1016/j.seps.2021.101029

Abstract. In recent years, public health emergencies have occurred frequently, posing a serious threat to the regional economy and the safety of people's lives and property. In particular, the outbreak of the COVID-19 novel coronavirus this year has caused serious losses to the global economy. On this basis, this article attempts to use modern advanced artificial intelligence technology and modern social science and technology to provide technical assistance and support for the prevention and control of major public health incidents, in order to improve the Chinese government's public relations capabilities and response to public health emergencies. Ability and level. This article attempts to use 3S technology closely related to artificial intelligence technology to design and establish a public health emergency response system, so as to improve the government's response and decision-making ability to respond to and deal with public health emergencies, and reduce the occurrence of emergencies. The results showed that among the 298 respondents, 145 believed that public health emergencies depend on human-to-

human transmission. Most event information is acceptable, while 169 people who rely on mobile phones for information think that most of them are acceptable, and 89 people who rely on TV media for information think that most of them are acceptable. It shows that the use of artificial intelligence technology can effectively solve and prevent the further development of the situation, and at the same time improve the government's ability and level to respond to major public health emergencies, and increase the government's prestige in the eyes of the public.
Keywords: technology empowerment perspective, artificial intelligence, major public health emergencies, new crown pneumonia epidemic.

Park, Y., Casey, D., Joshi, I., Zhu, J., Cheng, F.
Emergence of New Disease: How Can Artificial Intelligence Help? // *Trends in Molecular Medicine*, 2020, 26(7), 627-629.
URL:https://doi.org/10.1016/j.molmed.2020.04.007

Abstract. Emergence of new disease remains a critical parameter in human health and society. Advances in artificial intelligence (AI) allow for rapid processing and analysis of massive and complex data. In this forum article, the recent applications across disease prediction and drug development in relation to the COVID-19 pandemic are reviewed.
Keywords: artificial Intelligence, machine learning, COVID-19.

Sun, T. Q., Medaglia, R.
Mapping the challenges of Artificial Intelligence in the public sector: Evidence from public healthcare // *Government Information Quarterly*, 2019, 36(2), 368-383.
URL:https://doi.org/10.1016/j.giq.2018.09.008

Abstract. The nascent adoption of Artificial Intelligence (AI) in the public sector is being assessed in contradictory ways. But while there is increasing speculation about both its dangers and its benefits, there is very little empirical research to substantiate them. This study aims at mapping the challenges in the adoption of AI in the public sector as perceived by key stakeholders. Drawing on the theoretical lens of framing, we analyse a case of adoption of the AI system IBM Watson in public healthcare in China, to map how three groups of stakeholders (government policy-makers, hospital managers/doctors, and Information Technology (IT) firm managers) perceive the challenges of AI adoption in the public sector. Findings show that different stakeholders have diverse, and sometimes contradictory, framings of the challenges. We contribute to research by providing an empirical basis to claims of AI challenges in the public sector, and to practice by providing four sets of guidelines for the governance of AI adoption in the public sector.
Keywords: artificial Intelligence, public sector, healthcare, challenges, framing, China.

Li, D.

5G and intelligence medicine—how the next generation of wireless technology will reconstruct healthcare? // *Precision Clinical Medicine*, 2019, 2(4), 205-208.
URL:https://doi.org/10.1093/pcmedi/pbz020

Abstract. Despite intensive efforts, there are still enormous challenges in provision of healthcare services to the increasing aging population. Recent observations have raised concerns regarding the soaring costs of healthcare, the imbalance of medical resources, inefficient healthcare system administration, and inconvenient medical experiences. However, cutting-edge technologies are being developed to meet these challenges, including, but not limited to, Internet of Things (IoT), big data, artificial intelligence, and 5G wireless transmission technology to improve the patient experience and healthcare service quality, while cutting the total cost attributable to healthcare. This is not an unrealistic fantasy, as these emerging technologies are beginning to impact and reconstruct healthcare in subtle ways. Although the technologies mentioned above are integrated, in this review we take a brief look at cases focusing on the application of 5G wireless transmission technology in healthcare. We also highlight the potential pitfalls to availability of 5G technologies.
Keywords: aging, artificial intelligence, fantasy, health care costs, intelligence, technology, health care systems, self-mutilation by cutting, wireless technology, big data, internet of things.

Faizal khan, Z., Alotaibi, S.R.

Applications of Artificial Intelligence and Big Data Analytics in m-Health: A Healthcare System Perspective // *Journal of Healthcare Engineering*, 2020, Article ID 8894694.
URL:https://doi.org/10.1155/2020/8894694

Abstract. Mobile health (m-health) is the term of monitoring the health using mobile phones and patient monitoring devices etc. It has been often deemed as the substantial breakthrough in technology in this modern era. Recently, artificial intelligence (AI) and big data analytics have been applied within the m-health for providing an effective healthcare system. Various types of data such as electronic health records (EHRs), medical images, and complicated text which are diversified, poorly interpreted, and extensively unorganized have been used in the modern medical research. This is an important reason for the cause of various unorganized and unstructured datasets due to emergence of mobile applications along with the healthcare systems. In this paper, a systematic review is carried out on application of AI and the big data analytics to improve the m-health system. Various AI-based algorithms and frameworks of big data with respect to the source of data, techniques used, and the area of application are also discussed. This paper explores the applications of AI and big data analytics for providing insights to the users and enabling them to plan, using the resources especially for the specific challenges in m-health, and proposes a model based on the AI and big data

analytics for m-health. Findings of this paper will guide the development of techniques using the combination of AI and the big data as source for handling m-health data more effectively.

Schönberger, D.

Artificial intelligence in healthcare: a critical analysis of the legal and ethical implications // *International Journal of Law and Information Technology*, 2019, 27(2), 142-170.
URL:https://doi.org/10.1093/ijlit/eaz004

Abstract. Artificial intelligence (AI) is perceived as the most transformative technology of the 21st century. Healthcare has been identified as an early candidate to be revolutionized by AI technologies. Various clinical and patient-facing applications have already reached healthcare practice with the potential to ease the pressure on healthcare staff, bring down costs and ultimately improve the lives of patients. However, various concerns have been raised as regards the unique properties and risks inherent to AI technologies. This article aims at providing an early stage contribution with a holistic view on the 'decision-making' capacities of AI technologies. The possible ethical and legal ramifications will be discussed against the backdrop of the existing frameworks. I will conclude that the present structures are largely fit to deal with the challenges AI technologies are posing. In some areas, sector-specific revisions of the law may be advisable, particularly concerning non-discrimination and product liability.

Wahl, B., Cossy-Gantner, A., Germann, S., Schwalbe, N.R.

Artificial intelligence (AI) and global health: how can AI contribute to health in resource-poor settings? // *BMJ Global Health*, 2018, 3(4)**:**e000798.
URL:http://dx.doi.org/10.1136/bmjgh-2018-000798

Abstract. The field of artificial intelligence (AI) has evolved considerably in the last 60 years. While there are now many AI applications that have been deployed in high-income country contexts, use in resource-poor settings remains relatively nascent. With a few notable exceptions, there are limited examples of AI being used in such settings. However, there are signs that this is changing. Several high-profile meetings have been convened in recent years to discuss the development and deployment of AI applications to reduce poverty and deliver a broad range of critical public services. We provide a general overview of AI and how it can be used to improve health outcomes in resource-poor settings. We also describe some of the current ethical debates around patient safety and privacy. Despite current challenges, AI holds tremendous promise for transforming the provision of healthcare services in resource-poor settings. Many health system hurdles in such settings could be overcome with the use of AI and other complementary emerging technologies. Further research and investments in the development of AI tools tailored to resource-poor settings will accelerate realising of the full potential of AI for improving global health.

Vellido, A.

Societal Issues Concerning the Application of Artificial Intelligence in Medicine // *Kidney Dis*, 2019, 5(1), 11-17.
URL:https://doi.org/10.1159/000492428

Abstract. Medicine is becoming an increasingly data-centred discipline and, beyond classical statistical approaches, artificial intelligence (AI) and, in particular, machine learning (ML) are attracting much interest for the analysis of medical data. It has been argued that AI is experiencing a fast process of commodification. This characterization correctly reflects the current process of industrialization of AI and its reach into society. Therefore, societal issues related to the use of AI and ML should not be ignored any longer and certainly not in the medical domain. These societal issues may take many forms, but they all entail the design of models from a human-centred perspective, incorporating human-relevant requirements and constraints. In this brief paper, we discuss a number of specific issues affecting the use of AI and ML in medicine, such as fairness, privacy and anonymity, explainability and interpretability, but also some broader societal issues, such as ethics and legislation. We reckon that all of these are relevant aspects to consider in order to achieve the objective of fostering acceptance of AI- and ML-based technologies, as well as to comply with an evolving legislation concerning the impact of digital technologies on ethically and privacy sensitive matters. Our specific goal here is to reflect on how all these topics affect medical applications of AI and ML. This paper includes some of the contents of the "2nd Meeting of Science and Dialysis: Artificial Intelligence," organized in the Bellvitge University Hospital, Barcelona, Spain.
Keywords: artificial intelligence in medicine, machine learning, social impact.

Резаев, А.В., Трегубова, Н.Д.

Искусственный интеллект и искусственная социальность: новые явления и проблемы для развития медицинских наук // *Epistemology & Philosophy of Science*, 2019, 56(4), 183-199, doi: 10.5840/eps201956475
URL:https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-i-iskusstvennaya-sotsialnost-novye-yavleniya-i-problemy-dlya-razvitiya-meditsinskih-nauk

Аннотация. Статья ориентирована на приглашение к профессиональной дискуссии философов, теоретиков и методологов науки, представителей медицинских наук о возможности и действительности искусственного интеллекта в медицине. Конкретная цель работы состоит в том, чтобы выявить и сформулировать принципиальные вопросы, проанализировать основные теоретические и методологические направления анализа проблем развития искусственного интеллекта в медицинских науках. Первый раздел статьи предлагает определение понятий искусственного интеллекта и «искусственной социальности». Второй раздел представляет обзор ключевых тенденций развития медицины. После этого авторы сосредоточиваются на

двух проблемах, возникающих в связи с внедрением искусственного интеллекта в медицину. Первая – возможный пересмотр принципов западной медицины. Вторая – изменение содержания и форм медицинского образования. В заключение подведены итоги обсуждения данных проблем.
Ключевые слова: artificial intelligence, artificial sociality, philosophy of science, medical sciences, life sciences, medical education, искусственный интеллект, искусственная социальность, философия науки, медицинские науки, науки о жизни, медицинское образование.

Pee, L.G., Pan, S.L., Cui, L.

Artificial intelligence in healthcare robots: A social informatics study of knowledge embodiment // *China's NSFC Joint Research Fund*, 2018, 70(4), 351-369.
URL:https://asistdl.onlinelibrary.wiley.com/doi/abs/10.1002/asi.24145

Abstract. Knowledge embodiment, taking a social informatics perspective, refers to the transformation of knowledge into a form in which its value becomes evident. Knowledge embodiment in robotic systems with artificial intelligence (AI robotic systems) actualizes the value of knowledge much more powerfully than other entities, potentially altering the connections among people or even displacing professionals. To understand the effects of knowledge embodiment in AI robotic systems on connections among people and technology, this study addresses 2 cumulative research questions: (i) What is the nature of knowledge embodiment, that is, how are knowledge and AI robots assembled for knowledge work? (ii) How does knowledge embodiment affect connections among people and technology (that is, social informatics)? A case study of a large hospital that has employed different AI robotic systems in many parts of its healthcare service provision process indicates 4 forms of knowledge embodiment, each with a distinct focus. Further, a social informatics analysis suggests four ways knowledge embodiment affects connections among people and technology and reveals related social and institutional issues that go beyond technological determinism. Implications of these findings for research on social informatics and information science are discussed.
Keywords: artificial intelligence, healthcare system, robots, social information.

Li, Y., Deng, K., Chen, X.

The application of Artificial Intelligence in Psychological Counseling Based on "Treat Pre-Disease"// *CAIH2020: Proceedings of the 2020 Conference on Artificial Intelligence and Healthcare*, October 2020, 72-78.
URL:https://doi.org/10.1145/3433996.3434010

Abstract. "Treat pre-disease" is one of the important ideas of Chinese medicine culture, and it is a scientific view of health based on the overall health of the human body. The application of artificial intelligence technology in the field of psychological counseling is still in its infancy. The integration of "preventive treatment" in psychology is an important part of Chinese medicine culture and

health management, and it is one of the important theoretical foundations for constructing the theoretical system of Chinese medicine health. Therefore, it is of great significance to study the application of artificial intelligence technology in the field of psychological counseling on the basis of the idea of "preventive treatment". This article introduces the related applications of artificial intelligence technology in the field of mental health at home and abroad, studies the feasibility and difficulties of artificial intelligence in psychological counseling, and proposes the application of artificial intelligence in psychological counseling in the future Several countermeasures and suggestions.
Keywords: artificial intelligence, mental health management, treat pre-disease, psychological counseling.

Ausman, M.C.
Artificial Intelligence's Impact on Mental Health Treatments // *AIES '19: Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society*, January 2019, 533-534.
URL:https://doi.org/10.1145/3306618.3314311

Abstract. An interest in artificial intelligence (AI) as a medical aid stemmed as research on mental health and psychology increased. Yet despite failing the Turing Test, AI continues to be used as a practical aid in the psychological community. From virtual reality simulations of everyday activities to robotic pet seals implemented in nursing homes, AI has found a home in the psychological field as a support for those in the medical field as well as those taking care of loved ones. In this paper, I aim to look at the stages of the Turing Test, how those are related to factoid and non-factoid questions and how current applications of AI are used in mental health treatments.
Keywords: artificial intelligence, mental health, therapy, psychology, robots.

Yang, F., Han, T., Deng, K., Yong, H.
The Application of Artificial Intelligence in the Mental Diseases // *CAIH2020: Proceedings of the 2020 Conference on Artificial Intelligence and Healthcare*, October 2020, 36–40.
URL:https://doi.org/10.1145/3433996.3434004

Abstract. The advent of the era of big data has brought opportunities for the application of artificial intelligence and mental health. From "virtual psychotherapists" to social robots for dementia and autism treatment to robots for treatment of disorders, AI is innovating traditional models of mental illness prevention and treatment with high levels of treatment and interventions. This paper summarizes the research progress of artificial intelligence in mental illness group, including the current situation of the application of mental illness prevention, diagnosis, treatment and nursing, and discusses the advantages, disadvantages and prospects of the application of artificial intelligence in the field

of mental illness, hoping to provide reference for the sustainable development of this field.
Keywords: artificial intelligence, mental diseases, machine learning, application.

Han, T., Yang, F., Deng, K.

Application and Development Prospect of Artificial Intelligence in Healthy Pension Industry // *CAIH2020: Proceedings of the 2020 Conference on Artificial Intelligence and Healthcare*, October 2020, 79-83. URL:https://doi.org/10.1145/3433996.3434364

Abstract. History and experience of the international community show that long-term aging has a huge impact on both economic and social development. China's ageing population is rising, and the country faces a "getting old before getting rich" and "getting old before getting prepared" situation. If effective measures are not taken in time, the impact of aging on China's economy may be more severe than in other countries. With the increasingly mature application of Internet technology, artificial intelligence and Internet of Things technology are more and more applied in the field of health management. Relying on the Internet and the Internet of Things, artificial intelligence provides real-time, safe and fast intelligent elderly care services for the elderly through intelligent, structured, classified and integrated health data of the elderly.
Keywords: artificial intelligence, healthy pension, psychological care industry, artificial intelligence community.

Jackson, B.R., Crawford, J.M., Becich, M.J., Roy, S., Botkin, J.R., de Baca, M.E., Pantanowitz, L.

The Ethics of Artificial Intelligence in Pathology and Laboratory Medicine: Principles and Practice // **Academic pathology**, 2020, doi:10.1177/2374289521990784
URL:https://journals.sagepub.com/doi/full/10.1177/2374289521990784

Abstract. Growing numbers of artificial intelligence applications are being developed and applied to pathology and laboratory medicine. These technologies introduce risks and benefits that must be assessed and managed through the lens of ethics. This article describes how long-standing principles of medical and scientific ethics can be applied to artificial intelligence using examples from pathology and laboratory medicine.
Keywords: ethics, artificial intelligence, machine learning, algorithms, privacy, big data.

Jaynes, T.L.

On human genome manipulation and Homo technicus: the legal treatment of non-natural human subjects // *AI and Ethics*, 2021, 1, 331–345.
URL:https://doi.org/10.1007/s43681-021-00044-5

Abstract. Although legal personality has slowly begun to be granted to non-human entities that have a direct impact on the natural functioning of human societies (given their cultural significance), the same cannot be said for computer-based intelligence systems. While this notion has not had a significantly negative impact on humanity to this point in time that only remains the case because advanced computerised intelligence systems (ACIS) have not been acknowledged as reaching human-like levels. With the integration of ACIS in medical assistive technologies such as companion robots and bionics, our legal treatment of ACIS must also adapt—least society faces legal challenges that may potentially lead to legally sanctioned discriminatory treatment. For this reason, this article exposes the complexity of normalizing definitions of "natural" human subjects, clarifies how current bioethical discourse has been unable to effectively guide ACIS integration into implanted and external artefacts, and argues for the establishment of legal delineations between various ACIS-human mergers in reference to legal protections and obligations internationally.
Keywords: bionics, cybernetics, gene therapy, human augmentation, legal personality, speculative bioethics.

07. Образование

На всех уровнях в сфере образования искусственный интеллект внедряется через сложные программно-технические комплексы, что, с одной стороны, имеет бесспорные преимущества, делая его более доступным, универсальным, способным транслировать в образовательные процессы современные научно-технические знания, с другой стороны, существует опасение, что, перекладывая на «умную» машину человеческие компетенции, люди в целом подвержены риску интеллектуального деградирования, потери навыков, например устного счета или анализа больших объемов данных. Оценки использования искусственного интеллекта у специалистов достаточно сильно расходятся – от сомнений в благоприятных для человечества последствиях до реальных практических разработок, адаптирующих детей к жизни среди роботов.

Malik, G., Tayal, D.K., Vij, S.

An Analysis of the Role of Artificial Intelligence in Education and Teaching // *Recent Findings in Intelligent Computing Techniques*. *Advances in Intelligent Systems and Computing*, 2019, 707, Springer, Singapore.
URL:https://doi.org/10.1007/978-981-10-8639-7_42

Abstract. The contribution of Artificial Intelligence (AI) in the field of education has always been significant. From robotic teaching to the development of an automated system for answer sheet evaluation, AI has always helped both the teachers and the students. In this paper we have done an in depth analysis of the various research developments that were carried out across the globe corresponding to artificial intelligence techniques applied to education sector so as to summarize and highlight the role of AI in teaching and student's evaluation. Our

study shows that AI is the backbone of all the NLP enabled intelligent tutor systems. These systems helps in developing qualities such as self reflection, answering deep questions, resolving conflict statements, generating creative questions, and choice-making skills.
Keywords: artificial intelligence, education, teaching, assessment, intelligent tutor system.

Chassignol, M., Khoroshavin, A., Klimova, A., Bilyatdinova, A.
Artificial Intelligence trends in education: a narrative overview // *Procedia Computer Science*, 2018, 36, 16-24.
URL:https://doi.org/10.1016/j.procs.2018.08.233

Abstract. Digital technologies have already become an internal part of our life. They change the way we are looking for information, how we communicate with each other, even how we behave. This transformation applies to many areas, including education. The main objective of this article is to identify prospective impact of artificial technologies to the study process and to predict possible changes in educational landscape. In presented literature review we considered four categories: customized educational content, innovative teaching methods, technology enhanced assessment, communication between student and lecturer. Having reviewed publications on the subject we present here a possible picture of how the Artificial Intelligence (AI) will reshape education landscape.
Keywords: artificial intelligence, education, machine learning, technology, enhanced learning.

Cope, B., Kalantzis, M., Searsmith, D.
Artificial intelligence for education: Knowledge and its assessment in AI-enabled learning ecologies // *Educational Philosophy and Theory*, 2020, 53(12), 1229-1245.
URL:https://doi.org/10.1080/00131857.2020.1728732

Abstract. Over the past ten years, we have worked in a collaboration between educators and computer scientists at the University of Illinois to imagine futures for education in the context of what is loosely called “artificial intelligence.” Unhappy with the first generation of digital learning environments, our agenda has been to design alternatives and research their implementation. Our starting point has been to ask, what is the nature of machine intelligence, and what are its limits and potentials in education? This paper offers some tentative answers, first conceptually, and then practically in an overview of the results of a number of experimental implementations documented in greater detail elsewhere. Our key finding is that artificial intelligence – in the context of the practices of electronic computing developing over the past three quarters of a century – will never in any sense “take over” the role of teacher, because how it works and what it does are so profoundly different from human intelligence. However, within the limits that we

describe in this paper, it offers the potential to transform education in ways that – counterintuitively perhaps – make education more human, not less.
Keywords: artificial intelligence, e-learning, pedagogy, assessment.

Wang B., et al.
Artificial Intelligence and Education. In: Jin D. (eds) Reconstructing Our Orders, Springer, Singapore, 2018.
URL:https://doi.org/10.1007/978-981-13-2209-9_5

Abstract. As the progressive ladder for human society, education aims at ensuring cultural heritage and social development. More importantly, it may inspire human imagination. In this sense, education is very critical in the development of a nation and even in the whole human society. Education will vary with different times in its concepts, contents and modes and accumulate energy for the transformation of social patterns. Now, AI has been used in nearly all the industries and trades, posing a powerful impetus in promoting economic development and social progress. The in-depth development of AI will be bound to accelerate the process of social order restructuring, ensure the harmonious coexistence between mankind and nature, coordinate the development man and science and bring unprecedented development opportunities as well as challenges to education. In intelligence age, with more and more educational resources available, more flexible modes and patterns and multivariant intelligence systems in teaching, great changes will take place in education, during which people may acquire knowledge in the forms of clustering and individual education and their ability will be greatly improved. Meanwhile, the new topics will emerge on how to enlighten people's mind, how to reforge their values and how to tap their potential.

Schiff, D.
Out of the laboratory and into the classroom: the future of artificial intelligence in education // *AI & Society*, 2021, 36, 331–348.
URL:https://doi.org/10.1007/s00146-020-01033-8

Abstract. Like previous educational technologies, artificial intelligence in education (AIEd) threatens to disrupt the status quo, with proponents highlighting the potential for efficiency and democratization, and skeptics warning of industrialization and alienation. However, unlike frequently discussed applications of AI in autonomous vehicles, military and cybersecurity concerns, and healthcare, AI's impacts on education policy and practice have not yet captured the public's attention. This paper, therefore, evaluates the status of AIEd, with special attention to intelligent tutoring systems and anthropomorphized artificial educational agents. I discuss AIEd's purported capacities, including the abilities to simulate teachers, provide robust student differentiation, and even foster socio-emotional engagement. Next, to situate developmental pathways for AIEd going forward, I contrast sociotechnical possibilities and risks through two idealized futures. Finally, I consider a recent proposal to use peer review as a gatekeeping strategy to

prevent harmful research. This proposal serves as a jumping off point for recommendations to AIEd stakeholders towards improving their engagement with socially responsible research and implementation of AI in educational systems.
Keywords: artificial intelligence, education technology, social implications of technology, educational agents, responsible research and innovation

Ракитов, А.И.
Высшее образование и искусственный интеллект: эйфория и алармизм // *Высшее образование в России*, 2018, 6, 41-49.
URL:https://cyberleninka.ru/article/n/vysshee-obrazovanie-i-iskusstvennyy-intellekt-eyforiya-i-alarmizm

Аннотация. Развитые и развивающиеся страны вступили в стадию, принятую называть «Обществом образования», или «Информационным обществом». По существу, это синонимы, так как они фиксируют два связанных обстоятельства. Первое заключается в том, что современные научно-технологические и социально-политические знания оказывают всё возрастающее влияние на все стороны общественного бытия. Второе – в создании и производстве этих знаний неуклонно возрастает роль систем искусственного интеллекта (ИИ). С максимальной интенсивностью создаются программно-технические комплексы универсального человекоподобного интеллекта (УЧИ) и искусственного суперинтеллекта (ИСИ). По замыслу их создателей в обозримом будущем эти системы, особенно ИСИ, смогут решать задачи, с которыми не всегда в состоянии справиться человеческий интеллект. До тех пор пока эти процессы не подвергнуты глубокому научному осмыслению, и компьютерная эйфория, и цифровой алармизм не могут стать основанием для определения образовательной политики в этой области. Внедрение ИИ в высшее образование должно проводиться не только энергично, но и с определённой осторожностью.
Ключевые слова: высшее образование, искусственный интеллект (ИИ), универсальный человекоподобный интеллект (УЧИ), искусственный суперинтеллект (ИСИ), ИИ в высшем образовании, higher education, artificial intelligence (AI), universal human-like intelligence, artificial superintelligence (ISI), AI in higher education.

Williams, R., Park, H.W., Breazeal, C.
A is for Artificial Intelligence: The Impact of Artificial Intelligence Activities on Young Children's Perceptions of Robots // *CHI '19: Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, May 2019, Paper No 447, 1-11.
URL:https://doi.org/10.1145/3290605.3300677

Abstract. We developed a novel early childhood artificial intelligence (AI) platform, PopBots, where preschool children train and interact with social robots to

learn three AI concepts: knowledge-based systems, supervised machine learning, and generative AI. We evaluated how much children learned by using AI assessments we developed for each activity. The median score on the cumulative assessment was 70% and children understood knowledge-based systems the best. Then, we analyzed the impact of the activities on children's perceptions of robots. Younger children came to see robots as toys that were smarter than them, but their older counterparts saw them more as people that were not as smart as them. Children who performed worse on the AI assessments believed that robots were like toys that were not as smart as them, however children who did better on the assessments saw robots as people who were smarter than them. We believe early AI education can empower children to understand the AI devices that are increasingly in their lives.

Keywords: AI education, early childhood education, child-robot interaction, social robots.

08. Экология

В сфере контроля и защиты экологии интеллектуальные системы, способные уже довольно точно распознавать образы и обрабатывать гигантские массивы информации, используются для идентификации видов, классификации поведения животных и оценки биоразнообразия. Авторы статей этого раздела касаются проблем многих экологических дисциплин, включая прикладные контексты, такие как управление и охрана природы. Машины с искусственным интеллектом проводят автоматический мониторинг популяций и экосистем, генерируют огромное количество данных, которые больше не могут быть эффективно обработаны людьми, например в изучении изменения климата. Специалисты в области ИИ убеждены, что на основе глубокого обучения «умные» машины могут стать мощным справочным инструментом для экологов.

Вместе с тем, авторы статей подчеркивают необходимость выдерживания принципов прозрачности, безопасности и этических стандартов при разработке и использовании устройств с ИИ, какими благими ни выглядели бы цели их применения.

Zorins, A.

Understanding the Essence of Artificial Intelligence: Towards Ecological Safety of AI in Human Society // *CompSysTech '20: Proceedings of the 21st International Conference on Computer Systems and Technologies '20*, June 2020, 56-60.
URL:https://doi.org/10.1145/3407982.3408001

Abstract. Most members of scientific community would agree that Artificial Intelligence (AI) has already dramatically changed our society and all of it aspects including science and research. There are thousands of publications declaring the great advantages of AI and only few are trying to go deeper and reveal other aspects of computerized world.

In the present time the name cyber security has become hugely popular among governmental, business, social and other structures. However, usually it means only safety of personal or organizational data (financial and other resources) and stability and integrity of a computer system. Nothing more…
In this article the author would like to look at the cyber systems especially based on AI from a perspective of ecological safety for humanity of such a system. The article provides definition of ecological safety of AI and discusses its relevance to a modern science and society.
Keywords: artificial intelligence, ecological safety of artificial intelligence, artificial superintelligence.

Vinuesa R., et al.
The role of artificial intelligence in achieving the Sustainable Development Goals // *Nature Communications*, 2020, 1-10.
URL:https://www.nature.com/articles/s41467-019-14108-y.pdf

Abstract. The emergence of artificial intelligence (AI) and its progressively wider impact on many sectors requires an assessment of its effect on the achievement of the Sustainable Development Goals. Using a consensus-based expert elicitation process, we find that AI can enable the accomplishment of 134 targets across all the goals, but it may also inhibit 59 targets. However, current research foci overlook important aspects. The fast development of AI needs to be supported by the necessary regulatory insight and oversight for AI-based technologies to enable sustainable development. Failure to do so could result in gaps in transparency, safety, and ethical standards.

Christin, S., Hervet, É., Lecomte, N.
Applications for deep learning in ecology // *Methods in Ecology and Evolution*, 2019, 10(10), 1632-1644.
URL:https://doi.org/10.1111/2041-210X.13256

Abstract. A lot of hype has recently been generated around deep learning, a novel group of artificial intelligence approaches able to break accuracy records in pattern recognition. Over the course of just a few years, deep learning has revolutionized several research fields such as bioinformatics and medicine with its flexibility and ability to process large and complex datasets. As ecological datasets are becoming larger and more complex, we believe these methods can be useful to ecologists as well.
In this paper, we review existing implementations and show that deep learning has been used successfully to identify species, classify animal behaviour and estimate biodiversity in large datasets like camera-trap images, audio recordings and videos. We demonstrate that deep learning can be beneficial to most ecological disciplines, including applied contexts, such as management and conservation.
We also identify common questions about how and when to use deep learning, such as what are the steps required to create a deep learning network, which tools

are available to help, and what are the requirements in terms of data and computer power. We provide guidelines, recommendations and useful resources, including a reference flowchart to help ecologists get started with deep learning.
We argue that at a time when automatic monitoring of populations and ecosystems generates a vast amount of data that cannot be effectively processed by humans anymore, deep learning could become a powerful reference tool for ecologists.

Liu, Z., et al.
Application of machine-learning methods in forest ecology: recent progress and future challenges // *Environmental Reviews*, 2018, 26(4), 339-350.
URL:https://doi.org/10.1139/er-2018-0034

Abstract. Machine learning, an important branch of artificial intelligence, is increasingly being applied in sciences such as forest ecology. Here, we review and discuss three commonly used methods of machine learning (ML) including decision-tree learning, artificial neural network, and support vector machine and their applications in four different aspects of forest ecology over the last decade. These applications include: (i) species distribution models, (ii) carbon cycles, (iii) hazard assessment and prediction, and (iv) other applications in forest management. Although ML approaches are useful for classification, modeling, and prediction in forest ecology research, further expansion of ML technologies is limited by the lack of suitable data and the relatively “higher threshold” of applications. However, the combined use of multiple algorithms and improved communication and cooperation between ecological researchers and ML developers still present major challenges and tasks for the betterment of future ecological research. We suggest that future applications of ML in ecology will become an increasingly attractive tool for ecologists in the face of “big data” and that ecologists will gain access to more types of data such as sound and video in the near future, possibly opening new avenues of research in forest ecology.

Huntingford, C., et al.
Machine learning and artificial intelligence to aid climate change research and preparedness // *Environmental Research Letters*, 2019, 14(12), 124007.
URL:https://doi.org/10.1088/1748-9326/ab4e55

Abstract. Climate change challenges societal functioning, likely requiring considerable adaptation to cope with future altered weather patterns. Machine learning (ML) algorithms have advanced dramatically, triggering breakthroughs in other research sectors, and recently suggested as aiding climate analysis (Reichstein et al 2019 Nature 566 195–204, Schneider et al 2017 Geophys. Res. Lett. 44 12396–417). Although a considerable number of isolated Earth System features have been analysed with ML techniques, more generic application to understand better the full climate system has not occurred. For instance, ML may aid teleconnection identification, where complex feedbacks make characterisation difficult from direct equation analysis or visualisation of measurements and Earth

System model (ESM) diagnostics. Artificial intelligence (AI) can then build on discovered climate connections to provide enhanced warnings of approaching weather features, including extreme events. While ESM development is of paramount importance, we suggest a parallel emphasis on utilising ML and AI to understand and capitalise far more on existing data and simulations.
Keywords: climate change, global warming, extreme weather, drought, artificial intelligence, machine learning, climate simulations.

Malik, R., Pande, S., Nishi, Aditya, Kh.
Artificial Intelligence and Machine Learning to Assist Climate Change Monitoring // *Journal of Artificial Intelligence and Systems*, 2020, 2, 168-190.
URL:https://doi.org/10.33969/AIS.2020.21011

Abstract. Climate change issues societal operation, likely wanting considerable adaptation to deal with doing well altered weather patterns. Machine learning (ML) algorithms have progressed considerably, triggering breakthroughs in some other investigation sectors, along with only lately suggested as helping climate evaluation. Though a significant volume of isolated Earth System functions are analyzed with ML techniques, much more generic phone system to find out better the whole temperature unit hasn't happened. For instance, ML is able to aid remote identification, in which complex feedbacks make characterization tough from instantaneous equation analysis or perhaps possibly visualization of sizes plus Earth System design (ESM) diagnostics. Artificial intelligence (AI) may thus build on determined climate associates to provide enhanced alerts of approaching eco-friendly functions, which includes intense events. While ESM development is actually completely necessary, a parallel concentrate on utilizing ML and AI to determine as well as capitalize a great deal more on pre pre-existing simulations as well as info is suggested by us.
Keywords: climate, glacier retreat, mass balance, lakes, sea level.

Жаворонкова, Н.Г., Шпаковский, Ю.Г.
Цифровизация в сфере экологической безопасности: административно-правовые аспекты // *Юрист*, 2019, 4, 14-19, doi: 10.18572/1812-3929-2019-4-14-19.
URL:https://elibrary.ru/item.asp?id=37426815

Аннотация. Проблема исследования влияния ускоренного внедрения цифровых технологий в деятельности системы государственного управления в сфере обеспечения экологической безопасности является актуальной. По мнению авторов, главная задача цифровизации в сфере экологической безопасности – адаптация существующей системы государственного управления к цифровой среде, так как это зона повышенного внимания, экономической и социальной ответственности государства. В статье проводятся обобщение и анализ фундаментальных позиций цифровой трансформации государственного управления в сфере экологической

безопасности, в том числе внедрения современных «прорывных» цифровых технологий в управленческий процесс. Авторами показано, что разработка и внедрение цифровых технологий в сфере обеспечения экологической безопасности предполагает наличие и использование всего правового и организационного арсенала управления. Показано, что в процессе реализации программы цифровой экономики будут меняться характер и структура управленческих процессов в рассматриваемой сфере за счет внедрения аддитивных технологий, технологий блокчейн, технологий «больших данных», технологий искусственного интеллекта и др.

Ключевые слова: цифровая экономика, цифровизация, экологическая безопасность, чрезвычайные ситуации, техногенные аварии, природные катастрофы, digital economy, digitalization, environmental safety, emergency situations, man-made accidents, natural disasters.

09. Городская среда

Цель использования интеллектуальных устройств и технологий в современном городе – повышение комфортности городской среды при одновременном стимулировании экономического процветания и расширения возможностей.

«Умные» города направлены на эффективное управление растущей урбанизацией, потреблением энергии, на поддержание экологически чистой окружающей среды, повышение экономического роста и уровня жизни своих граждан, а также повышение возможностей людей эффективно использовать и внедрять современные информационно-коммуникационные технологии.

Авторы статей анализируют статистику катастроф и неудобств в транспортном секторе, включая пробки на дорогах, несчастные случаи и высокий уровень загрязнения, пытаясь решить эти проблемы с помощью искусственного интеллекта. Активно обсуждаются преимущества и риски использования в городе беспилотных автомобилей и летательных аппаратов.

Allam, Z., Dhunny, Z.A.
On big data, artificial intelligence and smart cities // *Cities*, 2019, 89, 80-91.
URL:https://doi.org/10.1016/j.cities.2019.01.032

Abstract. Cities are increasingly turning towards specialized technologies to address issues related to society, ecology, morphology and many others. The emerging concept of Smart Cities highly encourages this prospect by promoting the incorporation of sensors and Big Data through the Internet of Things (IoT). This surge of data brings new possibilities in the design and management of cities just as much as economic prospects. While Big Data processing through Artificial Intelligence (AI) can greatly contribute to the urban fabric, sustainability and liveability dimensions however must not be overlooked in favour of technological ones. This paper reviews the urban potential of AI and proposes a new framework binding AI technology and cities while ensuring the integration of key dimensions of Culture, Metabolism and Governance; which are known to be primordial in the

successful integration of Smart Cities for the compliance to the Sustainable Development Goal 11 and the New Urban Agenda. This paper is aimed towards Policy Makers, Data Scientists and Engineers who are looking at enhancing the integration of Artificial Intelligence and Big Data in Smart Cities with an aim to increase the liveability of the urban fabric while boosting economic growth and opportunities.
Keywords: artificial intelligence, big data, smart cities, Internet of things, sustainability, liveability.

Olayode, O.I., Tartibu, L.K., Okwu, M.O.
Application of Artificial Intelligence in Traffic Control System of Non-autonomous Vehicles at Signalized Road Intersection // *Procedia CIRP*, 2020, 91, 194-200.
URL:https://doi.org/10.1016/j.procir.2020.02.167

Abstract. The increase in both rural and urban road traffic flow in recent years has led to several disasters in the transportation sector which include traffic congestion, accidents, and high rate of pollution. Alternative traffic control measures are needed whenever there is failure of conventional traffic control or real time traffic issues at road intersection. This current study seeks to investigate the stability and efficiency of Artificial Intelligence (AI) techniques, the artificial neural network (ANN) for eliminating or reducing traffic volume in the case of non-autonomous vehicles in a mixed South African traffic flow conditions. Electronic traffic data of one hundred and twenty six (126) vehicles were observed from Mikros Traffic Monitoring (MTM) firm, a subsidiary of Syntell Group of Company, South Africa. The traffic data was obtained via the traffic technologies employed at MTM which are basically sensor embedded on road surfaces to monitor and control vehicles which passes the traffic counter daily. The dataset obtained from MTM was trained, tested and validated using artificial neural network model under signalized road intersection in heterogeneous condition by using the class description of the vehicles, and corresponding speed as input variables. After series of training, the results suggest that ANN model produced the best possible results for traffic congestion in a heterogeneous traffic condition.
Keywords: non-autonomous vehicles, artificial intelligence, artificial neural network.

Deng, X., Zhang, M., Xiao, F.
Design and implementation path of intelligent transportation information system based on artificial intelligence technology // *The Institution of Engineering and Technology*, 2020, 482-485, doi:10.1049/joe.2019.1196
URL: https://www.semanticscholar.org/paper/Design-and-implementation-path-of-intelligent-based-Xia-Zhou/fbbab0259410c6a82564ff6ab3554420f0990d8f

Abstract. By using the concept, guiding ideology and design idea of artificial intelligence (AI) and Internet of Thing, this study puts forward the logistics

intelligent transportation system (ITS) model, structure design and function design based on AI, focusing on the time value and information value of the intelligent logistics information system. The results show that the design of ITS model based on AI includes three modules: input, transformation and output of ITS. The ITS supply chain management platform and function design of freight vehicles with AI is feasible and prospective. The application of AI technology in ITS has great value and development prospect.
Keywords: supply chain management, Internet of things, artificial intelligence, logistics, intelligent transportation systems, production engineering computing, freight handling, intelligent transportation information system, artificial intelligence technology.

Ullah, Z., Al-Turjman, F., Mostarda, L., Gagliardi, R.
Applications of Artificial Intelligence and Machine learning in smart cities // *Computer Communications*, 2020, 154, 313-323.
URL:https://doi.org/10.1016/j.comcom.2020.02.069

Abstract. Smart cities are aimed to efficiently manage growing urbanization, energy consumption, maintain a green environment, improve the economic and living standards of their citizens, and raise the people's capabilities to efficiently use and adopt the modern information and communication technology (ICT). In the smart cities concept, ICT is playing a vital role in policy design, decision, implementation, and ultimate productive services. The primary objective of this review is to explore the role of artificial intelligence (AI), machine learning (ML), and deep reinforcement learning (DRL) in the evolution of smart cities. The preceding techniques are efficiently used to design optimal policy regarding various smart city-oriented complex problems. In this survey, we present in-depth details of the applications of the prior techniques in intelligent transportation systems (ITSs), cyber-security, energy-efficient utilization of smart grids (SGs), effective use of unmanned aerial vehicles (UAVs) to assure the best services of 5G and beyond 5G (B5G) communications, and smart health care system in a smart city. Finally, we present various research challenges and future research directions where the aforementioned techniques can play an outstanding role to realize the concept of a smart city.
Keywords: smart city, 5G and B5G communication, UAVs, Intelligent Transportation System, Smart grids, Cyber-security, Internet of Things, mmWave communication.

Yigitcanlar, T, Desouza, KC, Butler L, Roozkhosh, F.
Contributions and Risks of Artificial Intelligence (AI) in Building Smarter Cities: Insights from a Systematic Review of the Literature // *Energies*, 2020, 13(6), 1473.
URL:https://doi.org/10.3390/en13061473

Abstract. Artificial intelligence (AI) is one of the most disruptive technologies of our time. Interest in the use of AI for urban innovation continues to grow. Particularly, the rise of smart cities—urban locations that are enabled by community, technology, and policy to deliver productivity, innovation, livability, wellbeing, sustainability, accessibility, good governance, and good planning—has increased the demand for AI-enabled innovations. There is, nevertheless, no scholarly work that provides a comprehensive review on the topic. This paper generates insights into how AI can contribute to the development of smarter cities. A systematic review of the literature is selected as the methodologic approach. Results are categorized under the main smart city development dimensions, i.e., economy, society, environment, and governance. The findings of the systematic review containing 93 articles disclose that: (a) AI in the context of smart cities is an emerging field of research and practice. (b) The central focus of the literature is on AI technologies, algorithms, and their current and prospective applications. (c) AI applications in the context of smart cities mainly concentrate on business efficiency, data analytics, education, energy, environmental sustainability, health, land use, security, transport, and urban management areas. (d) There is limited scholarly research investigating the risks of wider AI utilization. (e) Upcoming disruptions of AI in cities and societies have not been adequately examined. Current and potential contributions of AI to the development of smarter cities are outlined in this paper to inform scholars of prospective areas for further research. View Full-Text
Keywords: artificial intelligence (AI), AI technologies, AI algorithms, disruptive technology, smart city, smart urban technology, urban informatics, sustainable urban development, climate change.

Kassens-Noor, E, Hintze, A.
Cities of the Future? The Potential Impact of Artificial Intelligence // *AI*, 2020, 1(2), 192-197.
URL:https://doi.org/10.3390/ai1020012

Abstract. Artificial intelligence (AI), like many revolutionary technologies in human history, will have a profound impact on societies. From this viewpoint, we analyze the combined effects of AI to raise important questions about the future form and function of cities. Combining knowledge from computer science, urban planning, and economics while reflecting on academic and business perspectives, we propose that the future of cities is far from being a determined one and cities may evolve into ghost towns if the deployment of AI is not carefully controlled. This viewpoint presents a fundamentally different argument, because it expresses a real concern over the future of cities in contrast to the many publications who exclusively assume city populations will increase predicated on the neoliberal urban growth paradigm that has for centuries attracted humans to cities in search of work.
Keywords: artificial intelligence, smart cities, future, work, autonomous vehicle.

Василенко, И.

«Умный город» в цифровом обществе 5. 0: социально-политические и гуманитарные риски цифровизации общественного пространства // *Власть*, 2019, 5, 67-73.
URL:https://cyberleninka.ru/article/n/umnyy-gorod-v-tsifrovom-obschestve-5-0-sotsialno-politicheskie-i-gumanitarnye-riski-tsifrovizatsii-obschestvennogo-prostranstva

Аннотация. Статья посвящена исследованию проблем формирования «умного города» в цифровом обществе на основе пятой технологической революции, которая несет с собой широкое внедрение инновационных смарт-технологий в социум, среди которых большие данные, искусственный интеллект, дополненная реальность. Автор считает, что сегодня политологи должны не только сконцентрировать внимание на блистательных перспективах «цифрового мира», но и всесторонне рассмотреть его возможные политические вызовы и риски, обусловленные внедрением смарт-технологий в общественное пространство, что связано с дегуманизацией общественных отношений в ответ на предельную технологизацию общества. Автор приходит к выводу о необходимости гуманитарной экспертизы при внедрении смарт-технологий в общественное пространство, развития ответственного стратегического планирования в реализации государственной политики формирования цифрового общества.
Ключевые слова: цифровое общество, пятая технологическая революция, смарт-технологии, инновации, политические риски, digital society, fifth technological revolution, smart technologies, political risks.

Самойлова, Н.А.

Градостроительное регулирование среды жизнедеятельности с использованием информационного моделирования // *Фундаментальные, поисковые и прикладные исследования Российской академии архитектуры и строительных наук по научному обеспечению развития архитектуры, градостроительства и строительной отрасли Российской Федерации в 2018 году*. Сборник научных трудов РААСН. Российская академия архитектуры и строительных наук, 2019, 415-431.
URL:https://elibrary.ru/item.asp?id=40355567

Аннотация. В статье представлен научный обзор трансформаций в сфере градостроительного регулирования среды жизнедеятельности в контексте современной глобализации, сопровождающейся процессами информационного моделирования. Специальные знания, накопленные в области урбанистики и ее конкретных сферах (например, в Российской Федерации - в сфере градостроительства), как опираются на уже имеющиеся труды в области информатизации, так и обогащают их, создавая нечто более новое в виде комплексной модели, такой как «Умный город» («Smart City» или «Smart and Sustainable Cities»). Среда жизнедеятельности или

антропогенная среда (преобразованная в результате человеческой жизнедеятельности) – это сложная система, цифровая модель которой представляет собой не только графическое представление материального мира на плане (картосхеме), но и насыщенное большими объемами информации виртуальное исследование и моделирование процессов на территории. Современная информация и экспертно-аналитические сети «искусственного интеллекта» основываются на общемировых трудах, краткий анализ которых представлен в статье.

Ключевые слова: градостроительство, градостроительное регулирование, "умный город", среда жизнедеятельности, цифровое проектирование пространства, "smart city" ("smart and sustainable cities").

Липчанская, М.А., Отставнова, Е.А.

Социальные права человека в условиях "умного города" и использования искусственного интеллекта в городской среде: правовое регулирование концепции и особенности реализации // *Правовая политика и правовая жизнь*, 2020, 4, 149-160.

URL:https://elibrary.ru/item.asp?id=44655959

Аннотация. Современный период развития общества в глобальном масштабе характеризуется переосмыслением организации территории обитания, главным критерием которой становится комфортная среда проживания для каждого человека. Это возможно обеспечить только в условиях развития цифровых технологий и систем искусственного интеллекта, используемых при построении современной умной урбанистики. Активное внедрение концепции «умного города» диктует необходимость научно-доктринального осмысления этого явления, выработки его критериев и стандартов и, разумеется, адекватного правового регулирования. При этом актуализируются проблемы сохранения фундаментальных конституционных ценностей, таких как человек, его права и свободы, становится необходимым установление пределов ограничения прав человека и их трансформации в условиях «умного города». В статье обоснован вывод, что реализация концепции «умного города» предусматривает синтез искусственного интеллекта, общества и человека, и только в случае триединства указанных элементов возможно получить синергетический эффект построения «умной» урбанистики.

Ключевые слова: конституционные права и свободы человека и гражданина, качество жизни, "умный город", искусственный интеллект, государственная политика, национальные проекты.

Dubljević,V.

Toward Implementing the ADC Model of Moral Judgment in Autonomous Vehicles // *Science and Engineering Ethics*, 2020, 26, 2461-2472.

URL:https://doi.org/10.1007/s11948-020-00242-0

Abstract. Autonomous vehicles (AVs) – and accidents they are involved in – attest to the urgent need to consider the ethics of artificial intelligence (AI). The question dominating the discussion so far has been whether we want AVs to behave in a 'selfish' or utilitarian manner. Rather than considering modeling self-driving cars on a single moral system like utilitarianism, one possible way to approach programming for AI would be to reflect recent work in neuroethics. The agent–deed–consequence (ADC) model (Dubljević and Racine in AJOB Neurosci 5(4):3–20, 2014a, Behav Brain Sci 37(5):487–488, 2014b) provides a promising descriptive and normative account while also lending itself well to implementation in AI. The ADC model explains moral judgments by breaking them down into positive or negative intuitive evaluations of the agent, deed, and consequence in any given situation. These intuitive evaluations combine to produce a positive or negative judgment of moral acceptability. For example, the overall judgment of moral acceptability in a situation in which someone committed a deed that is judged as negative (e.g., breaking a law) would be mitigated if the agent had good intentions and the action had a good consequence. This explains the considerable flexibility and stability of human moral judgment that has yet to be replicated in AI. This paper examines the advantages and disadvantages of implementing the ADC model and how the model could inform future work on ethics of AI in general.
Keywords: agent–deed–consequence (ADC) model, autonomous vehicles (AVs), artificial intelligence (AI), artificial neural networks, artificial morality, neuroethics.