CNA

July 2020

Artificial Intelligence in Russia
Issue 7, July 31, 2020

The Russia Studies Program

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DOP-2020-U-027701-Final2

Abstract

This report is part of an effort by CNA to provide timely, accurate, and relevant information and analysis of the field of civilian and military artificial intelligence (AI) in Russia and, in particular, how Russia is applying AI to its military capabilities. It relies on Russian-language open source material.

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This work was performed under Federal Government Contract No. N00014-16-D-5003.

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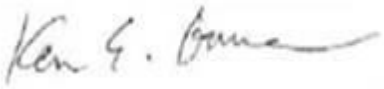
Approved by: **July 2020**



Ken E. Gause, Research Program Director
Adversary Analytics Program
Strategy, Policy, Plans, and Programs Division

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Governance and Legal Developments

1. Russian government reviews regulation concept for AI and robotics

On July 21, *Kommersant* reported that the Russian government was reviewing a concept for the development of regulation in the AI and robotics sphere until 2024, written by Russia's Ministry of Economic Development, Sberbank, and Skolkovo. The concept reportedly enumerates gaps and challenges of regulation, including privacy and liability for harm from AI and robotic systems. Roskosmos and other federal government bodies are to respond within three months with their respective proposals to implement the concept within the frameworks of two federal projects: "Normative regulation of the digital environment," and "AI" of the national program "Digital Economy of the Russian Federation."

This concept is reportedly based on the notions of (1) "stimulation before regulation," which means that limits will be imposed only if there is risk of implementing new technologies, and (2) the "human-centered approach," which means that the employment of AI should not lead to harm. These point to certain obstacles to the adoption of new technologies, including the adaptation of data laws to account for privacy concerns, the creation of a safe regime to access the data, and the removal of limits to the employment of data. Another challenge involves delineating responsibility for harm caused by AI and robotic systems; the authors propose the development of insurance instruments coupled with an explicit description of conditions in which an AI system would identify itself when in direct contact with a human. The concept also recommends simplifying regulations to ease exports on AI technologies and improving intellectual property rights.

The article quotes the executive director of Sberbank.ai, Andrey Neznamov, as discussing the balance between data privacy and experimentation and the insufficiency of current regulatory "sandboxes" to test unmanned transport systems, for example. The head of the KPMG technology practice in Russia, Sergey Vikharev, notes the importance of loosening regulations in order to develop medium-sized businesses and startups. Ivan Begtin, head of the autonomous non-profit organization (ANO) "Information culture," noted that Russia's efforts to regulate AI are lagging behind because the country does not have a national strategy for working with data.

Source: "A lawful place is sought for AI" [Искусственному интеллекту ищут законное место], Kommersant, July 21, 2020, https://www.kommersant.ru/doc/4424897.

2. Russian experts discuss laws and challenges of AI development

Beginning on July 1, 2020, Russia plans to conduct a five-year experiment on the introduction of AI technologies in the country, through the passage of a new law, No. 123-FZ, as part of the national program titled "Digital Economy of the Russian Federation" (passed in April 2020). The new law will regulate the conditions for developing and implementing AI technologies, though an amendment to the bill disallows foreign firms from applying to participate in the experimental regime, in addition to Russian firms whose share of participating in foreign legal entities registered in offshore zones amounts to 50 percent or more.

According to Anna Serebryanikova, the managing partner for Nlogic and president of the Big Data Association, experimental legal regimes of this type are the most promising and effective tools for creating special testing procedures and the subsequent implementation of solutions in the fields of AI and big data processing. This is because they allow for the timely implementation of developments while bypassing meandering bureaucratic processes that do not take into account the specifics of AI or big data. They also do not require the adjustment of existing legislation, and they ensure the proper level of security and protection of citizens' rights. Irina Shurmina and Ksenia Danshina, lawyers at CMS, stated that the experimental legal regime will create the proper conditions for understanding what needs correcting within the current AI concept, and will allow for consistent and pointed testing of legal regulations—particularly in Moscow, where the largest number of IT companies are located.

At the same time, the country may see the introduction of additional legal regimes on related topics. As an example, a recent provision related to the development of artificial intelligence was included on a list of instructions for building out information and communication technologies. Shurmina and Danshina pointed out that introduction of experimental regimes in many cities and regions at once could prove detrimental, because it could hinder the creation of uniform laws, since each area will likely resolve emerging problems in its own way. Therefore, to avoid discrepancies, the lawyers said, there must be close cooperation and an open exchange of ideas between the creators of the regimes.

The definition of AI in Russian law

The definition of "artificial intelligence" under Russian law first appeared in the presidential decree "On the Development of Artificial Intelligence in the Russian Federation," passed on October 10, 2019, and was subsequently subsumed by the law "Digital Economy of the Russian Federation." This definition describes AI as "a complex of technological solutions that allows for the imitation of human cognitive functions and obtains results at least comparable to the results of human intellectual activity." At the same time, the law noted that "imitation" includes self-learning and searching for solutions without the use of preprogrammed algorithms. The

definition, therefore, covers all types of AI in the broadest sense by including both AI working on preprogrammed tasks, and AI working autonomously (described by the article as technology capable of potentially completely replacing a person through the performance of their tasks).

According to Ilya Durnitsyn, a corporate lawyer at Prospektasi LLC, the definition is broad in order to cover the widest range of possible achievements in the field of AI, including the range of activities for the future development of AI. However, he believes that this definition is too wide from a technical standpoint, because it does not give a clear and concise explanation of the basic concept of AI from a technical point of view. First, he states that the phrase "imitation of human cognitive functions" has a variety of interpretations, because, for example, in the 19th century, even a machine doing simple counting was considered such imitation. Second, he asserts that considering a machine's ability to learn and solve problems "without algorithms" is too nuanced to have a clear meaning, because, for example, one needs to consider whether the self-learning is supervised or unsupervised. He raises the classic uncontrolled self-learning example of a neural network capable of making accurate forecasts based on market quotes. However, he questions whether this market-trading software then falls within the definition of AI, or whether it needs to have more substance and an ability to perceive that is lacking in this case. Third, Durnitsyn says there is not a separate definition for "self-learning" in Russian law, making it difficult to fully understand the Russian law as written.

However, other experts believe that maintaining a broad definition for AI is more advantageous than disadvantageous at this stage, because it allows for the conduct of experiments on the implementation of AI and consideration of how the law should change. Shurmina and Danshina stated that the definition as written reflects the fundamental characteristics of AI: the fact that it is a complex of technologies and not a single technology; the fact that AI can self-learn and search for solutions without predetermined algorithms, making it fundamentally different from other technologies; and the fact that AI can obtain results at least comparable to the results of human intellectual activity, with the definition implying that AI can potentially obtain results even better than those achieved by humans. Pavel Ganin, an attorney with the Chamber of Advocates of the Nizhny Novgorod region, stated that, in order to develop a clearer understanding of the term "AI," there must be opportunities at the state level for the development of AI technologies with the involvement of legal entities and individuals engaged in the various stages of AI development and implementation. He asserted that such development is important for removing AI regulation from the legal gray zone and introducing the operationalization of AI into the daily practice of government relations.

Challenging legal issues

Irina Shurmina notes that a number of legal issues has accompanied AI's introduction, including confidentiality of data; safety and responsibility; the functioning of big data technologies; intellectual property rights; and ethics.

Use of personal data. The main component of artificial intelligence is data, and the federal law "On Personal Data," passed in 2006, requires anyone performing an action using personal data (including actions performed using automation tools) to anonymize the data before it is used. Alexander Savelyev, a legal advisor for IBM Russia/CIS, stated that certain categories of personal data have a special legal status because there would be particularly negative consequences in the case of a data breach, though he stated that the use of anonymized health data is now permissible in order to improve state and municipal efficiency. On July 19, the Russian Ministry of Economic Development developed a draft amendment to the experimental legal regime law, which would allow AI developers to use patient data without their consent. The authors of the bill stated that current legislation creates unacceptable costs for developers, since the development and testing of new technologies requires a lot of data, and obtaining the individual consent of thousands of patients takes a great deal of time.

Security issues. The issue of security related to AI is particularly urgent considering its use in unmanned vehicles. Today, there is no consensus on the issue of legal responsibility for harm or death following from the use of AI. In a number of foreign countries, there have already been cases in this field, which have fueled discussions on legal responsibility for AI. While no related cases have arisen in Russia, the gradual increase in the number of unmanned vehicles indicates that such discussions will likely occur in the near future.

According to Shurmina, in a number of cases there is a question over whether the use of AI is acceptable without strict control over its activities, which directly contradicts the essential functions of AI. The example cited is that of self-driving cars, for which there is an open question of who is responsible in the case of an accident without a person behind the wheel. However, if a person is operating the unmanned vehicle, the essence of an unmanned vehicle is lacking and it significantly slows down the development of such technology. Sergey Borodin, the managing partner of Borodin & Partners Bar Association, believes that the criminal code provisions for the violation of traffic rules are inapplicable for accidents involving unmanned vehicles, since the code is strictly applicable with clear definitions for the subjects of crimes. Borodin believes that cases involving unmanned systems should instead fall under the code related to the provision of services not meeting safety standards.

Intellectual property rights. The legal regulation of intellectual property created by AI, including the legal personality of the AI and the legal status of objects it generates, is also an open legal question at the moment. According to Danshina, currently there is not a good

solution to these issues, primarily because there is a lack of common approach to intellectual property in the field of AI globally, not just in Russia.

Ethics. Shurmina also spoke on the issue of AI and ethics, stating that AI has the potential to replace workers and take away jobs, particularly those characterized by a high degree of monotony. At the same time, she does not believe this problem to be a big threat to the working population, because technological progress has existed throughout human history. She therefore stated that, in the case of universal introduction of AI in the manufacturing and other sectors leading to a reorientation of the labor market, low-skilled workers will have the opportunity to find jobs in the new marketplace.

It should be noted that earlier, the Russian government expressed concern about the general reliance of the public and private sectors on imported technologies and expertise for ICT RDT&E. Despite the official Kremlin statements that the country should be open to international cooperation on AI development, including on foreign talent working in Russia, the imposed limit described in the article alludes to the government efforts to support the underdeveloped IT sector with preferential treatment.

Sources: "Artificial Intelligence and the law: is there a contract?" [Искусственный интеллект и право: есть контакт?] Garant.ru, July 16, 2020, https://www.garant.ru/news/1401154/; "AI developers will be allowed to use patient data without their consent" [Разработчикам искусственного интеллекта позволят использовать данные пациентов без их согласия] AI-news.ru, July 19, 2020, https://ai-news.ru/2020/07/razrabotchikam_iskusstvennogo_intellekta_pozvolyat_ispolzovat_danny.html; "Foreign firms will not be allowed to participate in the implementation of artificial intelligence in the Russian Federation" [Иностранным фирмам не разрешат участвовать во внедрении искусственного интеллекта в РФ] Interfax, July 6, 2020, https://www.interfax.ru/russia/716123.

3. Discussion on draft national AI standard starts in Russia

On July 20, 2020, the Technical Committee TK 164 for the Standardization of Artificial Intelligence (initiated by the Russian Venture Company, the state fund for development of the Russian venture capital market) presented for discussion a draft national standard in the field of AI specifically related to situational analytical technologies that use intelligence video surveillance systems. This is the first national standard related to the use of AI for situational video analytics, and its intent is to determine the characteristics, the methods of testing and assessing the quality of intelligent video surveillance system equipment, and the requirements for their placement. The committee predicts that adoption of the standard will streamline regulations in this sphere, removing technical barriers to the use of such "smart" information systems.

According to the chairman of TK 164, Sergey Garbuk, while modern video surveillance systems rely on the use of intelligent data processing technologies to analyze both individual images and sequences in real time, the lack of unity around terminologies makes it difficult for consumers and system integrators to pick the right solution for each specific scenario. Therefore, Garbuk stated that adopting the new standard would allow for the establishment of uniform terms and definitions for situational video analytics and contribute to increase efficiency in the use of such technologies. He also believes this will increase interest in the AI technologies market.

Videointellect, a developer of intelligent computer vision systems, created the draft, which is now on the company's website and open to public comment until September 16. The Russian Venture Company expects Rosstandart (the state agency for technical regulations) to approve the draft by the end of the year.

Note that this draft standard is part of a series of Russian national standards aimed at harmonizing terminology and concepts within the field of AI. As discussed in issue 2 of *AI in Russia*, in May 2020, TK 164 submitted for discussion the first edition of a proposed national standard titled "Information technologies. Big data. Review and dictionary" aimed at establishing standardized terms and definitions in the big data field. The development of standards for the use of AI and its application across Russia was one of the main goals of the national AI strategy released in October 2019, and discussions continue over the proper application of AI technologies in Russian society. Federal and nongovernmental, private sector stakeholders have a stake in developing standards for AI-enabled surveillance in the near future, and its use by Moscow municipal authorities during the COVID-19 pandemic has revealed the likelihood of such technologies becoming widespread in Russia.

Source: "Public discussion of a draft national AI standard starts in Russia" [Публичное обсуждение проекта национального стандарта в сфере ИИ стартует в России], *Future Russia,* July 20, 2020, https://futurerussia.gov.ru/nacionalnye-proekty/publicnoe-obsuzdenie-proekta-nacionalnogo-standarta-v-sfere-ii-startuet-v-rossii.

4. Russian experts discuss AI ethics

A July report in *Lenta* offered interviews with Russian participants in the Ad hoc Committee on Artificial Intelligence (CAHAI), created by the Council of Europe in 2019. Russia was represented at the meeting by NTI/MIPT's Andrey Kuleshov and Skoltech's Maksim Fyodorov, leaders of Russia's two key organizations on AI RDT&D. Fyodorov was reportedly also a participant in the UNESCO expert group on AI, which is developing recommendations for ethical principles in AI development and employment.

Fyodorov argues that one of the challenges is that AI is perceived as a subject, instead of being "ethically neutral." He notes that AI ethics are essential and it is important to stay human-

centered in AI technologies development as well as to avoid "personification." Kuleshov, in turn, argued that regulation must build trust toward technology and protect the interests of persons, society, and state, and not the other way around. Regulation also should not impede the development of the industry, because excessive initial regulation could be an obstacle to innovation and lead to domination of large companies. Like Fyodorov, Kuleshov believes that AI does not exist on its own, and thus the regulation is of technologies and not an abstract-philosophical AI. He notes that regulation of AI needs to be risk oriented and focused on areas where AI employment could cause harm (for example, do not regulate chatbots, but do regulate AI in the medical field).

Source: "AI is developing very quickly. How to ensure that it won't harm humans?" [Искусственный интеллект развивается слишком быстро. Что сделать, чтобы он не навредил человечеству?] Lenta.ru, July 11, 2020, https://lenta.ru/articles/2020/07/11/ai.

5. Russia and Israel offer grant on high tech development

According to a July 16 *Vedomosti* article, the RUSNANO Group, a Russian nanotechnology innovation institution, and the Israel Innovation Agency are accepting applications for a joint grant. The partnership is the result of a 2010 agreement between Russia and Israel, which calls for increased industrial R&D cooperation. The board will consider proposals submitted by teams comprising both Russian and Israeli partners. Priority is reportedly given to projects related to "quality of life; new materials and coatings; energy efficiency; nanoelectronics, optoelectronics, photonics; neurotechnology and artificial intelligence." This is the ninth such selection cycle for the joint grant, and throughout the program's history, more than 70 applications have been considered. Grants from recent years have funded a wide variety of technology development projects, including proton therapy devices and a synthetic aquaculture product called astaxanthin.

According to the RUSNANO Group's website, projects must be related to the field of nanotechnology or related high-tech sectors, should have potential markets in Israel and Russia, and should plan to commercialize the technology in three to five years. The RUSNANO Group's Fund for Infrastructure and Educational Programs, which administers the Russian share of the grant funds, was founded in 2010 through reorganization of the state institution Russian Corporation of Nanotechnologies.

Note that cooperation between Russia and Israel is growing, and joint scientific R&D is key to this relationship. For Moscow, this cooperation is also a link to the Russian-speaking diaspora in Israel that is pivotal to Israeli economic development.

Sources: “Russia and Israel launch new projects for industrial R&D” [Россия и Израиль начали новый отбор проектов по промышленным НИОКР], *Vedomosti*, https://www.vedomosti.ru/press_releases/2020/07/16/rossiya-i-izrail-nachali-novii-otbor-proektov-po-promishlennim-niokr, July 16, 2020; “Russia and Israel launch new projects for industrial R&D” [Россия и Израиль начали новый отбор проектов по промышленным НИОКР], Rosnano, https://www.rusnano.com/about/press-centre/news/20200716-rosnano-rossiya-i-izrail-nachali-noviy-otbor-proektov-po-promyshlennym-niokr, July 16, 2020.

Military and Security Developments

6. Quantum AI laboratory to open in Russia

ROSATOM, which is Russia's State Atomic Energy Corporation, and the Russian Quantum Center (rqc.ru), announced in early July the creation of the first laboratory in Russia for the research and development of machine learning approaches to quantum computing. The stated main task of the new laboratory is the "development of technologies for quantum machine learning and quantum optimization." ROSATOM is particularly interested in how this technology can impact modeling in the nuclear industry and affect the study of complex, multiparticle quantum systems. The announcements note the solely theoretical basis for quantum computing at the current time but posit that Russia should be prepared to take advantage of quantum computing as countries move from the theoretical to the practical.

The lab is situated within ROSATOM's Quantum Computing project, which involves both the RQC quantum information technology group and the Tsifrum artificial intelligence laboratory, and will be headed by Ruslan Yunusov, who previously led the development of the quantum technologies roadmap within the "Digital Economy" national program.

Source: RQC, "Russia creates its first lab for the development of quantum artificial intelligence," July 2, 2020, https://rqc.ru/article/russia-creates-its-first-lab-for-the-development-of; Tsifrum, "A Laboratory for the development of quantum artificial intelligence has been created in Russia," Rosatom, July 7, 2020, https://rosatom.ru/journalist/news/v-rossii-sozdana-laboratoriya-po-razvitiyu-kvantovogo-iskusstvennogo-intellekta/.

7. Russian industry representative discusses automation, robotic antiaircraft guns

Georgy Zakamennykh, general director of the "Burevestnik" Central Research Institute (the manufacturer of many Russian artillery systems and munitions), gave an interview to the TASS state news agency. In this interview, he discussed the "Derivatsiya" self-propelled air defense system. Zakamennykh noted that the level of automation in the vehicle's firing, along with the weapons' remote control from automated workstations inside the vehicle bring "Derivatsiya" "very close to performing the function of a "robotic artillery complex." He noted that the air defense vehicle will be equipped with its own ground and air unmanned reconnaissance and fire adjustment vehicles. Zakamennykh also spoke about the overall Russian MOD trend towards robotization of specific vehicles, "accompanied by the development and implementation of remote control algorithms, elements of artificial intelligence and the

implementation of information exchange over secure channels." It is not clear what is meant by “remote control algorithms” sense this would seem to be just a description of standard computer programming.

At the same time, Zakamennykh believes that even with a high level of automation in artillery fire control systems, today’s “robotic” systems could hardly be called "smart,” since most are tele-operated by a human and deal with very limited operational algorithms. He pointed out that a real discussion on the AI-driven military systems can only be had “when a robotic vehicle demonstrates the ability to independently form the algorithm for the correct action in unfamiliar scenarios.” Zakamennykh also noted that such development is in the far future, and is both an attractive and an unsafe concept.

As we have noted in past issues of *AI in Russia*, the Russian MOD is interested in the “intellectualization” of different weapon systems, with the stated goal of an increasing share of “robotic” systems in land, air, and naval forces. That being said, it is not clear that there are actually AI-enabled aspects of this air defense system – just highly automatic systems. It could also be an attempt by the institute to give the system more attractiveness by coupling with the drive to integrate AI into the defense industry.

Source: “A weapon of crushing power: on the Russian artillery of the future and modern robots” [Оружие сокрушительной мощи. О российской артиллерии будущего и современных роботах], Tass.ru, July 20, 2020, https://tass.ru/armiya-i-opk/8872643.

8. Rostec will employ AI to control aviation steel quality

RT-Techpriemka (part of Rostec, Russia’s state defense industry conglomerate, discussed in issue 6 of *AI in Russia*) will implement an artificial intelligence system to control the quality of steel supplied to its aviation enterprises. RT-Techpriemka will be implemented at the Chelyabinsk plant for the production of steel sheets for the manufacture of civilian and military aircraft and helicopters. The Russian company Videomatrix developed the technology with the participation of RT-Techpriemka. The hardware and software complex combines artificial intelligence with neural networks and computer vision. The VmxDequs software analyzes video images of the finished steel sheets. Based on the specified criteria, the program identifies product defects, including scratches and cracks, and subsequently classifies the sheets. RT-Techpriemka claims that this process will help minimize the human factor during the final inspection, prevent the shipment of defective raw materials, reduce production costs, and improve product quality and safety guarantees. There was not indications that the company is using AI to improve the quality of the steel. The company has tested the prototype at the developer's site. In August 2020, the system will begin checking products supplied to the

Russian Helicopters Holding, the maker of civil and combat helicopters. The steel is used to manufacture components for the Ka-226, Ka-62, Mi-38, and Mi-26 helicopters and the Ka-52 Alligator and Mi-28 Night Hunter military helicopters.

Source: "Rostec will control the quality of aviation steel using artificial intelligence" [«Ростех» будет контролировать качество стали для авиации с помощью искусственного интеллекта], CNews.ru, July 14, 2020, https://www.cnews.ru/news/line/2020-07-14_rosteh_budet_kontrolirovat.

9. MOD's ERA Technopolis continues AI R&D

On July 15, 2020, the ERA Military Innovative Technopolis started accepting applications for science research competitions on artificial intelligence, as well as on military, dual-use, and special purpose technologies. Competitions are intended to motivate talented specialists to conduct innovative applied research. During this competition, developers and scientists will have to create solutions for an intelligent interface, information retrieval, multi-agent, expert, robotic, and self-learning system.

The Russian MOD designated ERA Technopolis its main AI RDT&E hub in 2018. Medical AI is one of the primary areas of MOD focus, and a separate discussion on using AI in military medicine will take place at the upcoming ARMY-2020 expo, as discussed in issues 1 and 2 of *AI in Russia*.

Source: "The Russian Ministry of Defense announced the acceptance of applications for the All-Russian scientific research competitions" [Минобороны РФ объявило прием заявок на Всероссийские конкурсы научно-исследовательских работ] , TVZvezda.ru, https://tvzvezda.ru/news/forces/content/20207151948-ghN2q.html, July 15, 2020; "Artificial Intelligence-Based Development Presented at ERA Technopolis" [В технополисе «ЭРА» презентовали разработку, основанную на искусственном интеллекте], website of the Russian Ministry of Defense, http://contract.mil.ru/sel_contract/news/more.htm?id=12293736@egNews, May 22, 2020.

Corporate and Market Developments

10. Russian government engages with ICT industry and faces criticism

During a July 9th panel discussion at the Innopolis in Tatarstan, Russia's prime minister Mikhail Mishustin announced that the government plans to spend 20 billion rubles (over $279 million) in grants to Russia's ICT sector for the development of new technologies. He also reflected displeasure with the pace of the sector's growth. In order to increase its pace, the government's support program for the ICT includes the following components: a new tax regime; stimulation of demand; support for adoption of innovative technologies; help to startups; development of private-public partnerships; and growth of human capital. The new tax regime would see, among other changes, the reduction of taxes for ICT corporate profits from 20 percent to 3 percent.

Mishustin also pointed out that Russia's information-communications technology industry has a "historic chance" and a "carte blanche" to make a "leap forward in development" and noted that measures to support the industry in the face of the economic downturn and the COVID pandemic had significant support from Russia's president Vladimir Putin. During July 22 remarks to the State Duma, Mishustin reiterated that the adoption of AI-enabled technologies could help lead Russian development and that the state needed to consider ways in which it could become a digital platform to interact with people more effectively.

Despite this support from the prime minister and the president, the Russian government's approach received some criticism from ICT industry representatives. At the same July 9 panel, they argued for the need for additional human capital, tax regime reforms, anti-monopoly actions against Apple and Google, and additional credit opportunities. Some pointed to the importance of adopting the "AI" federal project for the establishment of a diverse AI industry with companies of various sizes and the importance of competition. Others noted the need for the government to incentivize demand in various sectors and create a data regime that would anonymize datasets to help with training of algorithms.

Separately, an open letter from the Association of Computer and Information Technologies Enterprises, a Russian ICT trade industry group that also includes companies working on AI technologies, threatened that its members could move abroad because of searches, checks, and initiation of criminal cases by the Russian authorities. A report noted that the authorities' actions against private and state entities, such as the National Computer Corporation, were related to collusion of prices in the supply of computers to the Russian government.

Sources: "Panel discussion with participation of representatives from the IT industry" [Панельная дискуссия с участием представителей IT-индустрии], Правительство России, July 9, 2020, http://government.ru/news/39995/; "Mishustin says that Russia's IT industry has a carte blanche for development" [Мишустин заявил, что IT-отрасли России дан карт-бланш на развитие], TASS, July 9, 2020, https://futurerussia.gov.ru/nacionalnye-proekty/misustin-zaavil-cto-it-otrasli-rossii-dan-kart-blans-na-razvitie; "Mishustin: adoption of AI in medicine and financial sphere could allow Russia swift development opportunities" [Мишустин: внедрение ИИ в медицину и финансы дадут РФ возможность опережающего развития], TASS, July 22, 2020, https://futurerussia.gov.ru/nacionalnye-proekty/misustin-vnedrenie-ii-v-medicinu-i-finansy-dadut-rf-vozmoznost-operezausego-razvitia; "Russia's largest IT companies threaten to authorities to move abroad" [Крупнейшие ИТ-компании России пригрозили властям бегством зарубеж], C-News, July 24, 2020, https://www.cnews.ru/news/top/2020-07-24_krupnejshie_itkompanii_gotovyatsya.

11. Russian Patent Office announces best AI and ICT inventions

In an effort to foster development of domestic RDT&E in accordance with the national AI roadmap, the Russian Patent Office recently announced its list of 100 best inventions, covering 2019 and the first half of 2020. The list includes 16 patents in the field of information technology and artificial intelligence:

- A method for topical diagnosis and visualization of lymphatic cancers, using 3D modeling of MRI imaging
- A method for improving internet search results by avoiding inclusion of advertising and clickbait articles in search algorithms
- Use of AI technology to improve recognition and analysis of digital text in non-standard scripts or languages
- Use of internal digital sensors to detect the internal condition of pipes
- Use of neural nets to identify and interpret text fields in documents
- Use of digital technologies and voice recognition to interpret a subject's psychological state
- Use of AI technology to mathematically model illnesses
- Use of facial recognition and virtual reality technology to aid in navigation
- Use of biometric information in facial recognition technology
- A method for developing heuristic rules for identifying spam emails
- A method for protecting internet servers from unauthorized intrusion
- A method for real-time data transformation for cryptographic purposes

- A method for improving packet transfer speeds using mathematical topology
- A method for modulating lasers with quartz resonators
- A method for protecting servers from DDQS attacks through the use of a control module with white and black lists
- A method of using neural nets and acoustic signals to determine the temperature of conductive metals

Source: "Russian inventions" [Изобретения России], June 26, 2020, *Scientific Russia,* https://scientificrussia.ru/articles/izobreteniya-rossii; also see https://rospatent.gov.ru/content/uploadfiles/100-best-2019-1p-2020.pdf.

12. Kaspersky announces patent

Reportedly, the Kaspersky Lab recently received a patent for a new system for monitoring digital security. This system uses AI to predict possible anomalies and automatically prevent or stop attacks. The AI system studies the parameters of regular work of the system being monitored and compares them to forecasted values derived from big data analysis. If the displayed fluctuations coincide with possible forecast values or are within what the system considers acceptable deviations, the system concludes that production facilities are operating normally. However, if the results obtained do not fit into the forecasting model, the monitoring system immediately notifies the operator of possible problems, and can give instant commands to suspend the production cycle or take other measures.

Source: "Kaspersky Lab Develops New Patent in AI Digital Monitoring," July 14, 2020, https://communalnews.com/kaspersky-lab-develops-new-patent-in-ai-digital-monitoring; see patent info at: https://www.fips.ru/ofpstorage/Doc/IZPM/RUNWC1/000/000/002/724/716/%D0%98%D0%97-02724716-00001/document.pdf; https://yandex.ru/patents/doc/RU2724716C1_20200625; English-language description of the patent: www.freepatentsonline.com/y2020/0210264.html.

13. Skolkovo meeting spotlights AI companies

On July 2, Dmitry Medvedev, who is deputy chair of Russia's Security Council and serves as the head of the Skolkovo board of trustees, held an online meeting with the directors of several startups based at Skolkovo. In addition to Medvedev, senior officials participating in the meeting included Viktor Vekselberg, who serves as the head of the board of directors of the Skolkovo Foundation, and Arkady Dvorkovich, the chair of the Skolkovo Foundation. Representatives of nine startups spoke at the meeting: three in the field of artificial intelligence, three in medicine, and three in materials science. The AI participants included Intellogic, which uses AI for medical imaging; Visionlabs, which is developing facial and object recognition

technologies; and Security Vision, which is developing an IT platform for automating information security.

Ruslan Rakhmetov, the general director of Security Vision, discussed the future growth plans of his company, including its efforts to reach international markets and fears that export and import restrictions may derail these plans. He also complained about bureaucratic delays in certification of new products. Medvedev responded by noting the security implications of this line of work and expressing hope that better cooperation could be established between the government and startups working in this field. In his conversation with the director of Visionlabs, Medvedev highlighted that facial recognition technology is already in use and asked about the security aspects of using such technology to facilitate financial transfers.

Please see issue 6 of *AI in Russia* for background information on Skolkovo and related companies.

Source: "Dmitry Medvedev met with leaders of Skolkovo startups" [Дмитрий Медведев встретится с руководителями стартапов «Сколково»], CNews, July 2, 2020, https://www.cnews.ru/news/line/2020-07-02_dmitrij_medvedev_vstretitsya; "Medvedev assessed possilibty of transactions through face recognition" [Медведев оценил возможность транзакции через распознавание лиц], July 2, 2020, https://rossaprimavera.ru/news/b6a0640; Екатерина Быстрова, "R. Rakhmetov told D. Medvedev of challenges for companies" [Р. Рахметов рассказал Д. Медведеву о вызовах для ИБ компаний] July 2, 2020, https://www.anti-malware.ru/news/2020-07-03-111332/33083.

14. AI-enabled technologies in the medical field

Russian president Vladimir Putin has directed the Russian government to implement and increase AI in the medical field. During the last month, Russian researchers announced at least three new AI-powered projects in medical diagnosis. There has been a particular emphasis on using AI technology to assist in COVID-19 diagnosis and treatment. The Celsus project has used AI technology to help classify CT scans in patients suspected of being ill with COVID-19. A similar project by a Moscow medical research institute describes how the AI is used: it detects changes in the lungs caused by pneumonia and measures the extent of these changes to predict how serious the course of the illness will be.

These tools can also reportedly be used for diagnosing and developing a course of treatment for other diseases, including non-COVID pneumonias and various cancers. Celsus has trained its system to detect cancer cells in breast tissue samples.

Much of this research is funded by Sberbank, a leading Russian state bank, and a co-author of the national AI strategy released in October 2019. Sberbank has used its cloud service

Sbercloud to enable users to upload lung CT scans and receive a digital analysis of the extent of lung damage within 5-10 minutes.

Source: "Sberbank adopting AI model of COVID diagnostics in Moscow's largest medical centers" [Сбербанк внедряет ИИ-модель диагностики коронавируса в крупнейших медицинских центрах столицы], Cnews.ru, July 15, 2020, https://www.cnews.ru/news/line /2020-07-15_sberbank_vnedryaet_iimodel; "Sberzdorov'ye and Sbercloud are launching a free AI-based service on CT-scan recognition" [«Сберздоровье» и SberCloud запускают бесплатный сервис ИИ по распознаванию снимков КТ], Cnews.ru, July 15, 2020, https://www.cnews.ru/news/line/2020-07-15_sberzdorove_i_sbercloud_zapuskayut; "Initiation of work in Moscow's radiological diagnostics" [Начало работы в отделениях лучевой диагностики города Москвы по направлениям флюорография и маммография], TAdviser.ru, July 15, 2020, https://www.tadviser.ru.

Education and Training Developments

15. Russian pollster to collaborate with TSU on monitoring public opinion

According to a July 15 TASS article, the All-Russian Center for the Study of Public Opinion (VTsIOM) and the Tomsk State University (TSU) have signed a cooperation agreement. As part of the agreement, the institutions will jointly create a software program to track the moods of social media users—"in particular, their opinions on political, economic, social, and other spheres of life." Social media platforms are useful in conducting experiments, because they offer millions of subjects concentrated in one place.

According to the article, Tomsk University has been developing similar big-data algorithms for several years, including one that tracks extremist sentiments among youth on VKontakte. According to the press release on the university's website, VTsIOM and TSU will also create an online course as part of the agreement. One of the course developers from TSU, Vitaly Kashpur, is quoted as saying that the course will be focused on new digital methods that can aid in social research, such as "mining and analysis using machine learning algorithms for social media data, natural language processing, social network analysis, [and] digital ethnography."

Note that this project is part of the effort to monitor the Russian population. Given the projects' emphasis on citizens' opinions about social, economic, and political issues, the Russian state would be interested in this kind of sentiment analysis in light of the worsening economic situation across the country following the onset of the COVID-19 pandemic.

Source: "Tomsk University and VTsIOM will monitor the mood of Russians in social networks using Big Data" [Томский вуз и ВЦИОМ будут мониторить настроения россиян в соцсетях при помощи Big Data], TASS, July 15, 2020, https://futurerussia.gov.ru/nacionalnye-proekty/tomskij-vuz-i-vciom-budut-monitorit-nastroenia-rossian-v-socsetah-pri-pomosi-big-data; "TSU and VTsIOM develop a service for monitoring quality of life in Russia" [ТГУ и ВЦИОМ разрабатывают сервис для мониторинга качества жизни россия]," Tomsk State University, July 15, 2020, http://www.tsu.ru/news/tgu-i-vtsiom-razrabatyvayut-servis-dlya-monitoring/.

16. Russian government supports ICT competitions and contests

According to the following articles, the Russian government is continuing to support ICT competitions and contests, with the ultimate goal of developing the next-generation workforce, as described in the 2019 AI strategy.

According to a TASS article from July 8, an online educational tournament for schoolchildren has begun. Mentors and experts are training students to use machine learning, computer vision, and artificial intelligence tools, which they will then use to create medical applications specifically focusing on COVID-19. Using real data from the coronavirus outbreak, participants will design and train neural networks to recognize the virus in CT scans. Students will also utilize regression analysis and machine learning tools to map outbreak patterns across Russia. The tournament is hosted by the National Technological Initiative "Circle Movement," which was created in line with the goals of Russia's national project "Science." This project states that by 2024, Russia should be in the top five countries for scientific and technological R&D. A similar training initiative organized by the "Circle Movement" that took place in June was highlighted in issue 6 of *AI in Russia*.

According to an article in *Regnum* on June 25, an online competition in machine learning and data analysis has begun, with more than 6,000 registered participants competing. Contestants are developing products to aid with recruiting, public administration paperwork, and laboratory research, all of which require sorting through vast amounts of data. Twenty-five finalists will split a prize of 2 million rubles and advance to the final round of the "Digital Breakthrough" competition. These finalists may also go on to apply for a grant from the Innovation Promotion Fund, which totals 25 million rubles. The "Digital Breakthrough" IT competition is hosted by the autonomous non-profit organization (ANO) "Россия – страна возможностей" (Russia—Country of Opportunity), which was founded in 2018 by presidential initiative. Partners for this phase of the competition include HeadHunter, IT Society, and the Ministry of Economic Development of the Irkutsk Region.

Source: "Digital Breakthrough Championship: 6,000 Russian participants" [Онлайн-чемпионат по машинному обучению и анализу данных для индивидуальных участников], *Regnum,* June 25, 2020, https://regnum.ru/news/society/2992700.html; "Россия – страна возможностей" [Russia—country of opportunity], https://rsv.ru/;"Students at online tournament will teach a neural network to identify COVID-19 from CT scans" [Школьники и студенты на онлайн-турнире научат нейросеть определять COVID-19 по КТ-снимкам], TASS, July 8, 2020, https://futurerussia.gov.ru/nacionalnye-proekty/skolniki-i-studenty-na-onlajn-turnire-naucat-nejroset-opredelat-covid-19-po-kt-snimkam.

Russian ICT Conferences

17. Summary of the 26th conference on computer linguistics held in June

A four-day conference on computer linguistics and natural language processing was held June 17-20, organized by the ABBYY software company alongside the Moscow Institute of Physics and Technology (MIPT). The conference involved 600 participants, with 100 presentations based on reports and academic research in 14 thematic sections. This conference continues to be the largest in the field of computer linguistics held in Russia and is an important venue for sharing research developments in the field. This year's invited speaker was Manfred Stede, a professor at the University of Potsdam in Germany, whose research focuses on developing "argumentation mining," or the automatic identification and analysis of arguments taken from natural language texts. Additionally, the annual "Dialogue Evaluation" forum took place during the conference, in which three competitions were held on different challenges for Russian-language automatic text analysis. The winners were mostly recent university graduates, with a large proportion from MIPT, suggesting renewed interest and expertise among young computer linguistics researchers.

Source: "Results of the 26th Conference on Computer Linguistics 'Dialog'" ["Итоги 26-й конференции по компьютерной лингвистике «Диалог»"], NKJ, June 26, 2020, https://www.nkj.ru/prtnews/39026/.

18. Summary of the ASI meeting held in July

A meeting of the supervisory board of the government-sponsored non-profit Agency for Strategic Initiatives (ASI) was held on July 9. Russian president Vladimir Putin chairs the supervisory board. During the meeting, the governor of Ulyanovsk, Sergei Morozov, presented a report about regional cooperation with ASI. He commented on a new pilot program to develop a rating system for quality of life in the Russian regions (subjects of the Russian Federation) that has been ongoing since 2017. This project is viewed as a tool to help evaluate and adjust state industrial programs, management decisions, and municipal incentive structures in the regions. Morozov proposed integrating AI and big data analysis to further develop tools to track quality of life in the regions and provide more information that can be used to more precisely identify different problems affecting specific regions instead of relying on one-size-fits-all approaches.

The ASI supervisory board meeting also included a proposal by Dmitry Peskov, the director of the "Young Professionals" Division within ASI, to create a new mechanism for protecting citizens' rights as new digital technologies continue to advance. Peskov suggested that as digitalization continues, new steps must be taken to ensure boundaries between technological capabilities and individual rights to privacy. He noted that citizens should know what information is collected about them, who owns their personal data, and how their personnel data could be used, affirming rights to digital justice as well as "digital oblivion mechanisms. (Note: Mr. Peskov of ASI should be distinguished from the Kremlin press secretary, also named Dmitry Peskov.)

The Agency for Strategic Initiatives (ASI) is a Russian non-profit organization founded by the Russian government. The agency aims to implement a set of social and economic measures for the promotion of priority projects. The ASI was established to coordinate the cooperation between Russia's financial organizations, development institutions, and funds. It also coordinates the interaction with authorities on the provision of support measures, and provides assistance in solving systemic problems, such as dealing with various regulatory and administrative barriers. ASI runs the "World AI and Data Challenge" competition. The competition's goal is to solve global socio-economic problems with the help of AI & data, as well as to implement AI & data technologies for breakthrough development of economy and public administration. ASI also administers the National Technology Initiative (NTI).

Source: "Morozov spoke to Putin about a joint project with ASI and offered to use artificial intelligence" [Морозов рассказал Путину о совместном проекте с АСИ и предложил использовать искусственный интеллект] 73 Online, June 9, 2020, https://73online.ru/r/morozov_rasskazal_putinu_o_sovmestnom_proekte_s_asi_i_predlozhil_ispolzovat_iskusstvennyy_intellekt-79617; "ASI was asked to introduce a mechanism of digital protection for citizens in Russia" [АСИ попросило ввести в России механизм цифровой защиты граждан], TASS, July 9, 2020, https://futurerussia.gov.ru/nacionalnye-proekty/asi-poprosilo-vvesti-v-rossii-mehanizm-cifrovoj-zasity-grazdan.

19. Conference on ICT in the public sector to take place in September

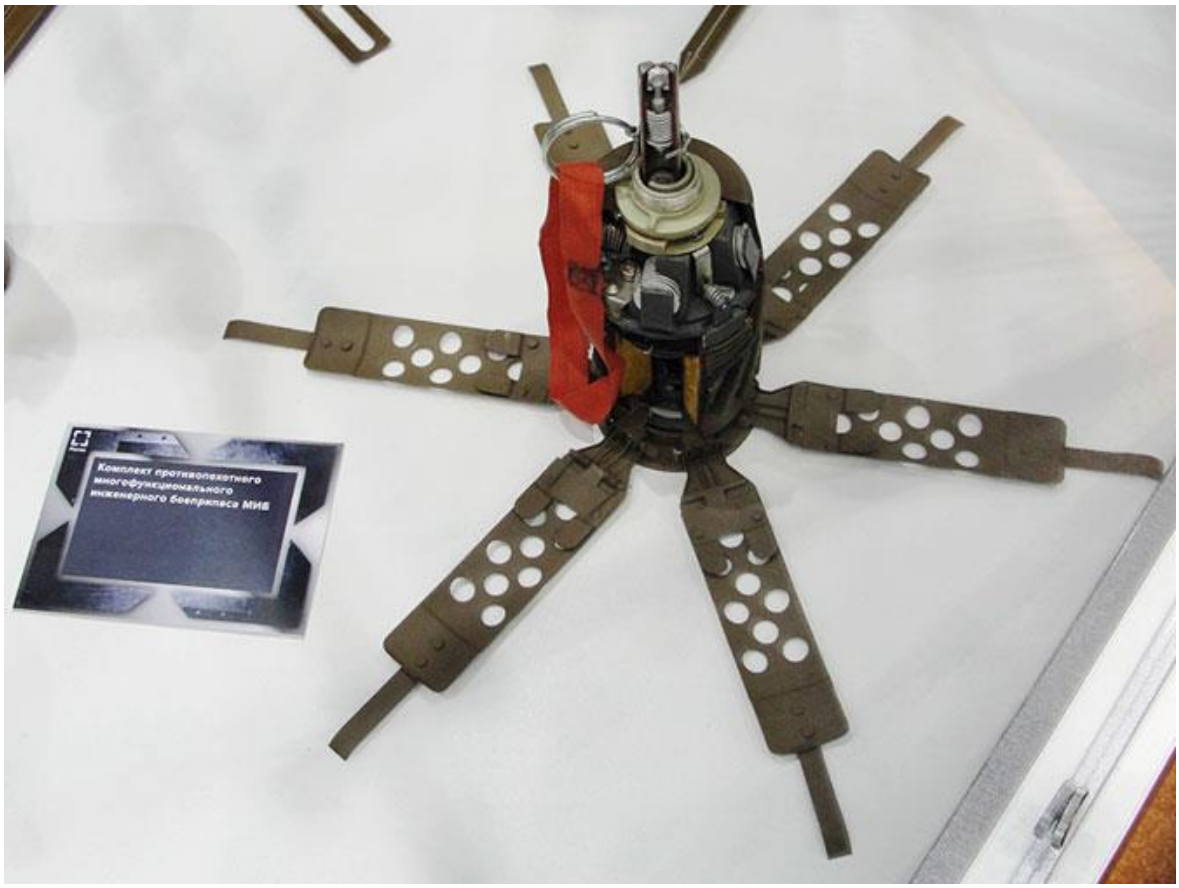
The CNews website announced that it will host a conference on information and communications technology (ICT) in the public sector on September 24, 2020. The conference, "ICT in the Public Sector: the Pace of Digitalization Grows," is billed as a forum to identify the current ICT needs of state institutions and government in Russia. The conference has four main themes: (1) "digitalization of the public sector: new challenges"; (2) "key ICT projects in the public sector"; (3) "ICT solutions for the public sector"; and (4) "ICT challenges in the near future." Included within these broader themes were emphases on financial and coronavirus crisis mitigation, import substitution, coordination of ICT services across different parts of the

state, data management, and digitalization, as well as cases of AI usage in the ICT sector and developments in the intelligent monitoring of vehicles. The conference is expected to have a number of well-connected and important figures in the Russian government attending, including Alexei Kudrin, the chairman of the Accounts Chamber, as well as representatives from federal ministries and from the regions, including Saint-Petersburg, Udmurtia, Nizhniy Novgorod, Moscow City, Tatarstan, Tyumen, and Moscow Region.

Source: "CNews Conference 'ICT in the State Sector: the Pace of Digitalization Grows'" [Конференция CNews «ИКТ в госсекторе: темпы цифровизации растут»] Cnews.ru, July 16, 2020, https://events.cnews.ru/news/top/2020-07-16_konferentsiya_cnews_ikt_v_gossektore.

Spotlight: POM-3 landmine

The Russian military is developing and possibly already fielding advanced landmines that utilize some AI-enabled capabilities. In 2015 through 2017, reports surfaced that the POM-3 (ПОМ-3) "Medallion" landmine had new features and capabilities not previously seen in Soviet or Russian landmines.



What purportedly makes the POM-3 unique is its reported ability to distinguish between various targets. According to the head of NII, the mine is able to distinguish between a civilian— say, a farmer—and a soldier. A seismic sensor injected into the ground picks up surface disturbances and an algorithm determines the profile of disturbance and whether it is friend or foe. The algorithm utilizes different signatures that a walking soldier makes with their attendant gear versus a walking civilian. When the mine determines that a threat has entered its kill radius, it launches its warhead to a height 1 to 1.5 meters before detonating. The name

"Medallion" comes from the shape of the disks within the warhead that shatter into rotating triangular fragments.[1]

Landmines using signatures are not new (an example is sea mines utilizing recordings of ship signatures), so the AI aspect of the mine is not necessarily clear from the reporting. It is also interesting that the mine purportedly can identify classes of people—e.g., it can distinguish a farmer or hiker from a solider. It is also unclear what assumptions the mine must make in order to do this.

The POM-3 is an antipersonnel fragmentation mine that is capable of deploying from numerous platforms and has a purported kill radius of 12 meters. The Scientific Research Engineering Institute (NIII) has been engineering explosive devices, among other weapons, since 1950. NIII is part of the larger Techmash Concern (http://tecmash.ru), whose primary production consists of ammunition for the Russian military. Techmash is part of the larger defense company Rostec (http://rostec.ru). The POM-3 was also on display at the Army-2019 military forum held in Moscow.[2]

[1] Dmitry Drozdenko, "The curse of the enemy infantry: what is terrible about the POM-3 mine" [Проклятие вражеской пехоты: чем страшна мина ПОМ-3], tvzvezda.ru, Sept. 9, 2017, accessed July 29, 2020, https://tvzvezda.ru/news/opk/content/201709260758-b9rq.htm.

[2] Defend Russia, "Cluster mines already distinguish humans from animals" [Кассетные мины уже отличают людей от животных]," June 27, 2019, accessed July 29, 2020, https://defendingrussia.ru/a/v_rossii_sozdali_umnyje_kassetnyje_miny-8773/.

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This report was written by CNA's Strategy, Policy, Plans, and Programs Division (SP3).

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DOP-2020-U-027701-Final2

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