



A biweekly newsletter on AI and autonomy developments in Russia

CNA Russia Studies Program

HIGHLIGHTS OF ISSUE 36

- The Russian government continues to combat the effect of sanctions on AI innovation and development, but numerous plans for AI implementation have already been postponed or canceled.
- The Russian military continues to be bullish on AI and autonomy possibilities.
- Russian domestic producers have expanded their industrial base and capacity to achieve some critical import substitutions in certain Russian companies.
- Federal registration has been drafted to prevent the exit of IT professionals from Russia without approval from the Federal Security Service (FSB).
- Some Russian technology companies feel the negative impact of Western sanctions, while others continue to remain optimistic about Russian ability despite the heavy sanctions.

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GOVERNANCE AND LEGISLATION

RUSSIAN GOVERNMENT CONTINUES TO DEVELOP MEASURES TO ADAPT TO SANCTIONS

On March 31, TASS reported that the Russian government has continued to hold meetings to discuss anti-crisis measures for the Russian economy in the environment of sanctions pressure. Among these are efforts to “support the financial and economic condition of market participants developing Russian IT solutions and solutions using domestic information technologies, as well as to ensure the planned dynamics of the introduction of Russian software and the required level of import independence.”

Russian news wires also reported that in April the Russian government will be working to finalize plans to support further development of the Russian radio and microelectronics industry, particularly for the civilian market. These plans will include concrete goals and production targets for specific products. The development of these plans follows a series of “strategic sessions” held by Deputy Prime Ministers of Russia Dmitry Chernyshenko and Yuriy Borisov, which, according to reports, focused on six goals: “domestic manufacturers should be represented in all areas of the domestic market and produce products on the Russian component base; Russian companies should be among the top 5 world manufacturers of microelectronics, and the volume of exports of products in the future should exceed sales on the domestic market; unique competencies and technological stages within the framework of international cooperation should be concentrated in Russia; as well as a threefold increase in the share of the electronics industry in GDP.” Borisov was quoted as saying that, despite sanctions imposed on the industry and the ban on imports of microelectronics from Taiwan, he thinks the industry “has a good growth potential” and he will push for “unprecedented measures of state support” in the short term as well as from a strategic planning perspective.

Finally, the Russian government reportedly has allowed the practice of parallel imports, which would allow the import of goods into Russia without the permission of the intellectual property owners.

Sources: “Government to discuss new anti-crisis measures” [Кабмин обсудит новые антикризисные меры], TASS, Mar. 31, 2022, <https://tass.ru/ekonomika/14234785>; “In April, the government will receive a plan of federal projects in support of radioelectronics” [В апреле правительство получит план федеральных проектов по поддержке радиоэлектроники], Interfax, Mar. 21, 2022, <https://www.interfax.ru/business/830275>; “Russia legalizes parallel import” [В России легализован параллельный импорт], Apr. 1, 2022, <https://d-russia.ru/v-rossii-legalizovan-parallelnyj-import.html>.

MOSCOW TO CONTINUE DIGITIZATION EFFORTS, MAYOR SAYS

Moscow Mayor Sergey Sobyanin was quoted by TASS as saying on March 31 that, despite stresses on the economy and Western sanctions, there are no plans to cut investments in information technologies in healthcare, education, transportation, or government services.

Instead, the Moscow government plans additional support for the industry, including through loans as well as grants for projects that involve import substitution. For context, Moscow's "regulatory sandbox" legal regime allows for extensive experimentation with the testing and development of new digital technologies, including AI-enabled ones. Moscow also hosts an "innovation cluster" for small and medium-sized businesses.

Source: "Moscow authorities do not plan to cut or halt IT development programs" [Власти Москвы не планируют сокращать или останавливать программы развития ИТ], TASS, Mar. 31, 2022, <https://tass.ru/ekonomika/14242095>.

PLANS TO INTRODUCE DIGITAL TECHNOLOGIES TO RUSSIAN PRISONS HALTED

On April 1, *Kommersant* reported that, as a consequence of Western sanctions on technologies, efforts to introduce "smart" monitoring and other digital technologies across the Russian prison system have been delayed. The effort was also set to include the introduction by 2023 of electronic documents and electronic prisoner profiles in 380 prisons as well as the unification of all technologies into one system. Similar impacts are likely to be felt across the Russian government as a whole, thus significantly complicating Russia's ambitious efforts to digitize government services. Reports suggest that, in addition to issues of funding and access to technologies, implementation of the efforts is challenged by the absence of adequately qualified personnel.

Source: Tatiana Isakova and Nikita Korolyov, "Цифре дали УДО" [Digitization is on probation], *Kommersant*, Apr. 1, 2022, <https://www.kommersant.ru/doc/5284034>.

MILITARY AND SECURITY

RUSSIAN MILITARY CONTINUES DRILLS IN RECONNAISSANCE FIRE/STRIKE COMPLEXES

The Russian military continues to exercise its "reconnaissance-fire/reconnaissance-strike complexes," which refers to a "grouping of various sensor and strike platforms, with integrated information sharing networks." As part of a drill in the Eastern Military District, personnel based on the Kuril Islands practiced artillery firing skills and antitank missile systems, using Orlan-10 and Eleron-3 ISR drones to adjust fire and to assess the battlefield damage. This exercise also involved defending against adversary combat drones, a key challenge faced by Russian forces in Ukraine where Ukrainian military drones continue their attacks on the Russian

military forces. In recent weeks we have seen an increasing use of drones by Russian forces in Ukraine to assist in targeting, but we do not know the level of integration or effectiveness of these operations in comparison with the conceptual and doctrinal reconnaissance fire and strike complexes discussed in Russian military writings.

Sources: "Russian military commenced exercises with the Tagil missile formation that are equipped with 'Yars'" [В России начались учения с Тагильским ракетным соединением, оснащённым "Ярсами"], Tass.ru, Apr. 1, 2022, <https://tass.ru/armiya-i-opk/14250813>; "Eastern Military District personnel practice anti-tank fires on Kurill Islands" [Военные ВВО отрабатывают на Курилах стрельбу из противотанковых ракетных комплексов], Tass.ru, Apr. 1, 2022, <https://tass.ru/armiya-i-opk/14250819>; "Bilateral Air Defense Forces battalion exercises began in Primorye" [В Приморье начались двусторонние батальонные учения ВВО], Tass.ru, Apr. 1, 2022, <https://tass.ru/armiya-i-opk/14249463>; Jeffrey Edmonds and Samuel Bendett, *Russian Military Autonomy in a Ukraine Conflict*, CNA, Feb. 2022, https://www.cna.org/CNA_files/PDF/Russian-Military-Autonomy-in-a-Ukraine-Conflict.pdf.

SUKHOI IS BULLISH ON THE CHECKMATE STEALTH AIRCRAFT

Russia's Sukhoi Aircraft Company (part of Rostec) has obtained an official patent for the Checkmate single-engine light tactical aircraft. Checkmate debuted at the Russian MAKS-2021 air show and was subsequently presented at the 2021 Dubai Airshow in the UAE, a prominent global military expo. The Russian government is hoping to find an export niche for Checkmate with nations that cannot afford more advanced US, European, or Chinese stealth aircraft but still desire advanced air forces. According to Sukhoi, Checkmate incorporates advanced technologies and ideas, including open architecture adjustable to customer requirements and artificial intelligence features. Sukhoi also claims that Checkmate's development considered and corrected the alleged weaknesses of the American Lockheed F-117A Nighthawk stealth aircraft, claiming that the US plane had poor takeoff and landing characteristics, and insufficient stability and controllability in flight. According to the patent, Sukhoi purportedly achieved better stability and controllability without compromising the aircraft's radar invisibility characteristics. Prior to the February 24, 2022, Russian invasion of Ukraine, Checkmate's maiden flight was scheduled for 2023, with serial production to begin in 2025. At this point, it is unclear how global sanctions imposed on Russia will impact the development, production, and planned export of the aircraft.

Sources: "Sukhoi company obtains patent for new single-engine fighter Checkmate," Tass.com, Mar. 24, 2022, <https://tass.com/defense/1426719>; "Checkmate fighter's designers took into account Lockheed F-117A's weaknesses — patent," Tass.com, Mar. 24, 2022, <https://tass.com/defense/1426739>.

RUSSIAN MILITARY DOUBLES DOWN ON CLAIMS TO DEVELOP MILITARY AI AND ROBOTIC SYSTEMS

On April 4, 2022, Deputy Prime Minister Yuri Borisov met with President Vladimir Putin, where they discussed the next State Armaments Program (SAP). According to the Kremlin, the next SAP will focus on "non-traditional" weapon systems, including directed-energy and kinetic weapons, as well as artificial intelligence control systems and robotics. Borisov informed

the Russian president that work on preparing the initial data for the next SAP has been completed and will be submitted for approval in 2023. Borisov also reported that the Russian government is working on import substitution, and that despite the global sanctions, the implementation of the state defense orders remains a top priority for the Russian defense industry.

Borisov's claim about the development of AI and robotic systems is in line with the earlier trajectory of Russian high-tech military developments. CNA's May 2021 report *AI and Autonomy in Russia* discussed the development of different unmanned, autonomous, and robotic aerial, ground, and maritime systems, along with military AI systems for C4ISR and data analysis. Some of these systems, such as military UAVs and demining UGVs, are already operating in Ukraine, and the Russian military will likely attempt to use their experience in Ukraine for future designs and platforms. Many Russian defense industries and R&D institutions are, at least outwardly, committed to the development of additional systems; funding and logistics were already allocated before the Ukraine invasion.

Prior to Russia's invasion of Ukraine, Russian defense companies were able to get access to imported high-tech goods for both the military and civilian spheres. The current sanctions are causing an unprecedented effect on the Russian IT and high-tech industry in general and will certainly impact Russia's ambitious robotic and AI projects. While the overall effect on development is difficult to estimate at this point, it is worth noting that the Russian government continues to place an emphasis on such systems for its future warfighting capabilities.

Sources: "Borisov said that the new SAP will be aimed at creating non-traditional weapons" [Борисов заявил, что новая ГПВ будет направлена на создание нетрадиционных видов оружия], Tass.ru, Apr. 4, 2022, <https://tass.ru/armiya-i-opk/14273793>; CNA Russia Studies Program, *AI and Autonomy in Russia*, CNA, May 2021, https://www.cna.org/CNA_files/centers/CNA/sppp/rsp/russia-ai/Russia-Artificial-Intelligence-Autonomy-Putin-Military.pdf; "Exclusive: Ukraine has started using Clearview AI's facial recognition during war," Reuters.com, Mar. 14, 2022, <https://www.reuters.com/technology/exclusive-ukraine-has-started-using-clearview-ais-facial-recognition-during-war-2022-03-13/>; Stephen Shankland, "Ukraine Is Fighting Russia With Drones and Rewriting the Rules of War," CNet.com, Apr. 9, 2022, <https://www.cnet.com/news/ukraine-is-fighting-russia-with-drones-and-rewriting-the-rules-of-war/>.

VPK PUBLICATION TOUTS FUTURE SUCCESS OF KRONSTADT DRONE LINEUP

Russia's VPK (*Voенно Promyshlenny Kurier*), one of the key open-source military analytical journals in the country, published an article outlining future advantages of domestic military drones that are currently in development by the Kronstadt enterprise. Kronstadt claims to domestically manufacture all key components for its growing military drone lineup. This is a significant claim, given current sanctions against Russia that impact the country's high-tech industries, including military-industrial enterprises. While the VPK article grudgingly recognizes the success of the Turkish-made Bayraktar TB2 drones that Ukrainian forces continue to use against Russian forces, it nonetheless expresses hope that Kronstadt drones will eventually become the nation's standard bearers in the ongoing global drone race.

The article describes two concept UAVs that Kronstadt unveiled earlier: Grom and Molniya. According to the company design, Grom—a loyal-wingman UAV that looks like the Kratos Defense XQ-58A Valkyrie—operates several hundred kilometers ahead of the main aviation group. It can release a swarm of Molniya mini drones designed to attack and destroy adversary air defense systems, while controlling them in an automated mode, ahead of an aerospace attack which can include Su-34, Su-35, or Su-57 bombers. Another Kronstadt development highlighted by VPK is miniature unmanned aerial vehicles that are part of the “future soldier” equipment initiative. Such nano- and micro-drones were supposedly tested in manual and semi-automatic modes, testing their ability to monitor the environment to determine the location of people and objects. In line with Kronstadt’s claim about successful import-substitution, VPK sites the company’s ongoing plans to develop ground and onboard equipment such as controllers, autopilot, artificial intelligence systems, and specialized target loads.

The VPK narrative concentrates on drones still in development—not those already flying in combat, such as the Orion MALE combat UAV. As a result, the article comes across as a bit disconnected from the current combat environment and requirements, given the ongoing drone operations between Russian and Ukrainian military UAVs. It is likely that Kronstadt will be incorporating data and analysis from Russian drone performance into its future TTPs, but the eventual fielding of UAVs with such Ukraine-based lessons is still years away. Kronstadt will also have to defend its claim that its manufacturing is indeed sanctions-proof, something that is probably on the mind of every defense-industrial enterprise across the country.

Sources: Vitaly Vikont, “UAVs for tomorrow” [Беспилотники для завтра], VPK-news.ru, Mar. 21, 2022, <https://vpk-news.ru/articles/66282>; Garrett Reim, “US Air Force ‘commits’ to fielding loyal wingman UAVs,” FlightGlobal.com, Dec. 10, 2021, <https://www.flightglobal.com/military-uavs/us-air-force-commits-to-fielding-loyal-wingman-uavs/146802.article>; “Britain imposes sanctions on Russian drone manufacturer Kronstadt,” Indiatoday.in, Mar. 26, 2022, <https://www.indiatoday.in/world/russia-ukraine-war/story/britain-impose-sanction-on-russian-drone-manufacturer-1929797-2022-03-26>; “Kronstadt CEO: the Turkish Bayraktar would not have passed state tests in Russia” [Глава компании “Кронштадт”: турецкий Bayraktar не прошел бы госиспытания в России], Interfax.ru, Aug. 24, 2021, <https://www.interfax.ru/interview/786015>; “Designer Nikolai Dolzhenkov spoke about the drones of the future” [Конструктор Николай Долженков рассказал о беспилотниках будущего], VPK-name.ru, Mar. 18, 2020, https://vpk.name/news/385215_konstruktor_nikolai_dolzhenkov_rasskazal_o_bespilotnikah_budushego.html.

MARKETS AND PRIVATE SECTOR

IMPORT SUBSTITUTION SEES SUCCESS IN A SUBSET OF RUSSIAN COMPANIES

Import substitution has forced Russian domestic producers to expand and further develop industrial bases at home. SIBUR (Siberian-Ural Petrochemical Company) is a major user of industrial-grade “Internet of Things” equipment and systems. Commenting on recent economic dislocations, the company announced that its own internal “Internet of Things” complex used in

industrial production settings is now “100% Russian-made technology.” The system is autonomous, with no imported equipment or software, and is cited as a cost-saving and efficiency measure.

Another import substitution success has been the big data platform “Linkage Navigator.” The platform is an automated customer service processor for contact centers in large companies, which uses AI to efficiently assess needs and priorities at a quick pace. According to the company, the service has seen considerable growth, with its “agent and executive recommendation platform increasing in sales by approximately 1.5 times, while still reducing customer complaints.” Konstantin Kozerog, the president of the WestLink corporate group, which owns Linkage Navigator, states that the platform is a major success of import substitution. It is listed on Russia’s “Unified Register of Russian Computer Programs and Databases” and is well placed to be an important element of Russia’s broader import substitution goals. According to Kozerog, “Our developers have always been against Microsoft, Oracle and other products on an ideological level. Even on workstations in our contact centers there is no Windows.”

Sources: “SIBUR develops developments for import substitution in the field of industrial Internet of Things” [СИБУР развивает разработки для импортозамещения в области промышленного интернета вещей], CNews, Apr. 1, 2022, https://www.cnews.ru/news/line/2022-04-01_sibur_razvivaet_razrabotki; “Intelligent system Linkage Navigator increases sales by 1.5 times” [Интеллектуальная система Linkage Navigator повышает продажи в 1,5 раза], TASS, Mar. 29, 2022, <https://tass.ru/novosti-partnerov/14216563>.

“PAY AT A GLANCE” SERVICE INTRODUCED BY SBERBANK NOW USED BY ALMOST ONE MILLION USERS

Sberbank’s new biometric system for automated payment is being adopted by customers at a rapidly growing rate. The company reports that “almost one million people” have now adopted the technology, which is an increase of 50 percent from the prior month. The system works at major supermarkets and other stores, and is connected to the customer’s Sber cell phone mobile app. The company expects use of the system to grow even further in the coming months.

Source: “Russians began to pay for purchases more often through the service ‘Payment at a glance’” [Россияне стали чаще оплачивать покупки через сервис «Оплата одним взглядом»], CNews, Mar. 31, 2022, https://www.cnews.ru/news/line/2022-03-31_rossiyane_stali_chashche_oplachivat.

AI USED IN DEVELOPING NEW ANTIMICROBIAL SUBSTANCES BY RUSSIAN SCIENTISTS

Russian researchers have deployed an AI algorithm to create strong antibacterial peptide compounds. According to the Russian Science Foundation, the project used neural networks at Stavropol State Medical University to identify the new, synthetic peptides. According to Albert Bolatchiev, one of the researchers on the project, this is a particularly promising development in antibacterial science: “Microorganisms have no protection against antimicrobial peptides, which means they are a promising basis for new-generation drugs. At the same time, they are expensive

to synthesize, and they are also quickly destroyed by body enzymes. We decided to try to create completely new peptides similar to natural ones, but more stable and, perhaps, more effective.”

Source: “In Russia, with the help of AI, substances with strong antibacterial activity were obtained” [В России с помощью ИИ получили вещества с сильной антибактериальной активностью], TASS, Mar. 29, 2022, <https://nauka.tass.ru/nauka/14212133>.

NEW MULTI-VENDOR TESTING LABORATORY FOR RPA PLATFORMS OPENED

The Russian IT service provider “T1 Integration” has opened a multi-vendor laboratory of RPA platforms, which will become a single-entry point for customers of robotics solutions.

The company cooperates with domestic and foreign developers of RPA platforms, continuing to develop a partner network. RPA is a business process automation technology, a program that allows you to simulate user actions, including using artificial intelligence. Foreign partners of the integrator include UiPath and Blue Prism, while domestic vendors include Primo RPA, Sherpa RPA, Pix RPA, Robin, and Roomy Bots. According to the company, the laboratory will become a “single window” for clients with a request for software robotization of processes.

The new laboratory will focus on an integrated approach to solving customer problems: provide advice on RPA technologies, help develop a company robotization strategy, select specific processes for RPA, determine the most relevant platform, perform implementation, conduct training, and provide technical support for a ready-made solution. The head of the RPA laboratory at T1 Integration, Vyacheslav Stepanov, noted:

A significant part of the companies are still at the stage of evaluating the applicability of the technology for their organization, however, we are seeing a significant acceleration of this process thanks to an increasing number of open successful cases. Today, the trend is the robotization of complex, important processes in which many systems and steps are involved. For example, T1 Integration specialists robotized the process of issuing bank guarantees, which made it possible to reduce the bank's response time to a client's request from 48 hours to 1 minute and reduce the processing time for one application from 40 to 15 minutes.

Source: “T1 Integration’ opened a multi-vendor laboratory of software robots” [«T1 интеграция» открыла мультивендорную лабораторию программных роботов], CNews, Mar. 30, 2022, https://www.cnews.ru/news/line/2022-03-30_t1_integratsiya_otkryla_multivendornuyu.

NEW COOPERATIVE RUSSIAN-CHINESE CREDIT AND BANK CARDS WILL USE AI SOFTWARE

Credit and bank cards that are “co-badged” between Mir and UnionPay—Russian and Chinese payment system companies, respectively—will use a new AI-based software to ensure the ease of recognizing and accepting data across platforms and to easily scan in

cards from different banks and payment services providers. The software, “Smart Engines,” relies on ultralight neural networks to correlate data taken as a digital image from 21 different banking and payment systems. The system uses computer vision AI to collect information and coordinate with Mir and UnionPay’s systems. The Mir-UnionPay co-badged card itself is a joint card of the two payment systems, which is mutually serviced by payment infrastructures on both sides. In Russia, it works like a Mir card, while abroad, all transactions are carried out through the Chinese partner payment system UnionPay International. The card will work outside of Russia automatically; the holder does not need to take any additional steps to activate the card in another country. Integrating Smart Engines technology into the system will allow Russians abroad to quickly connect foreign cards to the joint co-badged system while also connecting domestic payment cards.

Source: “Smart Engines recognition technologies will allow users to enter Mir-UnionPay card data in a mobile bank” [Технологии распознавания Smart Engines позволят пользователям вводить данные карт «Мир»-UnionPay в мобильном банке], CNews, Mar. 22, 2022, https://www.cnews.ru/news/line/2022-03-22_tehnologii_raspoznavaniya.

GOVERNMENT FUNDS TO SUPPORT EXPANSION OF LOMONOSOV SUPERCOMPUTER

The Russian government announced that 2.4 billion rubles taken from Moscow State University’s reserve fund will be used to expand the computing capacity of the new Lomonosov supercomputer. The supercomputer, housed at MSU, is primarily used to further AI research and applications. This is the second tranche of state funding in quick succession for expanding the Lomonosov supercomputer; a previous bloc of 1.8 billion rubles was allocated in December 2021. The Lomonosov system is not considered a competitive supercomputer globally, and this expansion process is designed to bring it up to speed with other domestic supercomputers, including the Lomonosov-2, which is also housed at MSU.

Source: “The government allocated 2.4 billion rubles to expand the computing potential of the Lomonosov supercomputer” [Правительство выделило 2,4 млрд рублей на расширение вычислительного потенциала суперкомпьютера «Ломоносов»], DRussia, Apr. 1, 2022, <https://d-russia.ru/pravitelstvo-vydelilo-2-4-mlrd-rublej-na-rasshirenje-vychislitelnogo-potenciala-superkompjutera-lomonosov.html>.

DIGITAL SOVEREIGNTY GIVEN RENEWED FOCUS BY RUSSIAN CORPORATE GROUP

The ‘Tsifra’ group of Russian companies has announced that it is preparing a list of supportive measures for developing Russian industrial software, supporting digital sovereignty, and aligning with import substitution goals. The group presented an outline of this support initiatives to the Russian Ministry of Digital Development. According to local reports, “These initiatives are aimed at minimizing the dependence of domestic companies on foreign information systems, supporting leading developers of industrial and engineering software, as well as developing demand in key industries where the share of Western industrial software, mainly North American production, has traditionally been high.” This support comes with the goal

of a mutual arrangement with the government. According to Tsifra's managing director, Pavel Rastopshin, the corporate group asked for relevant aid and legal support: "Among them is the introduction of a moratorium on increasing the rates of existing taxes, insurance premiums, excises and mandatory payments to the budgets of various levels."

Tsifra general director Igor Bogachev emphasized the need for rapid import substitution, especially in regard to Western software. He noted:

Today it is important to ensure the possibility of systematic introduction of domestic information systems into the work of enterprises. Otherwise, further dependence on Western software will entail catastrophic risks. We are not only talking about the economic risks from stopping a business or production. These are the risks of environmental disasters or large-scale accidents. It is important to understand that due to the termination of technical support for foreign software at many industrial enterprises, monitoring and production management systems may stop working. And this includes quality control, and monitoring the condition of equipment, and in many cases, the operation of emergency response systems. That is why today it is extremely important to simplify the mechanism for providing support measures as soon as possible.

Source: "Tsifra offered tools to ensure Russia's digital sovereignty" [«Цифра» предложила инструменты обеспечения цифрового суверенитета России], CNews, Mar. 22, 2022, https://www.cnews.ru/news/line/2022-03-22_tsifra_predlozhila_instrumenty.

HUMAN CAPITAL

DRAFT RESOLUTION TO CURB IT BRAIN DRAIN

According to a March 25 CNews article, oligarch Yevgeny Prigozhin has developed a draft federal law to regulate the departure of IT specialists from Russia. According to the regulation, if a specialist wants to leave Russia for employment in a foreign company, he or she must obtain permission from the Federal Security Service (FSB). Alternatively, if they just want to leave the country in general, they will have to notify the Border Guard Service a month in advance. Failure to comply with these requirements is punishable by a fine of 100,000 rubles (US\$1,187), and restrictions on leaving the country.

The draft resolution was met with criticism from the Ministry of Digital Development, the Committee on Information Policy, and Deputy Prime Minister Dmitry Chernyshenko, who oversees the IT industry. These critics fear that restrictions and prohibitions on IT personnel could lead to an increase in brain drain, and prefer trying to create conditions that attract and retain personnel naturally.

Source: "A draft law has been developed restricting the exit of IT specialists from Russia. Mintsifra against" [Разработан законопроект, ограничивающий выезд IT-специалистов из России. Минцифры против], CNews, Mar. 25, 2022, https://www.cnews.ru/news/top/2022-03-25_kompaniya_biznesmena_evgeniya.

UNIVERSITY AI RESEARCH DEVELOPMENTS

There were several updates to Russian university AI research during this reporting period.

They include the following:

- According to a March 30 CNews article, scientists from the Moscow Polytechnic University have created an autonomous control system to operate cargo trucks. This AI system will save 10-25 percent of the costs of operating these vehicles, including fuel. The system will be implemented within five to seven years.
- A press release on the Ministry of Science and Higher Education's website reports that two notable Russian universities are working on AI research related to climate change. A team of scientists at Moscow Institute of Physics and Technology (MIPT) is working on developing a device that can accurately measure the flow of greenhouse gasses into the atmosphere. Meanwhile, scientists at the Bauman Moscow State Technical University (MSTU) have developed hyperspectral cameras which will be attached to drones in order to collect environmental data about the impact of carbon testing sites and landfills, such as the vegetation and soil types of surrounding areas.
- According to an article in the March 20 edition of *Scientific Russia*, ITMO University scientists have developed an algorithm that analyzes images from an electron microscope to describe the morphology (size, shape, and structure) of nanomaterials. This is usually done manually by organic chemists. According to the article, such an algorithm may have impacts on biomedicine and biotechnology.

Sources: "The Moscow Poly has developed a control system for unmanned trucks for long-distance transportation" [В Московском Политехе разработали систему управления беспилотными грузовиками для магистральных перевозок], CNews, Mar. 30, https://www.cnews.ru/news/line/2022-03-30_v_moskovskom_politehe_razrabotali; "Russian universities have developed their own analytical equipment for carbon test sites and farms" [Российские вузы разработали собственное аналитическое оборудование для карбоновых полигонов и ферм], Ministry of Science and Higher Education, Mar. 31, 2022, https://minobrnauki.gov.ru/press-center/news/?ELEMENT_ID=49289; "ITMO Scientists Have Developed a Method for Digitalization of Nanomaterials for Artificial Intelligence Algorithms" [Ученые Университета ИТМО разработали метод цифровизации наноматериалов для алгоритмов искусственного интеллекта], *Scientific Russia*, Mar. 20, 2022, <https://scientificrussia.ru/articles/ucenye-itmo-razrabotali-metod-cifrovizacii-nanomaterialov-dla-algoritmov-iskusstvennogo-intellekta>.

DIGITAL PORTFOLIO COMPETITION FOR HIGH SCHOOL STUDENTS

According to a March 30 TASS article, the National Technological Initiative (NTI) Circle Movement has created a new "Digital Portfolio Competition" for high school students.

According to the article, students can upload information about their performance in Olympiads,

project schools, competitions, online courses, and other events. These portfolios will be evaluated, and winners will receive additional points when applying to Russian universities. The competition takes into account seven areas of study: Python Programming, Complex Engineering Problem Solving, Software Robotics, Artificial Intelligence, Information Security, Project Activities, and Research Activities. The competition is open until May 30, 2022.

Sources: “The NTI circle movement launches a digital portfolio competition for applicants ‘NTO Talent’” [Кружковое движение НТИ запускает конкурс цифровых портфолио для абитуриентов “Талант НТО”], TASS, Mar. 30, 2022, https://tass.ru/nacionalnye-proekty/14235019?utm_source=google.com&utm_medium=organic&utm_campaign=google.com&utm_referrer=google.com.

FEFU AND MGPU SIGN COOPERATION AGREEMENT

According to a March 29 press release, the Far Eastern Federal University (FEFU) and Moscow City Pedagogical University (MGPU) have signed an agreement to collaborate in three areas. First, they will jointly train teachers and develop technological entrepreneurship in the field of education in the Far East. Secondly, MSPU will become a supporting partner of FEFU’s student AI startup program. Thirdly, MSPU will become a partner of the “School Communities” university course, implemented by the Rybakov Foundation in 38 universities of Russia and the Commonwealth of Independent States (CIS).

Source: “FEFU and Moscow State Pedagogical University will jointly develop projects for the training of teachers” [ДВФУ и МГПУ совместно будут развивать проекты для подготовки педагогов], Far East Federal University, Mar. 29, 2022, https://www.dvfu.ru/news/fefu-news/dvfu_i_mgpu_sovmestno_budut_razvivat_proekty_dlya_podgotovki_pedagogov/.

SKEPTICISM AROUND AI IN MEDICAL CARE

Two articles discussed the perception of AI platforms in the medical field. The first, from March 21, discusses a study from Tyumen University which revealed that “only 29.4 percent of respondents expressed willingness to use AI methods in the provision of medical care.” While women frequently answered that they were willing to use electronic devices such as smart watches to monitor health, they spoke out against the use of AI for drawing up treatment plans, illness prevention, and a healthy lifestyle more than men did.

A similar article, from TASS on March 24, discusses ways to increase trust in medical AI platforms. According to the article, scientists from the Immanuel Kant Baltic Federal University (IKBFU) and the Ministry of Health of the Russian Federation have suggested that making AI that is “medically explainable” is of the highest importance when earning patients’ trust. The article references a famous experiment which illustrates the problems well: “Participants were asked who they would prefer to operate on them in the case of cancer—a person with a 15% mortality rate or a robot with a 2% mortality rate, but with the proviso that no one knows how the robot works, and cannot ask questions.’ All present, except for one, preferred the man.”

Sources: “Tyumen State Medical University learned which patients are ready for artificial intelligence methods in healthcare” [В Тюменском ГМУ узнали, какие пациенты готовы к методам искусственного

интеллекта в здравоохранении], *Naked Science*, Mar. 21, 2022, <https://naked-science.ru/article/column/v-tyumenskom-gmu-uznali-kakie-patsienty-gotovy>; "IKBFU proposes a way to eliminate the problem of trust in artificial intelligence in medicine" [В БФУ предложили способ устранения проблемы доверия искусственному интеллекту в медицине], TASS, Mar. 24, 2022, <https://nauka.tass.ru/nauka/14173825>.

INTERNATIONAL COLLABORATION

DEPUTY HEAD OF MIPT LAB SPEAKS AT NVIDIA GTC CONFERENCE

On March 23, Danila Kornev, deputy head of the MIPT Neural Systems and Deep Learning Laboratory and product director of the DeepPavlov.ai project, spoke at the NVIDIA GTC conference. The international NVidia GTC conference ran until March 24, 2022, in an online format. This year's focus was on accelerated computing, deep learning, data science, digital twins, quantum computing, and data center, cloud, and edge computing. This is an international developer conference dedicated to artificial intelligence, data science, and machine learning that brings together researchers, developers, engineers, and IT professionals.

At the conference, Kornev discussed improvements in flexible scripting skills for multi-skill AI assistants and chatbots using DF Designer, a new developer tool from DeepPavlov. He started with the difficulties that need to be solved in creating multi-skilled AI assistants that can solve both end-to-end tasks, such as ordering pizza and booking a hotel, and maintaining a conversation with a user. The use of generative models such as GPT-3 may not be relevant, because they may not always avoid inconsistencies and logical fallacies. Therefore, the DeepPavlov team is developing an approach that relies on hand-crafted scripts and text generation.

The design of such skills assumes that while there is an ideal path for the user in the dialogue, users rarely follow this path during interactions with the AI assistant. The main difficulty for AI assistants is the inability to predict the next user response, so it becomes necessary to handle exceptions—answers that deviate from the ideal path. In existing solutions, the handling of exceptions in the vast majority of cases comes down to answers such as "I can't answer" followed by a change of subject. In his presentation, Kornev discussed how DeepPavlov's new tool, DF Designer, makes exception handling more flexible and natural in scripted dialogue skills using new models of speech functions and dialogue acts.

Source: "DeepPavlov.ai developments presented at NVIDIA GTC conference" [Разработки DeepPavlov.ai представлены на конференции NVIDIA GTC], MIPT press release, no date, <https://ai.mipt.ru/news/tpost/lu2f78za81-razrabotki-deeppavlovai-predstavleni-na>.

HUAWEI HUNTS FOR AI AND CLOUD EXPERTISE IN MOSCOW

Huawei is taking advantage of the departure of European telecom companies Ericsson and Nokia from the Russian market. The Chinese company is advertising numerous positions in Moscow, including a lead designer for MindSpore, an AI cloud computing collaboration

framework that provides end-to-end AI capabilities for model development, execution, and deployment. Huawei also recently advertised for a technical lead in Moscow of the CNCF and K8 projects. “CNCF” refers to the Cloud Native Computing Foundation, the latest offshoot of the non-profit but high-paying Linux Foundation. “K8” is shorthand for Kubernetes, an open-source platform originated by Google that Huawei has been infiltrating. The advertisement says, “This recruit, essentially, would look after Huawei's cloud technologies research unit. That's potentially an important area, because Huawei has identified the cloud as one of its big growth opportunities now that its smartphones and 5G businesses have been torpedoed by the US.” Huawei's appeal has grown after Germany's SAP said it would shut down all cloud operations in Russia, leaving customers there stranded. Russian cloud companies, moreover, can no longer buy server technologies they need, including chips made by Intel and AMD. Huawei comes with its own Arm-based servers.

Source: Morris Lore, “Huawei hunts for AI and cloud expertise in Moscow,” Lightreading.com, Apr. 1, 2022, <https://www.lightreading.com/aiautomation/huawei-hunts-for-ai-and-cloud-expertise-in-moscow/a/d-id/776486>.

SKOLKOVO COMPANY CREATES TECH IMPORT SUBSTITUTION HOTLINE

The Skolkovo company FIS has started a consultation hotline on import substitution of foreign software from Microsoft, Oracle, SAP, SAS, and IBM. FIS has opened a hotline for Russian companies seeking alternatives for replacement of foreign software solutions from Microsoft, Oracle, IBM, Terrasoft, SAS, and SAP. FIS says its specialists are ready to provide customer support in the process of migration and implementation of information systems that completely replace foreign products or development platforms.

According to FIS managing partner Vladimir Zalesky, “Thanks to our many years of experience in creating high-load enterprise-level systems based on the FIS Platform, we have launched a special offer for technological import substitution not only for the financial and banking sector, but also for any enterprises and structures where there is a demand for automation and improving the efficiency of business processes.”

The FIS Platform promises to replace Terrasoft, Pega, Microsoft, and Siebel development environments for corporate systems. Systems created on the basis of the FIS Platform can serve as analogs for a number of foreign solutions. Examples are SAP ERP and CRM, SAS, Microsoft Dynamics CRM, Oracle Siebel CRM, Salesforce, Creatio, BPMOnline, Terrasoft CRM, OpenText, Microsoft Sharepoint, IBM BPM, K2, and Pega Platform. These systems can be used in all key business processes—from sales management, credit cycle, and factoring, to work with overdue debts and antifraud. They can also automate project management, finance, human capital, quality, material flows, and production planning.

Source: “Резидент «Сколково» FIS открыл горячую линию по импортозамещению Microsoft, Oracle, SAP, SAS и IBM” [Резидент «Сколково» FIS открыл горячую линию по импортозамещению Microsoft, Oracle, SAP, SAS и IBM], CNews, Mar. 24, 2022, https://www.cnews.ru/news/top/2022-03-24_rossijskij_razrabotchik_otkryl.

RUSSIAN IT COMPANIES FEELING PRESSURE FROM WESTERN PARTNERS

According to Andrey Sokolov, general director of JSC Technopark of St. Petersburg, who was speaking at a roundtable entitled “Crisis as a Time for New Opportunities. Rebooting IT Russian IT,” Russian technology companies are facing undue pressure from foreign partners. For example, JSC Technopark’s foreign partners have begun to unilaterally terminate the concluded contracts, which has resulted in problems with paying salaries to employees.

He also made the argument that Russian IT specialists are being forced to leave Russia because of conditions being set by Western companies, not because of their unwillingness to work in the country. “America drives the residents of our technopark into a corner. They tell them that since they have funding contracts, they do not mind working with the Russians, but on one condition—they must work on US soil. And the guys say they don’t want to work there, but want to work here, but they are forcing us, because we have contractual obligations.”

Source: Kseniya Temnikova, “Russian IT companies complained about pressure from foreign partners” [IT-компания РФ пожаловались на давление со стороны зарубежных партнеров], *Izvestiya*, Mar. 31, 2022, <https://iz.ru/1313519/kseniiia-temnikova/it-kompanii-rf-pozhalovalis-na-davlenie-so-storony-zarubezhnykh-partnerov>.

YANDEX IS FEELING THE IMPACT OF WESTERN SANCTIONS

Yandex has dismissed more than 20 of its American employees who were involved in testing unmanned vehicles in Ann Arbor, Michigan. The company explained that this decision was a result of state authorities suspending its licenses for testing drones. The company also insisted that it was “pressured by the state” to close its autonomous vehicle testing operation in Ann Arbor. However, Michigan authorities said they have not suspended any of the company’s licenses. A total of 15 Yandex employees worked in Ann Arbor, while another 21 people are employed in the states of Arizona and Ohio as auxiliary staff for delivery robots.

According to Yandex, following the Russian invasion of Ukraine, Yandex suspended testing of autonomous vehicles in Ann Arbor, as well as its tests with six-wheeled delivery robots at several university campuses in Ohio and Arizona. Representatives of Yandex said they hoped to resume testing later. However, on March 9, Yandex announced that the Michigan Department of Transportation had informed the company of the suspension of licenses required for testing. The company also said that the delivery robots would be moved to other locations. After regulators indicated that Yandex still had valid vehicle licenses, a former employee suggested that some Yandex employees questioned Michigan’s culpability in the layoffs.

Yandex LLC has also announced that Elena Bunina, the company’s CEO, is leaving her position. Bunina has held this post since December 2017. In March 2020, she was replaced by Tigran Khudaverdyan. However, a day after his appointment, he left the post after falling under EU sanctions, leading to Bunina’s return. Artem Savinovsky has been appointed acting general director. According to media reporting, Elena Bunina has left Russia because of her opposition to the war and intends to sever her relationship with the company. There are conflicting reports on

whether this has already happened or whether she is for the moment working in the Israeli office of Yandex.

Sources: Andrew Hawkins, "Russia's Yandex lays off two dozen US-based workers from its robot and self-driving teams," *The Verge*, Mar. 29, 2022, <https://www.theverge.com/2022/3/29/23000184/yandex-layoff-michigan-autonomous-vehicle-robot-delivery>; "Yandex has laid off dozens of workers in the US" [«Яндекс» уволил десятки сотрудников в США)], *Cnews*, Mar. 30, 2022, https://www.cnews.ru/news/top/2022-03-30_yandeks_uvolil_desyatki; "Yandex CEO Elena Bunina leaving her position" [Гендиректор «Яндекса» Елена Бунина покидает пост], *Kommersant*, Apr. 2, 2022, <https://www.kommersant.ru/doc/5292824>; Omer Benjakob, "Yandex CEO Relocates to Israel Over Ukraine: 'Cannot Work for a Country at War,'" *Haaretz*, Apr. 6, 2022, <https://www.haaretz.com/israel-news/tech-news/yandex-ceo-relocates-to-israel-cannot-work-for-a-country-at-war-1.10722163>.

RUSSIAN EXPERTS BELIEVE THAT SANCTIONS WILL NOT AFFECT THE OPERATION OF VIDEO RECORDING SYSTEMS IN RUSSIA

According to the Russian Association of Manufacturers and Operators of Recognition and Photo-Video Recording Systems, sanctions against Russia imposed on the supply of electronic components, materials, and other high-tech products will not affect the operation of domestic road photo and video recording systems. The association noted that all software used for pre-processing and viewing materials from road cameras, providing data storage, monitoring the correct operation of complexes, predicting the occurrence of accidents, and preventing accidents is domestically developed and does not depend on foreign software providers. Only a few of the components for domestic photo and video recording systems, which include microprocessors and memory modules, need to be imported. However, most manufacturers and operators of photo and video recording systems have strategic stocks of such components for at least one year in advance. In addition, manufacturers have a sufficient number of already produced systems in stock to give the industry the time "necessary for maneuver and a little restructuring."

Source: "Experts said that the sanctions will not affect the operation of video recording systems in Russia" [Эксперты заявили, что санкции не повлияют на работу систем видеозаписи в России], TASS, Mar. 21, 2022, <https://tass.ru/ekonomika/14137539>.

This report, the thirty-sixth 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.

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