AI and Autonomy in Russia
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The Russia Studies Program

Abstract

This report, the twenty-ninth 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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Highlights of Issue 29

- Russian parliamentarians develop draft bill that defines and classifies robots and proposes principles of robot-human relations.

- Military looking at UAV-killing UAVs, better artillery.

- Higher School of Economics study suggests low presence of AI-enabled tech in Russian firms, but notes that the COVID-19 pandemic has accelerated adoption of AI solutions.

- Articles discuss Russia's human capital challenges, posit that current policies may drain talent from Russia's regions.

- Russian Deputy Prime Minister Chernyshenko discusses Russia's AI development in UN Internet Governance Forum speech as Russian President Vladimir Putin slams US sanctions against MIPT.

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Governance and Legal Developments

1. Russian parliament develops draft bill to regulate robot-human relations

Lawmakers in the Federation Council (upper house of Russia's parliament) have developed a draft bill that defines and classifies robots and provides principles of robot-human relations. TASS writes that the bill defines a *robot* as the "product of achievements of digital technologies, consisting of two or more component parts, controlled by means of a computer program embedded in it and capable of both performing actions pre-programmed by a person and autonomous problem solving." The proposed classification includes two categories, civilian robots and services robots (the latter category includes military), and four classes of danger levels depending on the "the degree of danger of causing harm to the interests of the individual, society and the state protected by law." It also states that robots could be guided and autonomous.

According to TASS, the draft proposes to regulate robot-human relations "based on the following principles: well-being of a person and a citizen; security of an individual, society and state; regulatory impact based on a risk-based approach; safety of robotic technologies; openness of information about robotic technologies." It also proposes a registry of robot models and components and lays out avenues of government involvement in relevant taxation issues, as well as financial and other types of support.

Finally, it explicitly bans "the circulation of robots that have the ability to independently make decisions and are able to act on the basis of an independently formulated behavioral algorithm, which are deliberately given properties to ensure their use with the use of weapons, its main parts, ammunition, explosives and explosive devices or other weapons," as well as robots that could be used to deliver weapons of mass destruction. The draft bill has been sent to the Ministry of Economic Development and the Ministry of Digital Development, Communications and Mass Media for feedback and input.

Source: "Federation Council develops draft law describing relations between robots and humans in Russia" (В Совфеде разработали законопроект, описывающий взаимоотношения робота и человека в РФ), TASS, Dec. 20, 2021, https://tass.ru/obschestvo/13243537.

2. Russian government creates a "Quantum Valley"

The Russian government reported that Russian Prime Minister Mikhail Mishustin signed an edict to create a so-called innovation science-technological center called "Quantum Valley" in the Nizhnyy Novgorod region of Russia. This center is one of many comparable innovation science-technological centers in Russia's regions first proposed in 2017. This particular center in Nizhnyy Novgorod would be publicly and privately funded and seek to develop "digital technologies, including quantum technologies and artificial intelligence." The government press release also states that "among the activities of the center are also the creation of innovative industries, intelligent transport systems, the implementation of projects in the field of high-tech personalized medicine and medical instrumentation, solution of problems in the field of ecology," and other areas.

Source: "Government approves the resolution to create an innovation science-technological center Quantum Valley" (Правительство утвердило постановление о создании ИНТЦ «Квантовая долина»), Russian government, Dec. 2, 2021, http://government.ru/news/43973/.

3. Numerous efforts to protect personal and other types of data proceed in Russia

Recent headlines in Russian media suggest numerous efforts in and discussions about protecting personal and other types of data while allowing access to some anonymized datasets that could facilitate economic development. These include the following:

- A new draft federal law developed by the Ministry of Economic Development to create a National Data Management System that would encompass various types of government and municipal data and numerous systems where these data reside. The law reportedly outlines the rights of citizens, businesses, and other entities in terms of data protection, as well as procedures for data access, including by companies and universities working on the development of AI-enabled systems. The National Data Management System was reportedly proposed by the Russian Government's Analytical Center and seeks to unify and harmonize fragmented and disparate public data systems across Russia by 2024.

- An agreement signed by Russia's Ministry of Digital Development, Communications and Mass Media with TS Integration to monitor the dark web and hacking forums for leaks and losses of personal databases and to provide the government with analysis of market dynamics (supply and demand) for such data. According to reporting, many of the leaks or hacks are of data stored by government or medical entities and occur

because of insufficient attention to information security or qualified staff to manage the data.

- Discussions about potential changes to the Russian criminal code to stiffen penalties for leaks and losses of personal data and to initiate investigations of such incidents before complaints are made by victims. Russia is reportedly developing a concept on the protection of rights and freedoms of people and citizens in Russia's digital space.

- Finally, the Russian Government's Analytical Center reportedly signed a cooperative agreement with the private company NP Russoft focused on issues of information security and data protection, among others.

Sources: "There is a draft law in Russia on government data, how to process and access it" (В России написан законопроект о том, что такое госданные, как их обрабатывать, и кому они доступны), CNews, Dec. 8, 2021, https://www.cnews.ru/news/top/2021-12-08_razrabotan_zakon_reguliruyushchi; Lev Matveev, "A leak without brains" (Утечка без мозгов), Izvestiya, Dec. 9, 2021, https://iz.ru/1261128/lev-matveev/utechka-bez-mozgov; Valeriy Kodachigov, "Personal data: how to trace sellers of illegal bases" (Персональные сданные: как будут отслеживать продавцов незаконных баз), Izvestiya, Dec. 12, 2021, https://iz.ru/1262783/valerii-kodachigov/personalnye-sdannye-kak-budut-otslezhivat-prodavtcov-nezakonnykh-baz; "Where is the jailing? Presidential advisor and Natalia Kasperskaya propose to conduct trials on the criminal code and billion ruble fines for personal data losses" (Где посадки? Советник президента РФ и Наталья Касперская предлагают судить по УК и штрафовать на миллиарды за утечки персданных), TAdviser, Dec. 16, 2021, https://www.tadviser.ru/; "Russian government analytical center and NP Russoft ink agreement on information cooperation" (Аналитический центр при Правительстве России и НП «Руссофт» подписали соглашение об информационном взаимодействии), CNews, Dec. 10, 2021, https://www.cnews.ru/news/line/2021-12-10_analiticheskij_tsentr_pri.

4. Russia's Foreign Ministry to develop new AI-enabled big data analysis system

Russia's Ministry of Foreign Affairs (MFA) plans to develop an AI-enabled big data analysis system that could potentially analyze Russia's foreign policy, according to an MFA special representative on digital transformation. The details of the system remain to be determined, as do the issues that such a system would analyze. The MFA is working with the V.P Ivannikov Institute of Systemic Programming (ISP RAN) on the project, which will potentially also involve students and instructors from the MFA feeder school Moscow State University of International Relations (MGIMO). ISP RAN and MGIMO have successful experience working together in creating a laboratory that utilizes big data analytics in the international relations sphere. MGIMO is also starting up a new master's degree focused in this area. The MFA effort is part of a digital transformation initiative for 2021–2023 that seeks to "improve the reliability and security of information systems, their technological independence from foreign products, as

well as to increase the satisfaction of Russian citizens with the digital services of the department," according to RBC.

Sources: Anna Balashova, Polina Khimpiashvili, "MFA will utilize AI to analyze foreign policy" (МИД применит искусственный интеллект для анализа внешней политики), RBC, Dec. 14, 2021, https://www.rbc.ru/technology_and_media/14/12/2021/61b770359a79475adb8e588f.

5. Meeting discusses successes of National Technology Initiative

During a December 16 meeting chaired by Russia's President Vladimir Putin, participants discussed results achieved over the last five years of government investment into the National Technology Initiative (NTI), an effort to support Russia's goal of becoming a technological leader by 2035. The reported investment totaled 50 billion rubles (around $680 million), matched in full by the private sector. Putin's special representative on digital and technological development, Dmitriy Peskov (not related to Putin's press secretary), credited NTI with determining beneficial markets for investment: "Markets on which the bets were made are growing today in the world and in Russia by an average of 20–30% per year. That is, the market for civilian unmanned aerial vehicles is growing today by 25% per year. Five years ago in Russia there were about five companies that could make competitive products, today there are about 25 of them." He also discussed international attention toward Russian technologies, listing China, Iran, South Korea, Serbia, Kazakhstan, and Uzbekistan as counties that expressed interest in 2021, as well as a request from the Collective Security Treaty Organization (CSTO) to "create a new CSTO venture fund at the junction of defense and civilian technologies using" NTI achievements.

Sources: "Expert: over last five years, government has directed over 50 billion rubles to NTI projects" (Эксперт: государство за пять лет направило на реализацию НТИ около 50 млрд рублей), TASS, Dec. 16, 2021, https://tass.ru/ekonomika/13222595.

Military and Security Developments

6. Russian Ministry of Defense unveils Orion combat drone that can strike UAVs

In December 2021, the Russian Ministry of Defense (MOD) unveiled a video showing an Orion UCAV striking another drone in mid-air. The demonstration was part of a drill in the Crimean Peninsula, with Orion destroying a helicopter-type VM-V drone with an antitank guided missile (ATGM). The ATGM was chosen for this test given its capacity for hitting low-flying air targets. The Orion is medium-altitude, long-endurance drone and is Russia's first combat UAV in military service. It can carry up to 200kg of munitions, such as KAB-20 and KAB-50 guided aerial bombs, UPAB-50 guided glide bombs, FAB-50 free-falling bombs, and X-50 aircraft-guided missiles. It was previously tested in Syria, where it struck ground targets, but the Crimean demo also shows that this unmanned aerial vehicle (UAV) could potentially strike low-flying aerial targets. The Russian MOD is preparing its own drone capabilities to counter the growing use of slow-moving, low-flying intelligence, surveillance, and reconnaissance and combat drones. It could be used against slower, low-altitude Turkish-made Bayraktar TB2 drones, should these UAVs square off in Eastern Ukraine or the Caucasus regions. Of note is Ukrainian military's recent acquisition of Baykraktar TB2 drones, with relatively slow speed and low altitude, and the demo's location in Crimea may be a message to Kyiv, given Russian complaints about Ukrainian military drone use in Eastern Ukraine.

Sources: "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; "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 дрона беспилотником "Орион"), Tass.ru, Dec. 18, 2021, https://tass.ru/armiya-i-opk/13238123; "Orion can handle Bayraktar, Russian general said" ("Орион" сможет справиться с Bayraktar, заявил российский генерал), Ria.ru, Dec. 19, 2021, https://ria.ru/20211219/orion-1764473799.html ; "Ukraine to buy four more Bayraktar TB2 strike drones from Turkey – Commander-in-Chief," Ukrinform.net, Jan. 4, 2022, https://www.ukrinform.net/rubric-defense/3314694-ukraine-to-buy-four-more-bayraktar-tb2-strike-drones-from-turkey-commanderinchief.html.

7. Pantsir-S1M and electromagnetic guns: how the Russian army will fight drones

The Rostec state corporation recently reported on the new Pantsir-S1M antiaircraft system's capabilities, noting that this upgraded version can counter different types of UAVs, including strike drones. In an interview with TASS state media corporation, Pantsir's chief designer, Valery Slugin, noted that this system was initially designed to counter large aerial objects, including earlier drone variants, which were relatively larger compared to many UAVs used in recent conflicts. The article claims that in order to intercept the more prevalent, compact drones, Pantsir's radar was modernized to detect objects at a distance of up to 75 km and to simultaneously detect up to 40 targets. It is unclear how the distance improvement meets the criteria for detecting smaller objects; the article had no further information.

TASS also noted that Russia's defense industry manufactures two types of counter-UAV systems—"soft-kill" systems that include electronic suppression and "hard-kill" kinetic systems like Pantsir. According to Slugin, the new Pantsir-S1M is capable of operating in both modes to suppress incoming drones' navigation equipment at a distance of up to 15–18 km with the help of electronic warfare equipment. TASS also noted that an effective modular air defense network can be built on the basis of the Pantsir-S1M to protect military units from small UAVs and strike drones.

Sources: Vasily Kuchuev, "Pantsir-S1M and electromagnetic guns. How the Russian army will fight drones" ("Панцирь-С1M" и электромагнитные ружья. Как армия России будет бороться с беспилотниками), Tass.ru, Dec. 13, 2021, https://tass.ru/armiya-i-opk/13166705; Mikhail Hodarenok, "Three echelons of protection: how anti-aircraft missile defense works at Khmeimim airbase", (Три эшелона защиты: как устроена зенитная ракетная оборона на авиабазе Хмеймим), Tass.ru, Feb. 12, 2016, https://tass.ru/armiya-i-opk/2650477.

8. Roskomnadzor denies introducing gaming artificial intelligence in military training

Russia's Kummersant, one of the country's most widespread publications, broke a story in December 2021 that the Main Radio Frequency Center (GRChT) proposed to adopt foreign practices utilizing gaming artificial intelligence (AI) for the Russian military. The GRChT is part of the federal radio frequency service—a specially authorized service for regulating radio frequencies and other radio electronic means. The proposed plan included modeling real combat strategies through the creation of simulators. The GRChT proposal discussed an AI-integrated wargame system that can conduct human-machine confrontation to identify potential problems and weaknesses. Kommersant further noted that GRChT researchers

suggested using trained neural networks in highly specialized military simulators, similar to training systems used by the United States and the United Kingdom.

However, Roskomnadzor—the Russian state agency that manages the GRChT—has officially denied such media reports, noting that the center "does not have the authority to regulate the military policy of the Russian Federation, and the [center] is not engaged in forecasting such regulation." Apparently, Kommersant's sourced its story using the GRChT's scientists' public statements on the foreign experience using gaming AI as part of those countries' regular military-related research. Kommersant also noted in its original story that Russia's Rostec is developing similar systems that uses hybrid reality technologies when creating educational and training tools for virtual training. While Roskomnadzor may have walked back the announcement due to classified nature of this work and its effects on the Russian forces, this proposal to use AI in gaming and simulations is not new. Back in March 2018, the Russian MOD proposed a series of military games to determine the effects of AI models on the changing nature of military operations. General reporting on military-related activity seems to have become more controlled over the past year, which may have contributed to the walk-back, but we have no reporting to support this theory at this time.

Sources: "Roskomnadzor denied recommendations on the introduction of gaming artificial intelligence in military training" (Роскомнадзор опроверг рекомендации по внедрению искусственного интеллекта в армии), Fontanka,ru, Dec. 6, 2021, https://www.fontanka.ru/2021/12/06/70298816/ ; Tatyana Isakova, "The army will be sent to the virtual world" (Армию направят в виртуальный мир), Kommersant.ru, Dec. 6, 2021, https://www.kommersant.ru/doc/5116316; "Conferencxe- AI problems and solutions 2018" (Конференция «Искусственный интеллект: проблемы и пути их решения — 2018), Official MOD website, Mar. 2018, https://mil.ru/conferences/is-intellekt.htm; Official GRChT website, https://www.grfc.ru/grfc/about/about-grfc/.

Corporate and Market Developments

9. Study suggests AI-enabled tech use in Russian companies remains low

Although AI is a growing field of interest for many Russian companies, a new report summary by the Institute for Statistical Studies and Economics of Knowledge (ISSEK) at the Higher School of Economics found that, among other things, only a little over 5 percent of smaller Russian firms utilize any form of AI technology when asked in a statistical survey of state data on corporations.

The ISSEK report highlighted a number of key findings, showing that: (1) the most common type of AI tool used by companies reporting AI usage of any kind is for chatbots and other data mining/natural language processing utilities, followed by computer vision; (2) the restructuring required to use AI tools effectively is considerable, and thus mostly limited to large corporations that can afford such intensive changes; (3) that the implementation of AI services is most advanced in the financial sector; and (4) that while over 35 percent of large firms use AI tools in some capacity, this quickly shrinks to less than 5 percent of companies with 250 employees or less. The authors of the report suggest that these figures will continue to rise but will remain especially advanced in large firms in the medium term. At the same time, the report suggests that the COVID-19 crisis has quickened the adoption of AI solutions at all levels, and that this trend will likely continue.

Sources: Ksenia Yanushkevich, "Artificial intelligence systems are used by only 5% of Russian companies" [], RBC Trends, Dec. 16, 2021, https://trends.rbc.ru/trends/industry/61bb18bd9a794705acf297b3; Yu. V. Turovets, S. A. Vasilkovsky, K. O. Vishnevsky, and G. I. Abdrakhmanova, "The use of artificial intelligence technologies in Russia," ["Использование технологий искусственного интеллекта в России"], Dec. 2021, https://issek.hse.ru/news/542527560.html.

10. Russian mail service and others consider use of cargo drones

Russian Post and other logistics companies expect that drone-based delivery and cargo transport operations are most likely to be used in large and low-density population regions. A recent industry and academic forum, "Arctic Present and Future," held panels that emphasized the particular utility of drones for regions with poor transportation infrastructure and widely

dispersed populations. Industry leaders suggest that the goal should be developing drones that can reliably and efficiently carry 800 kilograms of cargo, although lower ranges of 100–300 seem more likely for the immediate and medium term. However, until needed range and load capacities are confirmed, the deployment of drones remains in the realm of small-scale testing and speculation.

Among several early tests, Tomsk region is becoming a major site of cargo drone experimentation. The region has initiated a new legal architecture through special legislation that will allow for region-wide commercial viability and a temporary three-year regulatory regime that will ease barriers for the new service. This is thanks to a new federal law allowing for vertically integrated special legal regimes to be experimented with for multiyear projects. Several projects are ongoing or in developing stages, including partnerships between Russian Post and Aeromax, as well as others being tested by the Ministry of Transport and aviation regulator Rosaviatsiya.

Along with the new experimental legal regimes, the Russian State Commission on Radio Frequencies is expected to announce soon that stations that control UAVs are to be allocated the 5.85–6.425 GHz frequency range band. This is a slightly reduced range than previously suggested by industry advocates, due to concerns about overlap with fixed satellite and other space-based services that need radio frequency segments that are not being crowded out by other operations.

Sources: "Russia has allocated special frequencies for drones" ["В России выделили спецчастоты для беспилотников"], CNews, Dec. 16, 2021, https://www.cnews.ru/news/top/2021-12-16_v_rossii_vydelili_spetschastoty; "Experts: Russia will use drones mostly to take cargo to hard-to-reach areas," TASS, Dec. 13, 2021, https://tass.com/economy/1374643; "UAV unmanned aerial vehicle (drone): Major Drone Market Trends, Russia, 2021," TAdviser, Dec. 14, 2021, https://tadviser.com/index.php/Article:Unmanned_aerial_vehicle_%28drone%2C_UAV%29#2021_2.

11. New venture fund to invest in AI and high-tech projects in the Russian Far East

Vladimir Potanin's Interros has announced that it will be investing over $1 billion in AI and other high-tech projects in the coming year. The investments are being directed through the new Voskhod venture fund, which is based in the Russian Far East. The fund intends to become an "anchor investor" for new investments in the Far East, according Potanin, and will act as a first-mover to jumpstart regional development. The company will spread its investments widely across the burgeoning Russian digital market, and expects to also expand to national-level investments (not just regional ones) in time.

Source: "Interros will spend $1 billion on artificial intelligence and high-tech" ["'Интеррос' направит $1 млрд на искусственный интеллект и хай-тек"], mkset.ru, Dec, 16, 2021, https://mkset.ru/news/society/16-12-2021/interros-napravit-1-mlrd-na-iskusstvennyy-intellekt-i-hay-tek.

12. VisionLabs is acquired by MTS telecom giant subsidiary

The leading Russian AI startup VisionLabs is expected to be acquired by the MTS subsidiary Intema in an estimated 7-billion-ruble deal. Binding documents signed by Intema will give it a controlling stake in the company, with future plans to integrate VisionLabs into the new Intema umbrella brand, which is "aimed at developing marketable AI products and operating in international markets." VisionLabs co-founder Aleksander Khanin will remain as company chairman and stated that, "after the transaction, VisionLabs will continue to work autonomously and will retain the old business strategy and team." VisionLabs major institutional investors and partners, including Sber and Sistema Group, are planning to continue to work with the company, with Sber in particular noting that it will be retaining it for work on SberPortal and SmartBio projects, among others.

Sources: "MTS acquires VisionLabs" ["MTC приобретает компанию VisionLabs"], CNews, Dec. 13, 2021, https://www.cnews.ru/news/line/2021-12-13_mts_priobretaet_kompaniyu.

Education and Training Developments

13. Russian Academy of Sciences scholars discuss challenges of trusting AI

At a recent presidium of the Russian Academy of Sciences (RAS), academicians reportedly discussed whether humans could trust AI, and the boundary of this trust. RAS President Aleksandr Sergeev was quoted as saying that "The fact is that AI is today a "black box," but the most important thing is that no one, even the authors of the programs themselves, know how it works. Is it possible in such a situation to trust its conclusions? After all, it will, in fact, take on the functions of an oracle on a variety of issues. And I must admit that this smart machine already does many tasks faster and better than humans. And who knows, maybe someone would be tempted to give up science altogether. We will entrust everything to neural networks, ordinary operators can carry out any calculations on them, even without higher education.... But few people have thought about the possibility that that as a result of such trust, you can get a completely distorted picture, which will cost many millions of dollars." During this discussion, academicians also focused on the development of trusted (trustworthy) AI systems.

Sources: "RAS academicians doubt that AI can be trusted" (Академики РАН усомнились в том, что искусственному интеллекту можно доверять) 3D News, Dec. 8, 2021, https://3dnews.ru/1055472/akademiki-ran-usomnilis-v-tom-chto-iskusstvennomu-intellektu-mogno-doveryat.

14. Articles discuss Russian human capital challenges

Numerous articles have recently discussed Russia's shortage of IT personnel, which, according to experts interviewed, is due to a variety of reasons. A CNews article identified brain drain as a major contributing cause, the primary factor of which is Russia's "deteriorating economic situation." According to the article, 48 percent of Russian IT specialists working for a domestic company believe that in the near future, because of the poor economic situation in the country, their companies may reduce their salaries or otherwise worsen their working conditions. There is also a lack of qualified instructors to educate students in the field. According to one expert, while there is a shortage of IT personnel, "there is an even greater personnel disaster among teaching staff."

A December 10 interview with MIPT's Konstantin Vorontsov also discusses the IT personnel shortage. According to Vorontsov, the main solution to retaining IT expertise is to be more accommodating and gentle with young IT talents. Vorontsov also argues that the national olympiads and hackathons that offer large monetary awards, while useful, tend to draw talent away from more provincial parts of Russia and toward St. Petersburg and Moscow, leaving a dearth of talented experts in those regions. He asks, "What is preventing the Russian Ministry of Education from paying the same bonuses, so that the corresponding categories of schoolchildren could receive them while continuing to study in the regions where they were able to prepare and distinguished themselves at the All-Russian Olympiads?"

Another CNews article describes some of Russia's efforts to reverse these trends. According to the article, 27.8 billion rubles ($375.5 million) will be allocated to training and development of Russia's IT industry over the next 3 years. 4.8 billion rubles ($64.8 million) will be allocated for the development of IT personnel in 2022, more than 10 billion rubles ($135 million) in 2023, and more than 12 billion rubles ($162 million) in 2024. Also, according to the D-Russia article, by 2024, there will be 16 thousand "growth points"—specially equipped classrooms in schools across the country, which are equipped with 3D printers, powerful computers, quadcopters, virtual reality glasses, simulators, dummies, and other technology. Currently, there are more than 5,000 growth points across 50 Russian regions.

Sources: "Personnel disaster in Russian information security," [В российской информационной безопасности кадровая катастрофа], CNews, Dec. 7, 2021, https://www.cnews.ru/news/top/2021-12-07_v_rossii_kadrovaya_katastrofa; "Authorities will allocate more than 27 billion for training for the IT industry" [Власти выделят более 27 миллиардов на подготовку кадров для ИТ-отрасли], CNews, Dec. 8, 2021, https://www.cnews.ru/news/top/2021-12-08_pravitelstvo_vydelit_bolee; "Are we going to fix our bugs, and how we teach AI specialists?" [Будем ли устранять свои баги, и как учить специалистов по ИИ?], D-Russia, Dec, 10, 2021, https://d-russia.ru/budem-li-ustranjat-svoi-bagi-i-kak-uchit-specialistov-po-ii.html.

15. Russia hosts AI-focused events and hackathons

- Sberbank announced that it is establishing an annual Sber Science Award, in which three winners will each receive 20 million rubles (approximately $270,000) in prizes. One of the prizes is dedicated to the field of the "Digital Universe" and "encompasses mathematics and computer sciences (including artificial intelligence and machine learning)." The first awards ceremony will be held in March 2022.

- The Ministry of Education announced that it plans to hold the All-Russian Olympiad for Schoolchildren on Artificial Intelligence, which was last held in October 2021, on

an annual basis. In 2021, more than 10,000 students grades 8–11 from almost 2,000 schools across Russia's 77 regions applied to participate. The Institute for Education Development Strategy of the Russian Academy of Education provides support for the Olympiad.

- RBC published an overview of the Ministry of Economic Development's initiative to hold 116 hackathons and 85 science lectures on AI by the end of 2024. The article highlights the initiative's progress thus far. In 2021, the initiative held 10 hackathons with 1,512 participants (289 teams), with a total of 142 AI solutions developed based on their results. The full summary of the first 10 hackathons in Russian can be found here:https://trends.rbc.ru/trends/amp/news/61b9a8169a7947046eebab8f.

- Additionally, Russian AI experts have placed in several recent international AI competitions, the results of which were announced in December 2021. A team of researchers from Sberbank and AIRI (Artificial Intelligence Research Institute) took first place at the NetHack competition organized by Facebook AI and DeepMind. In addition, a team from Innopolis University took second place out of 30 teams at the international Open Catalyst Challenge hosted by Meta AI (Facebook AI Research) and Carnegie Mellon University.

Sources: "Russia's Sber Bank establishes new science award with $820,000 prize money," Robotics and Automation News, Dec. 16, 2021, https://roboticsandautomationnews.com/ 2021/12/16/russias-sber-bank-establishes-new-science-award-with-270000-prize-money/47696/; "All-Russian AI Olympiad for schoolchildren will be held annually" [Всероссийская олимпиада школьников по ИИ будет проходить ежегодно], Tass, Dec. 7, 2021, https://tass.ru/obschestvo/13130459; "Sberbank and the Institute of Artificial Intelligence AIRI took first place in the international AI competition", [Сбер и институт искусственного интеллекта AIRI заняли первое место в международном конкурсе по ИИ], Gazeta.ru, Dec. 11, 2021, https://www.gazeta.ru /tech/news/2021/12/11/n_16997617.shtml?updated; "Developers from Innopolis took second place in the AI competition" [Разработчики из Иннополиса заняли второе место в ИИ-конкурсе], Vesti.ru, Dec. 10, 2021, https://www.vesti.ru/hitech/article/2650754.

16. Skolkovo and MIPT launch joint bachelor's program

According to a December 15 Vedomosti article, Skolkovo's Moscow School of Management and the Moscow Institute of Physics and Technology (MIPT) are launching a joint undergraduate program, which will begin recruiting students in the summer of 2022. The four-year program will take place at both Skolkovo and MIPT campuses and will "provide in-depth training in physics, mathematics and IT, immersion in the space of social and human sciences, as well as the development of business competencies." According to rector of the Moscow School of

Management Yuri Levin, the new program is intended to help fill nationwide shortages of IT personnel.

Sources: "School of Management Skolkovo and Moscow Institute of Physics and Technology launch a joint bachelor's program" [Школа управления Сколково и МФТИ запускают совместный бакалавриат], Vedomosti, Dec. 15, 2021, https://www.vedomosti.ru/press_releases/2021/12/15/shkola-upravleniya-skolkovo-i-mfti-zapuskayut-sovmestnii-bakalavriat.

International Collaboration

17. Russian president Putin reacts to US sanctions against MIPT

Speaking at a meeting with participants of the Russian Congress of Young Scientists, President Putin described US sanctions against the MIPT and other scientific organizations as an effort to hinder Russia's development. "What we can state is that these restrictions and sanctions are being introduced on the grounds of ensuring the security of the United States. How does your institute threaten the security of the United States? This is complete nonsense. There is only one explanation—an attempt to restrain development." He was referring to a recent decision by the US Department of Commerce to put MIPT on a list of producers of products that are used by the military. Organizations on the list are subject to a stricter export control regime.

According to the president, as soon as the country began to cope with difficulties on its own and restored constitutional unity, Russia began to be perceived as an unwanted competitor. "And this was not desirable. So our partners began to pursue the so-called containment policy," Putin explained.

Sources: "Putin calls US sanctions against MIPT university nonsense, attempt to hamper Russia," TASS, Dec. 9, 2021, https://tass.com/politics/1372919; "Putin calls US sanctions aginst MIPt as an attempt to hamper Russian development" (Путин назвал санкции США против МФТИ попыткой сдержать развитие России), Rossaprimavera, Dec. 9, 2021, https://rossaprimavera.ru/news/7aff4e09.

18. Russian deputy PM focuses on AI development in UN speech

In a speech that also highlighted growth in Russian software exports, Deputy Prime Minister Dmitry Chernyshenko highlighted the need to remove regulatory barriers that prevent the development of AI technology.

Speaking at the plenary session of the UN Internet Governance Forum, Chernyshenko highlighted that "Russian digital technology industry is intensively developing. President Vladimir Putin approved the national goal of digital transformation. We have one of the strongest educational and scientific and technical schools. Our IT industry comprises tens of thousands of companies and hundreds of thousands of specialists. Export of software from Russia increased by almost 20% in comparison with last year alone. Our country has also built

a powerful incentive system for the IT sector. Packages of measures aimed at developing the industry are being gradually implemented. For example, annually the authorities allocate about 4 billion rubles ($53.9 mln) in the form of grants to support IT projects and companies."

He went on to note that the growth and development of IT solutions and the digital economy are impossible without cooperation on a global scale, the synergy of solutions, and the development of an international legal framework and that the need to remove regulatory barriers is particularly significant in the AI sphere. "Regulatory barriers to the penetration of artificial intelligence into the economy must be removed. In Russia, active work is already underway in this direction: for example, quite recently the Code of Ethics in the field of artificial intelligence was signed…. I would also like to note the importance of harmonizing international legislation regulating the global Internet and the activities of technology companies. We need to develop uniform approaches to the protection of personal data on a global scale in order to balance the rights and responsibilities of all parties in the digital environment."

The Deputy Prime Minister's office noted that the 20th UN Forum on Internet Governance will be held in 2025 in Russia. "We intend to ensure broad participation of all interested parties in the Forum. At the same time, we should ensure that the Forum results in practical solutions providing for the openness and security of the Internet, taking into account the interests of all participants in the online space," Chernyshenko stressed.

Sources: "Export of Russian software up by almost 20% in 2021, says Deputy Prime Minister," TASS, Dec. 7, 2021, https://tass.com/economy/1372185; Marina Fedorovskikh, "Chernyshenko calls RF an example of AI incorporation" (Чернышенко назвал РФ примером внедрения искусственного интеллекта), Ura, Dec. 7, 2021, https://ura.news/news/1052521044.

19. NCR and NtechLab joint project nears completion

The US company NCR's joint project with Russia's NtechLab to develop self-service terminals for stores is nearing completion. The terminals are designed to use AI technology to analyze customer behavior in order to provide them with personalized ads. NCR is providing the terminals, which are equipped with video cameras. NtechLab is providing software, including facial recognition technology that will allow the terminals to recognize frequent customers and use voluntarily entered customer biometric data to provide them with discounts and to allow for purchases of age-restricted goods such as alcohol and tobacco without having to show identification. In the future, the project expects to include the option to pay for purchases through facial recognition. The technology will also be used to maintain a blacklist of shoplifters, which will reduce retailer expenses.

Sources: "NCR and NTechLab to produce self-service payment systems using facial recognition and personalized ads" (NCR и NtechLab выпустят кассы самообслуживания с оплатой по лицу и персонализированной рекламой), CNews, Dec. 17, 2021, https://www.cnews.ru/news/line/2021-12-17_ncr_i_ntechlab_vypustyat_kassy_samoobsluzhivaniya.

20. Russian-French AI cooperation continues to develop

As part of its drive to set up digital innovation structures, Moscow is looking to form partnerships with foreign organizations, including France's National Institute for Digital Research and Technology (INRIA). Despite France's reservations about Russia's ambitions, the institute has formed a partnership with the Program Systems Institute.

Despite the mistrust generated by the toxic political climate, Franco-Russian cooperation in the digital sphere continues to develop, as demonstrated by the first meeting of a bilateral joint working group on innovation and digital technology on November 19. The group was first set up in 2019 and is co-chaired by Russian deputy economic development minister Vladislav Fedoulov and INRIA chief executive Bruno Sportisse. It aims to share best practices and bring together public bodies and companies in the digital field to come up with public-private development initiatives.

"The group is composed of executives from French start-up development body French Tech, which has a branch in Moscow headed by Euryale Chatelard, head of the Russian subsidiary of French web host Ecritel, and representatives of the Skolkovo Foundation. France is represented at the foundation by Franco-Russian Chamber of Commerce and Industry head Emmanuel Quidet, who chairs its audit committee. French Tech and the Skolkovo Foundation have been in contact with a good number of companies, including France's BlaBlaCar, Atos and Linagora, Russian surveillance specialist SearchInform, and Dassault Systems to discuss regulation of the digital market. The next meeting, which Moscow has already announced, will be held next year in Russia."

Sources: "Russia makes a fresh attempt to get France to help it develop its AI research capacity," The Reference, Dec. 9, 2021, https://www.thereference-paris.com/17624.

21. Russian-Italian partnership for automatic processing of tomographic data

The research company Smart Engines, specializing in developing algorithms for computer vision, machine learning, and AI, and the CNR Institute for Nanotechnology of the Italian National Research Council (CNR-Nanotec) have signed a three-year cooperation agreement,

with the goal of exchanging experience in the development of algorithms for tomographic reconstruction in assessing the effectiveness of advanced treatment methods and in the study of neurovascular diseases. The collaborative research group has started implementing projects on neural network technologies for working with phase-contrast tomography images. The partnership is designed to organize academic and scientific exchanges and develop a joint project in X-ray tomography and microscopy.

"Researchers from the Italian group have many years of expertise in performing unique measurements on world synchrotron radiation sources and the theoretical knowledge necessary to build mathematical models describing the imaging process. Scientists at Smart Engines can create energy-efficient neural network models that can reduce the radiation dose to patients during medical research using X-ray tomography. The need to reduce the dose load is a limitation for using existing medical computer systems and a place for the concentration of efforts of interdisciplinary research groups to create new designs for the automatic processing of high-resolution tomographic data."

Sources: "Italian and Russian scientists unit to create new system for automatic processing of tomography data" (Итальянские и российские ученые объединились для создания новой системы автоматической обработки томографических данных), CNews, Dec. 20, 2021, https://www.cnews.ru/news/line/2021-12-20_italyanskie_i_rossijskie.

22. German company SAP opens innovation lab at Siberian State Industrial University

SAP, Evraz, and the Siberian State Industrial University have signed an agreement to establish an innovation laboratory at the university. The SAP Next-Gen Lab will allow students and professors to develop digital scenarios for the mining company Evraz and for the metallurgy industry as a whole. The laboratory plans to work on industry and cross-industry scenarios in several areas: digital enterprise, energy-efficient manufacturing, AI and video recognition, robotization, advanced analytics and reporting, remote assistants, and chat bots. The lab will pay special attention to sustainable development goals, focusing on scenarios in the field of green production, responsible consumption, social responsibility, and development of extraction and production without damaging ecosystems. The lab will host project seminars, hackathons, master classes, and trainings, and will also provide access to an extensive library of SAP training materials.

Evraz is expected to become the key task manager for laboratory projects: students will be able to pilot the new digital products at the company's production sites. Evraz is implementing a digital transformation program, striving to become one of the global leaders in digitalization among metallurgical and mining companies.

Sources: "SAP and EVRAZ to create a center of academic innovations at SibGIU" (SAP и ЕВРАЗ
создадут на базе СибГИУ центр академических инноваций) Vedomosti, Dec. 13, 2021,
https://www.vedomosti.ru/press_releases/2021/12/15/sap-i-evraz-sozdadut-na-baze-sibgiu-
tsentr-akademicheskih-innovatsii.

Spotlight: Koalitsiya-SV Artillery System

Vitaly V. Kuzmin, 152mm self-propelled gun 2S35 Koalitsiya-SV, May 9, 2015, http://www.vitalykuzmin.net/?q=node/604, Wikipedia common license.

The Russian military will begin testing the new Koalitsiya-SV self-propelled howitzer in 2022, according to Izvestia news sources. The new system features increased automated functionality that enables it to fire at a rate of 16 rounds per minute. Based on the T-90 tank chassis, the crew requirements are possibly reduced to two to three soldiers, with firing executed remotely from within the chassis. As a fully integrated part of the Russian military's automated command and control system, the howitzer can receive targeting information from any number of sources, with fully automated firing calculations. According to the news outlets, the Koalitsiya is capable of firing precision-guided rounds to a distance of 60–70 kilometers.

Alexey Ramm and Bogdan Stepovoy, Drum kit: state tests of the "Coalition-SV" self-propelled guns begin in Russia, (Ударная установка: в России начинаются госиспытания САУ «Коалиция-СВ»), Izvestia, December 6, 2021, https://iz.ru/1259811/aleksei-ramm-bogdan-stepovoi/udarnaia-ustanovka-v-rossii-nachinaiutsia-gosispytaniia-sau-koalitciia-sv

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