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Abstract

This report, the thirtieth in a series of biweekly updates, 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.

Distribution

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Approved by: **January 2022**

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Highlights of Issue 30

- Government surveys suggest some job satisfaction but also significant challenges in the Russian AI field.

- Vampire drones and unmanned helicopters are being developed for use in the Russian military.

- Moscow continues to experiment with Smart City surveillance technologies.

- Universities detail projects in line with the Priority 2030 government effort to promote Russia's competitiveness in education, science, and technology.

- Russian foreign minister Lavrov touts Russian engagement in UNESCO's development of recommendations for ethical use of AI.

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Governance and Legal Developments

1. Government survey of Russian AI workforce points to challenges in sector

According to a survey conducted by the Analytical Center of the Russian Government across Russian AI experts and workforce in November and December 2021, 59 percent of respondents stated that AI technologies are developed in Russia on par with or ahead of other countries' leaders in the field, while 36 percent maintained that Russia is significantly behind. The survey also reportedly found that 64 percent of those working in the field are satisfied with work conditions in Russia. At the same time, the survey pointed to the following challenges in the sector: lack of qualified human capital, inadequacy of venture funding and support for startups, dependence on imports of technology from abroad, low penetration of Russian products on foreign markets, lack of protection of intellectual property, and weakness of the legal framework. The survey was conducted in two parts: the first one involved students and specialists responding to an online survey; the second involved in-depth interviews with corporate executives and scientific leaders in the field.

Sources: "Experts note obstacles for AI development in Russia" (Эксперты назвали препятствия для развития сферы искусственного интеллекта в России), PNP, Dec. 24, 2021, https://www.pnp.ru/economics/eksperty-nazvali-prepyatstviya-dlya-razvitiya-sfery-iskusstvennogo-intellekta-v-rossii.html; "Study: 64% of AI specialists satisfied with working conditions in Russia" (Исследование: 64% специалистов в сфере искусственного интеллекта удовлетворены условиями работы в России), CNews, Dec. 24, 2021, https://www.cnews.ru/news/line/2021-12-24_issledovanie_64_spetsialistov.

2. Plans and changes in legal framework on unmanned systems proceed

On December 30, Russia's president Vladimir Putin signed into law changes to the Air Code of the Russian Federation that include norms for airworthiness and markings of civilian unmanned systems of up to 0.25-30 kg either imported into or manufactured in Russia. The language adapts the existing Air Code to include these systems and discusses requirements for the safe operation of civilian unmanned systems created by the systems' developer and approved by the Russian aviation authority (Rosaviatsiya). These legal changes, passed by both

houses of Russia's Parliament in late December, are adding to a growing body of laws and regulations that have to do with unmanned systems in Russia.

Separately, on December 21, the Russian government also released the text of plans on the digital transformation of the transport sector, including unmanned systems, to 2030. The plans indicate that systems for passengers and cargo, unmanned logistical corridors, autonomous navigation, and unmanned aerial delivery, among others, are priority areas for development.

Sources: "Putin signs law on the inclusion of the concept of UAS airworthiness into the air code" (Путин подписал закон о введении в Воздушный кодекс понятия летной годности беспилотников), TASS, Dec. 30, 2021, https://tass.ru/armiya-i-opk/13338459; "Order of the government of the Russian Federation from 21.12.2021 N3744" (Распоряжение Правительства Российской Федерации от 21.12.2021 № 3744), Russian government laws website, http://publication.pravo.gov.ru/Document/View/0001202112270030.

3. Lawmakers discuss danger of discrimination by algorithms, simplification of appeals

According to reports, on December 22, the Council for the Development of the Digital Economy in Russia's upper house of Parliament sent recommendations to the Ministry of Digital Development, Communications and Mass Media and the Ministry of Economic Development about AI algorithms that have the capability to make decisions that discriminate against people. The recommendations discussed potential prohibitions on such technologies, a process for notifying people that decisions were made by an algorithm, a mechanism for assessing their implications on welfare, and a roadmap for their regulation and employment. Interfax reported that the council maintains that "citizens should be legally able to digitally appeal AI decisions, and such a complaint should only be reviewed by a human." They also propose to "develop legal mechanisms for compensation for damage caused as a result of the use of AI technologies, as well as insurance of damage."

Separately, the commission on the support of the digital economy of the Moscow branch of the Russian Bar Association also proposed rules as well as the simplification of appeals of decisions made by automated systems such as banking algorithms that make loan determinations. According to *Rossiyskaya Gazeta*, the Russian legislature is examining these proposals.

Source: "In Federation Council, there are proposals to ban AI that discriminates against people" (В Совфеде предложили запретить дискриминирующий людей искусственный интеллект), Interfax, Dec. 22, 2021, https://www.interfax.ru/russia/811935; Vladislav Kulikov, "The procedure for appealing decisions made by robots can be simplified" (Порядок обжалования вынесенных роботами решений могут упростить), *Rossiyskaya Gazeta,* Dec. 28, 2021, https://rg.ru/2021/12/28/poriadok-obzhalovaniia-vynesennyh-robotami-reshenij-mogut-uprostit.html.

4. Russian government sets directions for digitization of higher education and science

On December 21, the Russian government published the text of plans on the digital transformation of science and higher education to 2030. Reports suggest that the focus will be on the incorporation of the following technologies: AI for recommendation and decision support systems; big data for large datasets to support decision-making and data quality improvements; distributed ledger systems; the internet of things; and cloud technologies.

Sources: "Government approves directions for digital transformation of science and higher education" (Правительство утвердило направления цифровой трансформации науки и высшего образования), D-Russia, Dec. 27, 2021, https://d-russia.ru/pravitelstvo-utverdilo-napravlenija-cifrovoj-transformacii-nauki-i-vysshego-obrazovanija.html; "Order of the government of the Russian Federation from 21.12.2021 N 3579" (Распоряжение Правительства Российской Федерации от 21.12.2021 № 3579), Russian government laws website, http://publication.pravo.gov.ru/Document/View/0001202112250002.

5. Ex-Putin aide Surkov discusses future role of AI in politics and religion

The Russian political technologist and former presidential advisor Vladislav Surkov recently published an article and a video address, both devoted to picturing the role of artificial intelligence in society 100 years from now. The article focuses on how advanced AI will transform the political sphere. In this article he argues that in the future, AI will allow for most political decisions to be made directly by citizens through the mechanism of online voting. Furthermore, much of this decision-making will not be made directly by humans, but will be delegated to AI, with machines replacing human representatives as key decision-makers. The political class will remain, but will consist of those who control the algorithms—in other words, giant IT companies and, through back doors, security services. Surkov calls this "future democracy without people," because machines will take over the key roles. He continues by suggesting that sentient machines will want to replace humans and will gradually form their own political systems, systematically excluding humans and pursuing ends that are not comprehensible to human minds. Democracy without people will thus be the final form of human statehood, before being replaced by the era of machines. Virtual republics will thus form as examples of states without territories.

In his New Year's YouTube video, Surkov also focuses on the possibility that future advanced AI systems will be able to accept religion and become Orthodox believers. He argues the following:

Will artificial intelligence ever become Orthodox? Will it ever celebrate Christmas?... Will artificial intelligence ever be able to believe in Christ? Of course, I am not referring to the artificial intelligence we are dealing with today, this "helpful idiot" who goes by the name Alice and still cannot really learn to drive a car. I am, of course, talking about the artificial intelligence of the future, which scientists and engineers call "strong artificial intelligence" and which will be able not only to follow a protocol, but also to think and imagine... It seems to me that the artificial intelligence of the future will be able to understand that the events described here are the most important in the history of not only people, but also machines.

Sources: V. Surkov, "Peopleless democracy and other political miracles of the year 2121" (Безлюдная демократия и другие политические чудеса 2121 года), RussiaPost, Dec. 12, 2021, https://www.russiapost.su/archives/265026; "Ex-Putin aide Vladislav Surkov: will AI celebrate Christmas?" (Экс-помощник президента Владислав Сурков: будет ли искусственный интеллект отмечать Рождество?), BFM.ru, Dec. 31, 2021, https://www.bfm.ru/news/489743.

Military and Security Developments

6. MOD's ERA Technopolis at the center of AI R&D in the military

In an end-of-year interview with Deputy Defense Minister General Pavel Popov, for the Russian Ministry of Defense's official publication *RedStar,* he discussed the Russian military's innovations and new technology development that took place in 2021. Gen. Popov indicated that some of MOD's main RDT&E work involves artificial intelligence technologies, including systems to detect and counter unmanned aerial vehicles (UAVs), military aerial drones, autonomous uninhabited underwater vehicles, and remotely controlled combat modules. He also placed MOD's ERA Technopolis at the center of AI-related research, with a full cycle of AI-related work taking place at the ERA's Machine Learning Center that includes preparing data sets [presumably for training] and developing neural networks. Popov indicated that ERA Technopolis would better enable testing AI products, noting that work at the ERA would significantly reduce the cost and time of introducing artificial intelligence in weapons and systems across the military.

On January 1, 2022, ERA hosted a roundtable titled "Perspective directions for the development of artificial intelligence technologies in the Russian Armed Forces." The event was hosted by the MOD's Main Directorate for Innovative Development, with the participation of representatives from other industrial and scientific enterprises. During the roundtable, the participants discussed projects underway at the ERA's Machine Learning Center, along with the state of development of AI systems in Russia and around the world. Concurrently with the roundtable, ERA hosted a hackathon, with teams drawn from the Technopolis's military scientific companies and units solving machine processing and data analysis tasks. The hackathon tasks involved creating a software solution for automatic processing of unstructured data; creating a software solution for selecting and searching for key information in a data stream; and developing a prototype web application for analyzing the professional skills of specialists based on their behavior on the internet.

Sources: Roman Biruylin, "Innovation potential for the army of the future" (Инновационный потенциал для армии будущего), RedStar.ru, Dec. 29, 2021, http://redstar.ru/innovatsionnyj-potentsial-dlya-armii-budushhego/; "ERA hosted the discussion on the development of artificial intelligence technologies in the Russian Armed Forces" (В технополисе «ЭРА» обсудили направления развития технологий искусственного интеллекта в ВС РФ), Official MOD website, Jan. 1, 2022,

https://function.mil.ru/news_page/country/more.htm?id=12401573@egNews; "New year's hackathon took place at ERA" (В технополисе «ЭРА» начался «Новогодний хакатон»), Iz.ru, Jan. 3, 2022, https://iz.ru/1273011/2022-01-03/v-tekhnopolise-era-nachalsia-novogodnii-khakaton.

7. Russian military is working on a drone that can recharge from powerlines

Russian military scientists are working on new concepts to extend a UAV's operational capacity. Specialists at the Tyumen Higher Military Engineering Command School are developing a drone that can be recharged from power lines, thus significantly increasing the UAV's flight duration. According to the proposed plans, the drone is a multicopter with a ring magnetic circuit—i.e., special electric current clamps that allow the drone to hook up to power lines to recharge its battery. The drone's operator directs the pincers to the power line and gives the command to close them. The drone then hangs in an inverted position (like a bat) while retaining the ability to conduct reconnaissance. After the battery is charged, the pincers open and the drone returns to its original position and continues flying. The proposal notes that the placement of the magnetic circuit in the lower part of the drone allows it to disconnect from the power line without risk. According to this project, the drone's magnetic core can also be used to capture and drop payloads with its pincers. Tyumen's scientists believe that current Russian mini-drones are not capable of making long flights but that a need for their long-term operation exists both in peacetime and in wartime, especially for reconnaissance missions.

Sources: Russian tech firm to upgrade unmanned helicopter simulator for strike missions, Tass.com, Dec. 29, 2021, https://tass.com/defense/1382249; "For the first time, the Ministry of Defense showed a video of the destruction of a drone by Orion UCAV" (Минобороны впервые показало видео уничтожения "Орионом" беспилотника), Ria.ru, Dec. 18, 2021, https://ria.ru /20211218/orion-1764365145.html.

8. Robotics systems for Russia's Ground Forces

In an interview for RedStar, General Oleg Salyukov, Ground Forces Commander, mentioned that work is ongoing to put ground robotic systems (UGVs) into service this year by evaluating their combat capacity. Following this evaluation, a decision will be made on the optimal UGV number/type to equip the Ground Forces units. Such systems include the remote-controlled Uran-9 and Nerehta UGVs used during the Zapad-2021 exercise. He also noted MOD's ongoing R&D work on heavy Sturm and mid-sized Soratnik robotic platforms, intended for urban warfare and other missions. Salyukov also noted the emphasis that research places on integrating the control of ground and air robotic systems via receiving, processing, and

transmitting intelligence information using UAVs. The general's last point reflects MOD's growing interest in combining different types of unmanned military systems in units, groups, and swarms for more effective operations.

Sources: Alekasndr Tohonov, "The importance of the Ground Forces for the Russian Federation, which has the largest territory in the world, cannot be overstated" (Значение Сухопутных войск для Российской Федерации, обладающей самой большой территорией в мире, невозможно преувеличить), RedStar.ru, Jan. 10, 2021, http://redstar.ru/znamya-pobedy-vodruzhat-nam/.

9. Russian tech firm to upgrade unmanned helicopter for strike missions

Russia's Rostec subsidiary Technodinamika Group recently announced that it will upgrade VM-V unmanned target helicopters for strike and air reconnaissance missions. The VM-V helicopter can operate in the air for about two hours, climbing to an altitude of 2.5 km and maintaining radio communications at a range of 150 km. Currently, the company is carrying out self-initiated VM-V upgrades to improve its flight performance, install additional equipment, and increase its payload and its flight range and duration. Technodinamika is hoping such upgrades will make this drone more suitable for the growing range of duties undertaken by the country's UAVs, such as aerial reconnaissance, target acquisition, and strike/attack missions. The first VM-V batch was delivered to the Russian troops in late 2020. In October 2021, this drone was used to simulate an adversarial aerial attack during the "Slavic Shield 2021" Russia-Serbia drills. Earlier, the drones also simulated air targets for Pantsyr-S antiaircraft missile systems. Technodinamika's VM-V helicopter drones were also used in the December 2021 testing of Orion MALE UCAV's ability to shoot down unmanned aerial vehicles. The test was conducted in Crimea, possibly in response to Ukrainian drone activity in eastern Ukraine.

Sources: "Russian tech firm to upgrade unmanned helicopter simulator for strike missions," Tass.com, Dec. 29, 2021, https://tass.com/defense/1382249; "For the first time, the Ministry of Defense showed a video of the destruction of a drone by Orion UCAV" (Минобороны впервые показало видео уничтожения "Орионом" беспилотника), Ria.ru, Dec. 18, 2021, https://ria.ru /20211218/orion-1764365145.html.

Corporate and Market Developments

10. Video surveillance grows in efficacy in Moscow

Moscow's well-developed network of city-wide video surveillance and AI-assisted "Smart City" monitoring projects continues to bear fruit in new ways. Surveillance infrastructure has been used to monitor physical sites, such as courtyards and the roofs of houses. A new report by the Center for Automated Recording of Administrative Violations (which is within the Housing and Public Utilities Office) announced that 30,000 roofs across the city were being monitored for physical damage and general conditions, especially with regard to winter snow and ice damage. The system recorded over 250,000 "violations" in 2021, over 95 percent of which were fixed by relevant municipal authorities or private landlords.

This aligns with other current uses for the city's growing surveillance network. The new Sphere biometric facial recognition program introduced to the Moscow Metro at year end has led to the detainment of over 2,000 people. The program sends flagged individuals' information to databases of the Ministry of Internal Affairs, the FSB, and the Federal Penitentiary Service for analysis. Reporting on this at year end, one anecdote was repeated that the system successfully marked a criminal who had changed all of his official ID data (first and last name, date of birth, and so on) but could still be spotted through biometric analysis.

Other programs are being worked on to further the utility of the massive urban surveillance networks that have been built. One project, termed "the People's Inspector" focuses on automatically flagging reckless drivers recorded on video and referring them to the traffic police. This accords with the recent announcement by Moscow mayor Sergei Sobyanin that felony crimes, such as murder and burglaries, had decreased over the last year, which he attributed to increased use of the AI-assisted surveillance programs that had been introduced throughout the city. He noted that beyond just their benefits regarding crime and regulatory violations, citizens were particularly pleased with the ease of interacting with the city's bureaucracy through these kinds of integrated systems: "Digital transformation will significantly change the sphere of public services. Over the past 10 years, we have ensured that the execution of most benefits and documents has become quick and comfortable for people. It is necessary to completely save citizens from paperwork, which can be perfectly dispensed with in the modern digital world."

Sources: "More than 30 thousand roofs in Moscow are under the supervision of the center for fixing violations" [Более 30 тыс. кровель в Москве находятся под наблюдением центра фиксации нарушений], TASS, Dec. 22, 2021, https://tass.ru/moskva/13274065; "Artificial intelligence and "People's Inspector" will catch reckless drivers" ["Ловить лихачей будут искусственный интеллект и 'Народный инспектор'"], Vesti.ru, Dec. 21, 2021, https://www.vesti.ru/auto/article/2655193; "Two thousand people were detained using the facial recognition system in the Moscow metro" [2 тысячи человек задержали с помощью системы распознавания лиц в московском метро], Rubezh, Dec. 29, 2021, https://ru-bezh.ru/gossektor/news/21/12/29/2-tyisyachi-s-chelovek-zaderzhali-s-pomoshhyu-sistemyi-raspoznavan; "The number of murders and thefts in Moscow decreased thanks to the video surveillance system" [Количество убийств и краж в Москве снизилось благодаря системе видеонаблюдения], TASS, Dec. 22, 2021, https://tass.ru/obshchestvo/13269795.

11. Smart City arrives in Rostov region

The latest expansion of "Smart City" surveillance and logistics automated systems has been introduced in the Rostov region, in the medium-sized city of Volgodonsk, through an agreement with Rosatom Infrastructure Solutions, which is an arm of the state-owned corporation Rosatom. Financing was provided through Rosenergoatom Concern, also a subsidiary of Rosatom. The project connects a variety of municipal and residential services to create "smart" housing and communal services, school infrastructure, urban transport management, and digital connections to the city and regional government.

Source: "With Rosatom support, in Volgodonsk of Rostov region, technologies of Smart City are incorporated" (При поддержке Росатома в Волгодонске Ростовской области внедрены технологии «Умного города»), CNews, Dec. 29, 2021, https://www.cnews.ru/news/line/2021-12-29_pri_podderzhke_rosatoma_v.

12. Experimentation with AI in medical applications continues

Russian hospitals, medical clinics, and research centers continue to experiment with new applications for AI programs in their day-to-day practice. Among a variety of new uses, several have been reported on recently. The "Family Doctor" network of medical clinics has begun introducing new, automated, contactless thermometry systems which detect people with fevers across its clinics. The systems were developed by a local vendor, the "Special Technologies for Control" (STK) security company. The network's general director, Yulia Grafov, was quoted as saying that this would be a time-saver for receptionists and is "especially suitable for institutions with high attendance."

Proposals to introduce AI diagnostic programs to ambulances are also appearing in the Russian press. The entrepreneur Dmitry Davidov, who also directs a project on "20 Ideas for the Development of Russia," has suggested that Russian ambulance services include an electronic assistant program with voice and heartbeat-reading capabilities to assess cardiovascular disease in incoming patients as a way of determining treatment options more quickly and before admittance into a hospital.

Finally, new research funded by the Russian Science Foundation and published in the *Journal of Molecular Sciences* has provided a new approach to assessing health complications from diabetes. The researchers develop a text mining approach to modeling correlations across genes associated with diabetes and related health issues which can better infer the potential for negative issues deriving from a diabetes diagnosis. They used AI models on bioinformatic data to map pathways for complications, especially after sharp spikes in glucose, that the report suggests will be of use in applied medical research in the future.

Sources: "The network of clinics "Family Doctor" has implemented a thermometry system with AI" [Сеть клиник «Семейный доктор» внедрила систему термометрии с ИИ], CNews, Dec. 27, 2021, https://www.cnews.ru/news/line/2021-12-27_set_klinik_semejnyj_doktor; "Special Technologies for Control" [Специальные технологии контроля], https://www.stc-groups.ru/; "Russian ambulance is proposed to be equipped with artificial intelligence" [Российскую скорую помощь предлагают оснастить искусственным интеллектом"], Argumenty Nedel', Dec. 29, 2021, https://argumenti.ru/economics/2021/12/753210; "Artificial Intelligence Could Help Explain The High Risk Of Cardiovascular And Nervous System Damage In People With Diabetes" [Искусственный Интеллект Поможет Объяснить Высокий Риск Поражений Сердечно-Сосудистой И Нервной Систем У Людей С Диабетом], Nauchnaya Rossiya, Dec. 28, 2021, https://scientificrussia.ru/articles/iskusstvennyj-intellekt-pomozet-obasnit-vysokij-risk-porazenij-serdecno-sosudistoj-i-nervnoj-sistem-u-ludej-s-diabetom.

Education and Training Developments

13. More details released about Priority 2030 government effort

There have been several recent developments with the Priority 2030 project, which was established by the Russian government in May 2021 as part of an ongoing effort to increase Russia's competitiveness in education, science, and technology. More than 100 "frontrunner" higher education institutions have been selected for the project, which has an overall budget of around 100 billion rubles (~ US$1.36 million). The project is more fully described in the 28th issue of *AI in Russia*. The recent Priority 2030 developments include the following:

- According to a January 14 article, the Moscow Physical Engineering Institute (MEPhI) is using AI to create a digital replica of a nuclear reactor facility, which will be used both as a way to train personnel and as an educational tool to teach Russian students more about nuclear energy.

- According to a press release from the Russian Ministry of Science and Higher Education, the main goals of the Research Center for Applied AI Systems of the Moscow Institute of Physics and Technology (MIPT) over the next three years include the creation of methods and algorithms for controlling robotics and unmanned vehicles, the development and implementation of the next generation of the DeepPavlov chatbot, and the development of a prototype of an artificial robot brain capable of learning to solve a wide range of problems.

- The Russian University of Transport announced that it plans to launch a bachelor's program in 2023 and a master's program in 2024 titled "Neurotechnology, artificial intelligence and predictive analysis in transportation systems."

- In October 2021, the Moscow State Institute of International Relations (MGIMO) founded the Center for Artificial Intelligence with the aim of conducting research on the ethics of AI and developing foreign economic cooperation in the field.

- On December 22, the Scientific Research Technological Center for Neurotechnologies of the Southern Federal University opened two laboratories—one to study the "biology of synapses" and the other for neuroimaging. According to the press release, the laboratories will utilize artificial intelligence and computer vision technologies.

Sources: "About the program," Priority-2030, accessed Dec. 12, 2021, https://priority2030.ru
/en/about/; "A virtual nuclear reactor and artificial intelligence in transport: Russian
universities develop leading innovation projects," Market Research Telecast, Jan. 14, 2022,
https://marketresearchtelecast.com/a-virtual-nuclear-reactor-and-artificial-intelligence-in-
transport-russian-universities-develop-leading-innovation-projects/234374/; "Unmanned
vehicles and a brain for a robot: Universities participating in Priority 2030 are developing
unique technologies" [Беспилотный транспорт и мозг для робота: вузы — участники
«Приоритета 2030» разрабатывают уникальные технологии], Russian Ministry of Science
and Higher Education, Dec. 23, 2021, https://minobrnauki.gov.ru/press-
center/news/?ELEMENT_ID=45345; "SFedU opened two laboratories in the center of
neurotechnologies" [В ЮФУ открылись две лаборатории в центре нейротехнологий],
SFed.ru, Dec. 24, 2021, https://sfedu.ru/press-center/news/67485.

14. Student survey shows high interest in AI but low satisfaction with educational offerings

A recent VK Education survey reportedly conducted among 1,236 subjects shows that 72 percent of Russian university students are interested in internships in the field of artificial intelligence. Of those surveyed, 51.3 percent said they are further exploring the field of artificial intelligence. However, according to the survey, only 14 percent of respondents are satisfied with university AI programs, listing what they see as the primary shortcomings: outdated and irrelevant information (39.8%); lack of teachers who are well versed in the subject (37.5%); underrepresented area of AI in general (36.6%); lack of necessary technical equipment (34.5%); lack of master classes and lectures from practicing AI companies (26%); and a weak theoretical base (20.9%). These findings imply that while there may be considerable interest in AI among students, there remain widespread obstacles in addressing the demand for AI training at the university level.

Sources: "VK Education survey: 72% of Russian students are interested in internships in the field of
artificial intelligence" [Опрос «VK Образования»: 72% российских студентов интересуются
стажировками в сфере искусственного интеллекта], CNews, Dec. 27, 2021,
https://www.cnews.ru/news/line/2021-12-27_opros_vk_obrazovaniya_72.

15. AI competitions and hackathons held recently

- A hackathon was held December 17-19, 2021, in which participants developed digital innovations related to transport and travel via Moscow's river. The hackathon was organized by SberTroika.

- A machine learning and natural language processing (NLP) hackathon was held December 23-24, 2021. It was organized by Skolkovo, the National Technical Initiative (NTI) Fund, the Agency for Strategic Initiatives, and UpGreat. Three finalists were each awarded a prize of 1 million rubles.

- According to a December 28 CNews article, 2,300 Russian students in grades 7-11 passed the qualifying phase of an AI olympiad organized by the Academy of Artificial Intelligence for Schoolchildren of Sberbank's charitable foundation "Contribution to the Future" and the National Technology Olympiad. The finalists of the AI olympiad will be determined in January 2022, and the finals of the competition will be held in the spring of 2022.

- The qualifying phase of the iVision hackathon, which focuses on developments in computer vision and data analysis to predict user behavior, was held January 13-16. The final phase of the competition, which is organized by industry partner Citilink, will take place January 29-30 in Petrozavodsk.

Sources: "Moscow river transport innovation" [Инновации речного транспорта Москвы], CberTroika, accessed Jan. 14, 2022, https://hakaton21.sbertroika.ru/#up; "More than 2,000 schoolchildren passed the qualifying stage of the Olympiad in artificial intelligence" [Более 2000 школьников прошли отборочный этап Олимпиады по искусственному интеллекту], CNews, Dec. 28, 2021, https://www.cnews.ru/news/line/2021-12-28_bolee_2000_shkolnikov _proshli; "About the Competition" [о конкурсе], UpGreat One, accessed Jan. 14, 2022, https://ai.upgreat.one/; "iVision 2.0—Citilink artificial intelligence hackathon" [iVision 2.0 — хакатон «Ситилинка» по искусственному интеллекту], Berza, Dec. 30, 2021, https://berza.ru/ivision-2-0-hakaton/.

International Collaboration

16. Russian foreign minister Lavrov makes speech on AI ethics

Sergey Lavrov recently made a speech highlighting Russia's success in promoting the ethics of artificial intelligence. He noted the work of the Russian Committee on the Ethics of Artificial Intelligence, established under Russia's National Commission for UNESCO. This is the first such advisory body in the world. Lavrov noted that Russian experts were involved in UNESCO's development of recommendations for ethical use of AI. Russia has subsequently "created a national code of ethics in this area that is generally consonant with [the recommendations]." The Russian commission is now working with "Sberbank to establish a UNESCO Prize in the field of science and ethics of artificial intelligence."

Source: "Lavrov notes Russia's success in advancing AI Ethics in UNESCO" (Лавров отметил успехи России в продвижении этики искусственного интеллекта в ЮНЕСКО), TASS, Dec. 22, 2021, https://tass.ru/obschestvo/13273673.

17. Russian organizations expand AI joint ventures with South Korea, China, and others

In recent weeks, several Russian technology organizations have announced a range of joint ventures with foreign partners in the AI field. In addition to the ubiquitous Huawei, these partnerships involve Korean academic and business associations and the international tech company Mircod.

The Moscow Innovation Agency, the Korean Association of Innobiz, and the Korea Institute of Startup and Entrepreneurship recently signed a memorandum to work together to promote high-tech projects in Moscow and Seoul. The partners will focus on pilot testing of innovative projects and the Moscow Accelerator—a project for scaling up innovative solutions in promising industries in partnership with corporations. The pilot testing program is already underway, with several rounds of pitch sessions conducted by the Moscow Innovation Agency and Innobiz. During these sessions, Korean and Russian companies presented their projects in various fields in order to find test sites. South Korean representatives were particularly interested in Moscow-based products with artificial intelligence technology. The pilot testing program for innovative solutions is implemented by the Moscow Innovation Agency. It allows developers to test their projects in the urban environment, evaluate the prospects and

competitiveness of their developments, and, if necessary, improve them based on feedback from consumers. The Moscow Innovation Agency was created by the city's Department of Entrepreneurship and Innovative Development. It brings together representatives of government and business, as well as technology companies to jointly solve the problems of creating, testing, and implementing innovative solutions in the capital. The Korea Institute of Startup and Entrepreneurship is South Korea's leading organization in promoting technology companies, including international markets.

A second cooperative project involves Russia's Tsifra group and Huawei, which have signed an agreement on cooperation in the field of robotization and building 5G networks at mining and industrial facilities in Russia and the CIS. The purpose of the partnership agreement is to create a comprehensive technological base for the mining industry that over time will make it possible to reduce the cost of manufacturing autonomous industrial robots, make them more accessible to industrial enterprises, and expand their functionality through the use of 5G networks. The synergy between the two companies enhances the use of 5GToB technologies and accelerates digital transformation in the mining industry through the use of 5G technologies and Huawei cloud services that will allow for autonomously driven trucks in open pit mining environments. In particular, the use of fifth-generation networks will make it possible to transfer part of the onboard computing to enterprise servers, which will lead to a reduction in the cost of autonomous robotic systems. The "Intellectual quarry" concept is focused on creating an infrastructure for unmanned mining, which implements the technological cycle of loading and transporting solid minerals in an autonomous mode. The first project was implemented in partnership with SUEK, which, together with the Huawei team, successfully robotized dump trucks. The success of this project led to the formation of the strategic partnership and the creation of a comprehensive proposal for mining companies. The Tsifra group of companies is a developer of software products to improve the operational efficiency of the main production processes. The company is the leader of the Russian market of technologies for the digitalization of industry using the internet of things, machine learning, and artificial intelligence, and is a promising partner in the field of digital transformation at the international level. Tsifra has experience in developing information systems and implementing complex integrated solutions for various tasks in the mining, oil and gas, and chemical industries, as well as for robotic industrial transport.

A third cooperative project involves the VEB Ventures venture fund, which is part of the VEB.RF group. VEB Ventures has acquired a stake in the international technology company Mircod, a developer of devices in the field of the medical internet of things and in biotechnological equipment. Funding from VEB Ventures will be used to increase the staff of developers, as well as to strengthen the company's positions in Western markets. Mircod currently has offices in the US, Latvia, and Russia. Its primary products include devices for remote health monitoring, biotechnological equipment for cell and gene therapy, and automation of complex medical and

pharmaceutical laboratories. The company provides services for complex prototyping of IoT products, from initial drawings to mass production in all possible areas of IoT application. Mircod's clients include a number of large international companies such as Samsung and Orgenesis, with the bulk of its revenue coming from foreign sales. The project team also plans to launch a platform for automating the development process, which can be used by both large technology companies and ordinary users with or without experience.

Sources: "Moscow and Seoul combining efforts in developing high-technology startups" (Москва и Сеул объединят усилия в развитии высокотехнологичных стартапов), CNews, Dec. 27, 2021, https://innovations.cnews.ru/news/line/2021-12-27_moskva_i_seul_obedinyat_ usiliya; "Tsifra and Huawei Agree to develop technologies for autonomous robotic complexes" («Цифра» и Huawei договорились о разработке технологий для автономных роботизированных комплексов), AKM, Dec. 21, 2021, https://www.akm.ru/press/ tsifra_i_huawei_dogovorilis_o_razrabotke_tekhnologiy_dlya_avtonomnykh_robotizirovannykh_k ompleksov_s/; "Veb Ventures invests 400 mln rubles in Mircod biotech equipment developer" (VEB Ventures инвестировал 400 млн рублей в разработчика биотехнологического оборудования Mircod), CNews, Dec. 29, 2021, https://www.cnews.ru/news/line/2021-12-29_veb_ventures_investiroval_400_mln.

18. Russian robotics club franchise network for children expands to South Asia

Robbo Club, an international franchising network of children's clubs, has announced its entry into the South Asian market, with the first online club in the region opening in Bangladesh. Several offline clubs are expected to open in Dhaka in 2022, once coronavirus restrictions are lifted. The clubs function as an online classroom for students to learn programming, robotics, 3D modeling, and circuit design. The initial network will be located at a network of private English schools. The franchise plans to integrate the Robbo programs with its school network in order to develop a comprehensive business education in the country. The online school is currently at the launch stage, with teachers being trained by Robbo's international team. Once the training is complete, more than a hundred children from Bangladesh are expected to enroll to study robotics, programming, 3D modeling, and 3D printing, as well as internet of things technologies, using Robbo's methodology and equipment.

The Robbo team sees great potential for additional development in South Asia, because the level of technical education in many countries in the region is still extremely low while Asian IT markets are developing rapidly. As the region's educational system adapts to change, commercial coding services for children can be scaled up from more technologically advanced countries.

Source: "Robbo club enters the South Asia" («Роббо клуб» выходит на рынок Южной Азии), CNews, Dec. 24, 2021, https://www.cnews.ru/news/line/2021-12-24_robbo_klub_vyhodit_na_rynok.

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