



Artificial Intelligence in Russia Issue 21, February 26, 2021

The Russia Studies Program

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Abstract

This report, the twenty first 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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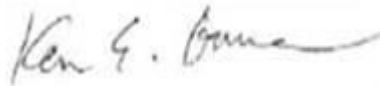
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Governance and Legal Developments

1. Putin orders new mechanisms to develop science and technology in Russia

At a meeting of the Council on Science and Education on February 8, Russia's president Vladimir Putin called technological sovereignty and science key factors in national security, and ordered the development of a new state program on science and technology. He instructed the government to prepare and adopt this new state program. At the same time, he called for a radical change in the approach to financing science from the state budget, though specifics were not available.

Putin also highlighted the need to ensure the planning and implementation of research and development work and establish uniform principles for assessing effectiveness in this sphere. He ordered the government to prepare and submit a decree for his signature that would change "the mechanisms for managing state scientific and technical policy." He said this would entail "substantially changing the format of work and principles of formation" of the Council on Science and Education, and would include members of the government and the Russian Security Council. Putin noted that some work in this area is classified "Secret," "Top Secret," or "Of Special Importance," so the team that works on these issues must be cleared to access any of this work, which would strengthen the mechanisms for decision-making in the field of science and technology.

In addition, Putin noted the necessity of creating a "special commission for scientific and technological development under the Russian government." The structure would include ministry representatives at the level of deputy minister or higher, as well as representatives from the Security Council. Putin expressed his hope that, through this effort, "the efficiency of operational management and interdepartmental coordination in making and implementing decisions in the field of scientific and technical policy will be increased." Putin also called for the creation of more efficient incentives for private companies "to participate in applied research together with scientific institutions, universities, and design bureaus to use domestic solutions to renovate production facilities and release high-tech products."

Sources: “Putin ordered the creation of a new state program for scientific and technological development” (Путин поручил подготовить новую госпрограмму научно-технологического развития), TASS, ТАСС, Feb. 8, 2021, <https://nauka.tass.ru/nauka/10649933>; “Putin called education and science key factors for national security” (Путин назвал образование и науку ключевыми факторами нацбезопасности), RIA Novosti (РИА Новости), Feb. 8, 2021, <https://ria.ru/20210208/natsbezopasnost-1596514867.html>.

2. Minister of Economic Development details anti-crisis measures, including AI spending

On February 4, Maxim Reshetnikov, the minister of economic development, gave a presentation on the ministry’s recently implemented national plan and anti-crisis measures aimed at bolstering economic growth, long-term structural changes in the economy, and restoration of nationwide employment and incomes. The government developed the economic recovery plan, which consisted of 515 related activities, in 2020. These activities ranged from the launch of a digital platform for small and medium-sized businesses, to the provision of 175 million public services in electronic form and the development of a federal law transferring employees to remote status.

Reshetnikov said that 24.6 billion rubles came from the state budget for the development of AI technologies. He stated that, by 2024, six research centers on AI should appear, and 50 federal executive authorities will integrate AI-based solutions into their work.

Sources: Tatiana Kostyleva, “The launch of a business platform, e-document management, development of public services, and AI were among the anti-crisis measures of the Ministry of Economic Development” (Запуск платформы для бизнеса, кадровый е-документооборот, развитие госуслуг и ИИ вошли в число антикризисных мер Минэкономразвития) D-Russia, Feb. 5, 2021, <https://d-russia.ru/zapusk-platformy-dlja-biznesa-kadrovuj-e-dokumentoorot-razvitie-gosuslug-i-ii-voshli-v-chislo-antikrizisnyh-mer-minjekonomrazvitija.html>.

3. Draft amendment to partially abrogate communication privacy

At the beginning of 2021, the Russian Ministry of Digital Affairs developed a draft amendment to the law “On Communications” that would partially deprive Russians of the privacy of communications previously guaranteed by the law. The original version of the law “On Communications,” passed in 2003, said that “telecom operators are obliged to ensure the secrecy of communications” and that telecom operators could only give information to third

parties as the result of a court decision. Under the amended version, third parties, including law enforcement agencies, will be able to obtain data on phone locations without obtaining court permission, and will also have access to information on the volume and cost of services provided by telecom operators. The Ministry of Digital Affairs stated that this amendment “will make it easier to find missing people.”

Some experts were skeptical of the new amendment. Mikhail Klimarev, executive director of the Internet Protection Society, stated that having access to subscribers’ locations will allow the security forces to easily track the movements of individuals. Others defended the decision. Dmitry Lipin, a member of the commission on legal support for the digital economy at the Moscow branch of the Russian Lawyers Association, said that this issue currently resides in a legal “gray zone,” since law enforcement agencies can still get access to location information for mobile devices without a court decision, despite the fact that this is not provided for in the law “On Communications.” He stated that the Ministry of Digital Affairs is simply trying to “close the gap in regulation.”

Source: Elyas Kasmi, “Authorities allow security officials to spy on Russians without court permission” (Власти разрешают силовикам следить за россиянами без разрешения суда), C-News, Feb. 4, 2021, https://www.cnews.ru/news/top/2021-02-04_mintsifry_hochet_razreshit.

4. New cargo transport industry concept provides for AI-enabled training

In February 2021, Russian prime minister Mikhail Mishustin approved a training concept for the cargo transport industry that aims to guarantee qualified employees for the smooth operation and development of the transport system and to create an environment that will attract leaders to the sphere. The concept provides for the opening of new educational programs, and focuses on digitalization using AI technologies, distributed computing, big data, information models of construction, and intelligent control systems for transport. To increase the practical training of specialists, the concept plans to update the training program by providing cyber-physical simulators using augmented reality technologies to training laboratories.

Source: “Artificial intelligence will mentor logistics personnel” (Логистические кадры будет наставлять искусственный интеллект), Logirus, Feb. 12, 2021, https://logirus.ru/news/transport/logisticheskie_kadry_budet_nastavlyat_iskusstvennyy_intellekt.html.

5. Kasperskaya discusses legal status of personal data collection

In an interview in *Izvestia* on February 3, Natalya Kasperskaya, the president of InfoWatch (a private Russian information security company) and co-founder and former CEO of Kaspersky Lab, discussed the vast amount of personal data currently collected and its implications for citizens. According to Kasperskaya, while most personal data are collected legally from mobile operators, internet sites, smart devices, street cameras, etc., it can be illegal to transfer and sell these data to third parties, though it happens regularly. She stated that the accumulation of these data is constantly increasing and that more and more are falling into the hands of government agencies and private actors. “We are moving toward total control,” she said.

Kasperskaya also said that the Russian Constitution contains a norm for protecting citizens’ private lives, but that no laws have yet been developed enshrining that norm. While she mentioned that Law 152-FZ regulates the collection and use of personal data, it only applies to data clearly marked as personal, and some kinds of data, such as data collected from CCTV cameras or on social media platforms, fall outside that law. Therefore, according to Kasperskaya, “The overwhelming part of the collection of use of personal data is now taking place in a gray area that is not covered by law.” She said this can lead to the abuse and misuse of data, and to a risk of discrimination against citizens on a variety of grounds.

To remedy these problems, Kasperskaya proposed the adoption of several new laws, including ones on the digital identity of citizens, on the right to privacy, and on the circulation of user data. She said these laws must operate throughout the country and should be part of a larger “digital code.”

Source: Anna Urmantseva, “Digital ‘Fukushima’ awaits us” (Нас ждут цифровые «Фукусимы»), *Izvestia* (Известия), Feb. 3, 2021, <https://iz.ru/1119259/anna-urmantseva/nas-zhdut-tcifrovye-fukusimy>.

Military and Security Developments

6. Russian defense establishment tests new robotic concepts

According to Bekkhan Ozdoyev, industrial director of Rostec's Armament Cluster, Russia's latest Udar robotic vehicle (UGV) will be capable of moving on the battlefield autonomously and interacting with drones. The Udar operational prototype was developed by Rostec's Signal All-Russian Scientific Research Institute. Ozdoyev stated that when developing the Udar UGV, the enterprise's specialists tested the possibility of the robot's movements in autonomous mode. The vehicle integrates a motion planning subsystem based on sensors and measuring devices. Based on the data received, the robot's route is formed, taking into account terrain features, and combat assignment parameters can be calculated. At present, Udar is still a remote-controlled vehicle, with the autonomy mode built in as an eventual option.

Udar's design is based on the BMP-3 infantry fighting vehicle. The UGV is designed to interact with unmanned aerial vehicles, and Ozdoyev stated that Udar was tested with drones, including a tethered type with an electric power supply from the vehicle itself, for conducting further reconnaissance and relaying radio comms. Rostec also tested Udar with lightweight robots designated for conducting reconnaissance, engaging targets, transporting cargo, and evacuating the wounded. A lightweight robot is mounted on or in the rear of the Udar vehicle and has an automatic undocking mechanism that releases it from the carrier before starting to fulfill the assigned task.

According to Rostec, Udar is intended for manning the Ground Forces and special MOD units, and can be used both independently and as part of robotic swarms. Rostec claims that Udar's main advantage is the ability to use various interchangeable target loads, so that the UGV can be used to perform combat, reconnaissance, technical, and logistical support tasks, as needed, in crewed and unmanned control modes. Rostec claims that the vehicle increases combat effectiveness and reduces the loss of equipment and personnel of the ground forces.

Russian military commentators are cautioning against calling Udar truly "autonomous," since such vehicles are still operated by humans. These experts state that a combined-arms battle is impossible without interaction with the infantry; therefore, it was necessary to create a robotic system built on a heavy armored personnel carrier. Other Russian commentators point out the advantage that Udar has over other UGVs under development, such as the Uran-9. On one hand, Udar is a heavier vehicle than the Uran-9; it is a smaller, slow-moving complex designed to solve specific problems, and extensive logistics are needed in order to deliver the vehicle to

and from combat. On the other hand, Udar is already a full-fledged armored vehicle that can operate in conventional motorized rifle units, just like other military vehicles. Russian commentators also point out that such robotic complexes guarantee the safety of people's lives: even if such a vehicle is destroyed, no one will die, and such machines are created in order to be used in the most dangerous areas, where there is little information about the enemy capabilities.

Udar represents one of two main UGV development pathways in Russia. One has new UGVs developed from scratch, such as Uran-6, Uran-9, Marker, and other UGVs mentioned earlier in the newsletters (issues 11 and 20, for example). Another pathway has the likes of the Udar and Shturm concepts, which are based on existing machinery and vehicles. The Signal Research Institute specifically uses a unified robotics principle that outfits existing hardware models with new equipment. Udar's developers specifically chose the BMP-3 armored vehicle as the basis for Udar development: because the BMP-3 has been in service for a long time, the military already has all the necessary skills for its operation and repair. Rostec noted that creating such a UGV chassis from scratch would take years of complex work.

The heavy "Shturm" UGV is based on a T-72 chassis. The MOD took over Shturm RDT&E in 2020, with urban combat as one of the vehicle's applications. Like the Udar's design, cited above, Shturm's T-72 chassis was chosen because of its wide availability across the armed services and its reliability as a military platform. Yet another UGV that is based on an existing platform is "Prohod-1," which is built on a T-90 tank chassis. This heavy sapper UGV is designed to guide columns of equipment and create passages in mined areas by using complex trawling equipment.

The above-mentioned UGVs are some of many concepts currently undergoing RDT&E by the Ministry of Defense. Issue 11 of *AI in Russia* covered the development of Marker UGV by the Advanced Research Foundation (ARF). The ARF recently announced plans to continue work on the modernization and improvement of the Marker platform. ARF's CEO, Andrey Grigoriev, stated that Marker was developed not as a combat variant but as a robotic platform on which the most cutting-edge technologies for the second-generation combat robots are being developed. As noted in issue 11, he reiterated that Marker is designed specifically for developing technologies, and will serve as a test bed for the third, fourth, and fifth UGV generations, with the MOD then using this technology to build actual combat robotic platforms.

Sources: “Russia’s latest Udar robot to learn to fight on its own and interact with drones,” Tass.com, Feb. 11, 2021, <https://tass.com/defense/1255189>; “ARF will improve Marker combat robotic robot platform” (ФПИ усовершенствует платформу боевого робота “Маркер”), Ria.ru, Feb. 5, 2021, <https://ria.ru/20210205/robot-1596113132.html>; “The General Staff announced the development of promising weapon systems” (В Генштабе рассказали о разработке перспективных комплексов вооружения), Tass.ru, Feb. 8, 2021, <https://tass.ru/armiya-i-oprk/10644329>; “‘Shturm’ is officially confirmed” (Робота подтвердили официально - «Штурм»), Andrej-BT military blog, Sept. 27, 2018, <https://andrei-bt.livejournal.com/949786.html>; Andrei Layshev, Elizaveta Komarova, “‘Guarantees the safety of people’s lives’: what is the Russian combat robot ‘Udar’ created on the basis of the BMP-3” («Гарантирует сохранность жизни людей»: что представляет собой созданный на базе BMP-3 российский боевой робот «Удар»), Russian.RT.com, Feb. 12, 2021, <https://russian.rt.com/russia/article/831267-rossiya-armiya-udar-robot>.

7. Russia develops new C-UAS drone

Almaz-Antey, one of Russia’s main defense-industrial firms, announced that it had concluded testing a modernized version of the newest Volk-18 interceptor UAV, which is capable of finding and then downing drones by launching a net or by ramming in a fully automatic mode. According to Almaz-Antey, the flight tests included the actual destruction of target drones, and Volk-18 will be part of the official state trial this year. The Volk-18 is a high-speed and maneuverable quadcopter with a takeoff weight of up to 6 kilograms and dimensions of 60 by 60 centimeters. It can stay in the air for up to 30 minutes.

Volk’s improved version received a new optical-location system, which provides an increased target detection range, and a modified control system that allows the drone to be used in a fully automatic mode. The developers claim that the UAV independently performs search, recognition and selection of targets, and maneuvering and destruction of drones. The operator only confirms the decision to attack.

According to Russian military experts, Volk-18’s creation is dictated by the desire of the military and security services to simplify and reduce the cost of detecting and intercepting small unsanctioned and illegal UAVs, including those made and flown by illegal armed formations. Specifically, Volk-18 is a good weapon for neutralizing multicopters—small vehicles that are now massively used for reconnaissance and sabotage. Such drones can fly during mass events or threaten the movement of civil aviation. Volk-18 can also be used in urban areas, where firing on illegal drones can cause panic among the civilian population. While the Russian military is developing and fielding electromagnetic C-UAS guns, their use can sometimes be ineffective. At the same time, an interceptor drone such as Volk-18 should work in any conditions by being efficient and relatively inexpensive. The Russian commentators also noted its advantage as a mobile system that is easy to transport, deploy, and launch at the desired location.

Sources: Aleksei Zakvasin, Elizaveta Komarova, “Unmanned Volk: how the new Russian interceptor drone can change C-UAS fight” (Беспилотный «Волк»: как новый российский дрон-перехватчик может изменить борьбу с БПЛА противника), Russian.RT.com, Feb. 10, 2021, <https://russian.rt.com/russia/article/830728-bpla-perehvatchik-volk-modernizaciya>; “In any condition. Military expert discusses new Volk-18 drone” (“В любых условиях”. Военный эксперт о новейшем дроне “Волк-18”), RadioSputnik.ria.ru, Feb. 10, 2021, <https://radiosputnik.ria.ru/20210210/volk18-1596851423.html>; “The first Russian autonomous Volk drone-hunter completed tests” (Первый в РФ автономный дрон-охотник «Волк» завершил испытания), Iz.ru, Feb. 10, 2021, <https://iz.ru/1122825/2021-02-10/pervyi-v-rf-avtonomnyi-dron-okhotnik-volk-zavershil-ispytaniia>.

8. Poseidon UUV carrier is scheduled for trials

The MOD announced that preparations have begun for testing the Belgorod nuclear submarine, the carrier of Poseidon nuclear UUVs. According to reports, the submarine is preparing to go to sea for the first time in its current Poseidon-carrying configuration. Previously, Poseidon was tested from the B-90 Sarov diesel submarine. Russian military experts believe that it may take several more years before the submarine is mission ready. At the same time, MOD stated that Poseidon tests are expected to be completed by the end of this year. Earlier, the Ministry of Defense reported that the Belgorod submarine crew had already been formed and had begun practical weapons and systems training.

The MOD sources admitted to the daily *Izvestia* publication that *Khabarovsk*, the lead submarine carrier of the Poseidon, will undergo further development and construction in 2021. The MOD plans for the construction of a series of several similar carrier submarines for the Northern and Pacific Fleets. Poseidon is one of the new types of deterrent weapons that Vladimir Putin presented in his message to the Russian Federal Assembly in 2018. These weapons are designed to deliver a guaranteed retaliatory strike even in the event of a surprise attack on Russia with the use of weapons of mass destruction, including nuclear ones.

The “heart” of Poseidon is an innovative small-sized nuclear reactor. Details of this device were not disclosed. According to the official statements, the Poseidon nuclear power plant is 100 times smaller in volume than the nuclear submarine engines, and still surpasses them in power. In February 2021, Sergei Ivanov, former defense minister, admitted that the MOD used anywhere from 10 to 20 billion rubles (from \$135 to \$270 million) annually to develop Poseidon and other advanced systems such as Avangard and Peresvet—implying that this level of funding allowed Russia to “quietly” develop the technology without stressing the defense budget and resources.

Sources: Anton Lavrov, Aleksei Ramm, “Poseidon in the boat: a submarine is prepped for testing nuclear robots” («Посейдон» в лодке: субмарину готовят к испытаниям ядерных роботов), Iz.ru, Feb. 11, 2021, <https://iz.ru/1123160/anton-lavrov-aleksei-ramm/poseidon-v-lodke-submarinu-gotoviat-k-ispytaniyam-iadernykh-robotov>; “Ivanov announced the cost of developing the latest Russian weapons” (Иванов озвучил стоимость разработки новейшего российского оружия), Iz.ru, Feb. 11, 2021, <https://iz.ru/1123447/2021-02-11/ivanov-ozvuchil-stoimost-razrabotki-noveishego-rossiiskogo-oruzhiia>; “Poseidon to help: new strategic weapon is tested in Russia” («Посейдон» в помощь: начинаются испытания стратегического оружия РФ), Iz.ru, Feb. 5, 2021, <https://iz.ru/1121208/dmitrii-kornev/poseidon-v-pomoshch-nachinaiutsia-ispytaniia-strategicheskogo-oruzhiia-rf>.

9. Su-57 gets “smarter” for more Okhotnik UCAV tests

According to Rostec’s United Aircraft Corporation, Russia’s Su-57 fifth-generation multirole fighter, maximized the automation of piloting and combat processes. Nikita Dorofeev, head of the Cockpit Department of the Sukhoi Design Bureau, said that automation, information integration, and intellectual support are the key requirements for the ergonomics of the cockpit in a modern fighter. He noted that theoretically, the pilot may not engage in piloting between takeoff and making an approach for landing, and can instead focus on searching for and attacking targets. According to Rostec, the fighter is equipped with multifunctional indicators that can provide the pilot with a large amount of information on the tactical situation and the operation of the aircraft’s systems.

The Su-57 incorporates the technology of intellectual support that helps the pilot accomplish assigned tasks. The Su-57 is a Russian-made fifth-generation multirole fighter designed to destroy all types of air, ground, and naval targets. It features stealth technology with the broad use of composite materials, is capable of developing supersonic cruising speed, and is furnished with the most advanced onboard radio-electronic equipment, including a powerful onboard computer (the so-called electronic second pilot). Its armament will include hypersonic missiles. The Su-57 took to the skies for the first time on January 29, 2010. The fifth-generation fighter jet has been successfully tested in combat conditions in Syria, and the Russian armed forces received the first Su-57 fighter in 2020.

The Su-57 will be paired with S-70 Okhotnik UCAVs in a loyal wingman configuration (please see previous issues of *AI in Russia*). The automation and intellectual support described above will help in S-70 command and control, especially if the Su-57 pilot can coordinate several Okhotnik drones. In February 2021, the Novosibirsk Chkalov Aviation Plant (NAZ) announced that it is building three more S-70 Okhotnik prototypes. According to the plan, they should be sequentially flight tested during 2022–2023. It is possible that changes in the design of the second prototype will be made based on the operating experience of the first Okhotnik drone,

and that the improvements will involve onboard radio-electronic equipment and airframe structural elements. It is also possible that the third and fourth UCAV versions may correspond to the final Okhotnik production version.

Sources: "Russia's Su-57 fifth-generation fighter gets maximally automated cockpit," Tass.com, Feb. 8, 2021, <https://tass.com/defense/1253851>; "Source: three more Okhotnik UCAVs are being assembled" (Источник: началась сборка еще трех ударных беспилотников "Охотник"), Voennoe,rf, Feb. 12, 2021, <https://xn--b1aga5aadd.xn--p1ai/2021/%D0%91%D0%BF%D0%BB%D0%B02/>.

10. Rostec develops smart weapons and systems

Ruselectronics Holding, part of the Rostec State Corporation, has begun designing a security system for the Baratayevka Airport complex in Ulyanovsk, Russia. The new system will be more efficient than traditional video surveillance systems because it will use elements of artificial intelligence. The work is planned to be completed by the end of the first quarter of 2021. The projected system will include radars, video cameras, a modular data center, and operator workstations. Radars will provide security for the airport perimeter at any time of the day and under any weather conditions. The developer claims that use of radar and data processing technologies based on artificial intelligence will automatically perform video analytics and forecast situations, as well as provide decision support for operators and other officials.

Rostec's High-Precision Complexes Holding plans to create a new Hermes 2.0 strike complex with a faster missile, via a plan to increase the missile combat power up to 2.5 times and increase its flight speed. Hermes' guidance system is autonomous and works on the "fire and forget" principle. Due to its multiplatform nature, it can be installed not only on armored vehicles and ships, but also on combat drones. The Hermes system is designed to engage modern and advanced tanks, armored vehicles, and various structures, as well as surface targets and low-speed aircraft at a distance of up to 100 kilometers.

Finally, Rostec's Techmash Holding has created a non-contact acoustic target complex that analyzes the speed and coordinates of a bullet or projectile, and transmits data on hits and deviations on the computer screen. Rostec stated that this development increases the effectiveness of training in shooting and the accuracy of adjusting fire.

According to the developers, the new target complex has no analogues in Russia. Its characteristics make it possible to obtain information about the effectiveness of shots virtually instantly and adjust the fire, focusing on the equipment data. The system is designed for training in small arms shooting, from 5.45mm to 12.7mm caliber, as well as 30mm projectiles.

The new target complex supports wireless communication between sensors and the operator at a distance of a kilometer.

Sources: "Russia has created a "smart" target complex for training accurate shooting" (В России создали "умный" мишенный комплекс для обучения точной стрельбе.), Tass.ru, Feb. 3, 2021, <https://tass.ru/armiya-i-opk/10611911>; "Rostec will create a Hermes 2.0 missile complex with increased power" («Ростех» создаст ракетный комплекс «Гермес 2.0» повышенной мощности), Iz.ru, Feb. 2, 2021, <https://iz.ru/1119330/2021-02-02/rostekh-sozdast-raketnyi-kompleks-germes-20-povyshennoi-moshchnosti>; "Ruselectronics is designing a security system for Ulyanovsk airport" («Росэлектроника» проектирует систему охраны аэропорта Ульяновска), CNews.ru, Feb. 5, 2021, https://www.cnews.ru/news/line/2021-02-05_roselektronika_proektiruet.

Corporate and Market Developments

11. Russian government and companies continue unmanned systems development

Early 2021 has seen numerous advances in Russia's development of unmanned systems with civilian applications. This is a summary of recent developments. On January 25, reports suggested that Russia would spend 172.3 billion rubles to develop smart transportation and traffic management systems through 2023. The development of infrastructure to support these systems—including roads, cameras, and sensors—will be based on regions. AI-enabled solutions for roads will be created in cities with more than 300,000 people.

In Moscow, testing of unmanned aerial taxis has begun on a closed test site, with the goal of making these possible by the 2023-2025 timeframe. The taxis are part of the Hover project, spearheaded by Alexander Atamanov. Skolkovo is considering developing a physical area for testing unmanned aerial vehicles jointly with the Moscow government. As discussed in past issues of *AI in Russia*, Moscow has the most highly developed legal infrastructure because of the laws it passed in 2020.

Russia's Ministry of Emergencies reportedly plans to purchase unmanned systems that could carry up to 150 kg, to rescue people from burning apartment buildings. The ministry already has over 400 light unmanned systems to monitor emergencies. Reports note that Russia still does not have laws that would allow people to be transported on unmanned systems, even in emergencies. One Skolkovo resident company, Hoversurf, is developing a passenger copter drone that could carry up to 300 kg and could also serve as an ambulance, though Russian experts note that Chinese systems developed by company EHang are in more advanced stages of development.

In early February, a representative of Cognitive Pilot (a joint venture of Sber and Cognitive Technologies) stated that the development of autopilots for motor vehicles will not be a priority as long as the legal and regulatory framework in Russia and other countries remains insufficient. Russia is currently developing legislation on legal regimes that have to do with unmanned systems.

Cognitive Pilot is also working on unmanned agricultural systems (as discussed in issue 15), smart active defense systems, and radar systems for unmanned transport. As discussed in issue 11, Cognitive Pilot is cooperating with the Chinese transportation company Fitsco. Separately, another key Russian company working on autonomous driving is Yandex. Both Cognitive Pilot and Yandex are set to continue working on unmanned vehicles, and some of these have been

tested not only in Russia but also in Israel and the United States (as discussed in issue 9). Sber is also testing SberAutotech unmanned vehicles in Moscow, and Russia's Ministry of Transportation is engaged in testing highly automated transportation vehicles.

Separately, unmanned systems developed by the Vega concern are also now being used by Russia's Rosseti electrical company to monitor electrical transmission lines.

Sources: Павел Клевошин, Валерий Кодачигов, "Sberbank JV to freeze unmanned vehicles concept," (СП Сбербанка заморозило проект создания беспилотных автомобилей), *Vedomosti*, Feb. 9, 2021, <https://www.vedomosti.ru/technology/articles/2021/02/09/857334-cognitive-pilot>; "В РФ выделено 172,3 млрд рублей на умные транспортные системы," TAdviser, Jan. 25, 2021, <https://www.tadviser.ru/>; "Skolkovo plans to create a zone to test unmanned vehicles" (В «Сколково» планируют создать зону для тестирования беспилотников), *Izvestiya*, Jan. 25, 2021, <https://iz.ru/1115949/2021-01-25/v-skolkovo-planiruiut-sozdat-zonu-dlia-testirovaniia-bespilotnikov>; Александр Грек, "Moscow has started testing flying taxis" (В Москве приступили к испытанию летающих такси)," *PopMech*, Jan. 15, 2021, <https://www.popmech.ru/technologies/662953-v-moskve-pristupili-k-ispytaniyu-letayushchih-taksi/>; "Russian emergency ministry to purchase heavy drones to rescue people from burning apartment buildings" (МЧС РФ закупает тяжелые дроны для спасения людей из горящих многоэтажек), TAdviser, Jan. 22, 2021, <https://www.tadviser.ru/>; "The future has arrived: ministry of emergencies to rescue people with drones" (Будущее прилетело: МЧС начнет спасать людей из горящих высоток дронами), *Izvestiya*, Jan. 12, 2021, <https://iz.ru/1110332/2021-01-12/budushchee-priletelo-mchs-nachnet-spasat-liudei-iz-goriashchikh-vysotok-dronami>; Татьяна Исакова, "Rosseti to use drones to monitor power lines" («Россети» начинают использовать дроны для мониторинга ЛЭП), *Vedomosti*, Feb. 1, 2021, <https://www.vedomosti.ru/technology/articles/2021/02/01/856266-rosseti-bespilotnikami>.

12. Roscosmos expands into commercial sector

Russian state-owned company Roscosmos will be further expanding its own production capabilities in the coming two years, increasing its interest in civilian and commercial products. CEO Dmitry Rogozin noted that this expansion will focus on light rail transportation equipment, drone control systems, power equipment for the Russian fuel and energy sector, medical equipment, and virtual reality devices for the education sector. This expansion in commercial sector products is being anchored by the announcement of new light rail vehicle purchases by Chelyabinsk governor Alexei Teksler. The new vehicles will be produced by the Ust-Katavsky Carriage Works (UKVZ), a joint-stock company controlled by Roscosmos, and plans include the development of unmanned tram vehicles by 2022.

Source: "Roscosmos will expand production of high-tech civilian products" (Роскосмос расширит производство высокотехнологичной гражданской продукции), TASS, Feb. 12, 2020, <https://tass.ru/ekonomika/10684565>.

13. University installs biometric facial recognition system

A new biometric facial recognition program has been installed on the campus of Stavropol State Agrarian University (SSAU). This new system was developed by the STC group of companies (TsRT, formerly known as the Center for Speech Technologies), which is a part of the broader Sberbank AI R&D ecosystem. The recognition system is a joint project between SSAU and Sberbank, the latter having been a partner with the university on several fronts for many years.

The system reportedly uses machine learning algorithms and the computer vision program “Vizir” to automatically analyze visitors who pass through entrance turnstiles on the university campus. Images taken from video surveillance are cross-checked with lists of people allowed access to the campus, before triggering an unlocking of the turnstile.

The CEO of STC, Dmitry Dyrmovsky, noted, “Thanks to modern algorithms, the scale of projects implemented by the RTC group, and our close integration with leading manufacturers of access control systems, all processes take less than a second, do not adversely affect the throughput of the turnstile, and provide convenient, fast, contactless passage.” He also noted that the group is an increasingly important part of efforts to integrate biometric facial recognition systems into public venues, including sports facilities and transportation locations, and said that some municipalities use it in their “Safe City” framework. (For more on Safe City, see issue 9.)

Source: “A biometric face recognition system of the CRT group has been introduced at SSAU” (В СтГАУ внедрена биометрическая система распознавания лиц группы ЦРТ), Cnews, Feb. 11, 2021, https://www.cnews.ru/news/line/2021-02-11_v_stgau_vnedrena_biometricheskaya.

14. NTI to develop stations housing self-propelled robots

The National Technology Initiative (NTI) Platform announced that it was developing a project to build standing stations that can house self-propelled robots. These stations would allow for the storage and charging of “multi-purpose wheeled platforms,” such as couriers, loaders, and snow blowers that can be deployed in areas with limited road infrastructure. At present, these robots are in development or at the conceptual stage, but the NTI is focused on ensuring a physical infrastructure that will be able to support them when they are at the later stages of development.

A test version of such a ground wheeled robot already exists; it has a carrying capacity of 150 kilograms and a speed of 15 kilometers per hour. All such robots would be directed remotely by workers over internet connections. This project is expected to be presented to regional

governments later this year. In the meantime, a feasibility study is being developed. This project is in line with other transport automation projects, such as the announcements of pilot tests for “flying unmanned taxis” in three Russian regions by 2025, as discussed earlier in this section.

Source: “Internet-controlled robot stations to appear in Russia” (В России появятся управляемые через интернет станции роботов), *Izvestiya*, Feb. 3, 2021, <https://iz.ru/1119870/2021-02-03/v-rossii-poiaviatsia-upravliaemye-cherez-internet-stantcii-robotov>.

Education and Training Developments

15. Rostov region to create agricultural scientific center engaged in AI research

According to a February 7th TASS article, an innovative scientific and educational center (ISTC) called “Don Valley” will be launched in the Rostov region in 2021. A number of joint laboratories and research organizations will be located in the 13,000-square-meter “valley.” According to the article, the main activities of the ISTC will be “the digitalization of the agro-industrial complex and the industrial complex, the development of organic farming, technologies of the food and processing industries, unmanned vehicles, artificial intelligence, robotics, and systems for monitoring the quality of crop production.”

The site will become part of the Southern Research and Educational Center, which was created under the “Science” national project in 2019. The Southern Scientific and Educational Center is made up of 14 universities, eight scientific organizations, and about 30 industrial partners. These include the Don State Technical University, Southern Federal University, Federal Scientific Agroengineering Center VIM, Southern Scientific Center of the Russian Academy of Sciences, Volgograd Technical University, Kostroma State University, Orel State University (Turgenev), and Dagestan State Technical University. The goals of the national “Science” project include the creation of 15 such world-class Research and Education Centers (RECs).

Sources: “An innovative technological valley will be created in the Rostov region by the end of the year” (В Ростовской области до конца года создадут инновационную технологическую долину), National Projects of Russia, Feb. 7, 2021, <https://xn--80aapampemcchfmo7a3c9ehj.xn--p1ai/news/v-rostovskoy-oblasti-do-kontsa-goda-sozdadut-innovatsionnuyu-tekhnologicheskuyu-dolinu>.

16. Tomsk universities jointly create chatbot to assist students

According to a February 9th TASS article, Tomsk State University (TSU), Tomsk State University of Control Systems and Radioelectronics, and Tomsk Polytechnic University have jointly created a digital chatbot assistant on the social media platform VKontakte. The chatbot, called “U-me” is designed to help students complete paperwork, navigate the campus, find social activities, and monitor their health. A similar digital assistant, which was covered in issue 17 of *AI in Russia*, was previously created by the three Tomsk universities to help students

develop resumes and apply for jobs. The three Tomsk universities received 560 million rubles of grant funds in 2019 for the creation of a Digital University under the Digital Economy of the Russian Federation national program. Using the grant funds, the three Tomsk universities are jointly developing curriculums on big data analysis, AI, and digital economy.

Sources: “Tomsk University has created a digital assistant for students” (Томский вуз создал цифрового помощника для студентов), National Projects of Russia, Feb. 9, 2021, <https://xn--80aarpmpemcchfmo7a3c9ehj.xn--p1ai/news/tomskiy-vuz-sozdal-tsifrovogo-pomoshchnika-dlya-studentov>.

17. Russian schoolchildren learn about digital privacy

According to a February 8th IBS article, schools across Russia recently concluded interactive lessons about digital privacy and personal data as part of the Digital Lesson project. This module, which is designed for students from grades 1 to 11 and features varying degrees of difficulty, was preented on February 8-22. Kaspersky Labs was the educational partner.

AI in Russia has covered the Digital Lesson (also translated as “Numbers Lesson”) in previous issues. Organized by the Ministry of Education, the Ministry of Digital Development, Communications and Mass Media of Russia, and the nonprofit organization (ANO) “Digital Economy,” Digital Lesson began in 2018. Now, in the 2020-2021 academic year, students are being educated on various modules, including unmanned vehicles (March 2021) and digital production (April 2021). Program partners include Sberbank, Yandex, and Mail.ru.

Sources: “Lesson numbers’ will teach students to protect their data on the Internet” («Урок цифры» научит школьников защищать свои данные в интернете), National Projects of Russia, Feb. 8, 2021, <https://xn--80aarpmpemcchfmo7a3c9ehj.xn--p1ai/news/urok-tsifry-nauchit-shkolnikov-zashchishchat-svoi-dannye-v-internete>; “Digital Lesson—All-Russian educational project in the field of digital economy” (УРОК ЦИФРЫ — всероссийский образовательный проект в сфере цифровой экономики), Digital Lesson, <https://xn--h1adlhdnlo2c.xn--p1ai/>.

18. AI Alliance to host AI youth conference, accredit AI university programs

According to a February 9th *Computer Weekly* article, Sberbank, along with the other members of Russia’s Artificial Intelligence Alliance, will be holding an international AI competition for students under the age of 18. The initial qualifying phases are open now until June 30, with subsequent rounds taking place throughout 2021. At the end of the competition, 10 winning

teams will each receive 1 million rubles. The Alliance in AI, which was formed at the 2019 AI Journey conference, includes Mail.ru Group, Yandex, Sberbank, Gazprom Neft, MTS, and RDIF.

Additionally, according to a February 10th CNews article, the Ministry of Science and Higher Education has recently included the Alliance in the field of artificial intelligence (AI) in the list of organizations that can conduct professional and public accreditation of higher education programs. These organizations help advise, develop, and homogenize AI education programs based on the standards created by the Russian government. Ideally, this will result in an expanded capacity to train AI experts. According to Kirill Bulatov, director of the AI Alliance, companies of the Alliance are facing a shortage of around 4,000 young experts with degrees in AI and data analysis. “Among the most in-demand majors are AI developers, data analysts and engineers, technical analysts, and data architects.”

Sources: “Artificial Intelligence International Junior Contest,” AIJC, <https://aijc.com/en/>; Vladimir Kozlov, “Russia’s Sber launches international AI contest for children,” *Computer Weekly*, Feb. 9, 2021, <https://www.computerweekly.com/news/252496062/Russias-Sber-launches-international-AI-contest-for-children>; Vladimir Bakhur, “Top universities teaching artificial intelligence to be formed in Russia” (В России сформируют топ ВУЗов, обучающихся искусственному интеллекту), CNews, Feb. 10, 2021, https://www.cnews.ru/news/line/2021-02-10_v_rossii_sformiruyut_top_vuzov.

19. Virtual assistant trains cadets for military service

According to a February 5th *Red Star* article, a new virtual assistant, “Avangard,” has been developed to help prepare Russian students for military service. The digital assistant is used during training camps and classes at the Patriot Military Park in Kubinka, near Moscow. The virtual assistant can monitor attendance, track the progress of each cadet, and be used as a learning tool by providing interactive educational games and quizzes in the classroom. According to the article, “The use of modern approaches in the learning process allows young people of pre-conscription age to get acquainted with the features of military service, study the rules of safety and behavior in emergency situations and master the basics of military professions.”

Sources: Victoria Andreychuk, “Artificial intelligence will help prepare Russian schoolchildren for military service” (Искусственный интеллект поможет подготовить российских школьников к военной службе.), *Red Star*, Feb. 5, 2021, <http://redstar.ru/ira-iz-avangarda/>.

International Collaboration

20. BRICS and SCO international IT forum to take place in Siberia

The 12th international IT forum will take place in June in Khanty-Mansiysk, although most events will be held virtually because of the continuing pandemic. Some leading experts and VIP guests, as well as panel moderators and IT company representatives, will be present in person. Priority areas for discussion will include artificial intelligence, big data, digital security, smart cities, digital education, digital health care, and digital transformation during the Covid-19 pandemic. Representatives from a total of 25 countries will take part, including not just BRICS and SCO, but also other CIS member states and Iceland, Cyprus, Portugal, and Croatia.

Source: “IT forum with BRICS and SCO participation will take place in Khanty-Mansiysk in the summer” (ИТ-форум с участием стран БРИКС и ШОС пройдет в Ханты-Мансийске летом) Interfax, Feb. 11, 2021, <https://www.interfax-russia.ru/ural/main/tradicionnyu-it-forum-s-uchastiem-stran-briks-i-shos-proydet-v-hanty-mansiyske-letom-v-smeshannom-formate>.

21. Russia involved in international effort to use AI to diagnose cancer

The medical startup Onecell, founded by Alexander Ninburg, has developed an AI-based telemedicine platform for oncological diagnosis by means of turning biopsy samples into structured data that can be used in a digital search for similar structures and chemical markers at all connected labs. Its equipment can use any laboratory microscope and allows pathologists to make remote diagnoses. The Russia-based company includes specialists from Russia, Israel, and Norway. The company has attracted \$6 million in investment and is currently piloting the system in three laboratories. While comparable systems exist, they cost five to 20 times more than the Onecell system. The goal is to reduce the frequency of incorrect cancer diagnoses. Existing diagnostic systems in Russia are analog based and are subject to an increasing shortage of qualified pathologists; this shortage can be rectified through telemedicine.

Source: Дмитрий Степанов, “Russians have created AI cancer diagnostics” (Россияне создали бюджетную ИИ-диагностику рака), Feb. 12, 2021, https://www.cnews.ru/news/top/2021-02-12_razrabotchik_onlajnass.

22. Russian system for neural control of computers ready for export

The Russian system Neurochat, which allows people with limited physical ability to use thought patterns to choose symbols on a screen for writing, is planning to begin exports abroad in 2021. The system allows people suffering from cerebral palsy, strokes, multiple sclerosis, and similar neurological conditions to use brain-computer interface technology to write texts on screen in order to improve their ability to communicate in person and online. In the future, the system will be able to connect to smart homes. It is already being used in medical facilities and special schools throughout Russia. Organizations from Israel, South Korea, and Singapore have expressed interest in importing the system as soon as borders reopen.

Source: “Export of Russian system to command computers with the power of thought will begin in 2021” (Экспорт российской системы для управления компьютером силой мысли начнется в 2021 году), TASS, <https://nauka.tass.ru/nauka/10610127>.

23. Russia-Turkey establish joint UAV monitoring in Karabakh

Russian and Turkish peacekeeping forces in the Caucasus have formed a joint monitoring center for Karabakh airspace using UAVs. The monitoring allows the control center to observe the entire territory and immediately note any crossing of the line of contact or any movements of military personnel or equipment by either side. Russian personnel working in the joint center use Forpost and Orlan-10 UAVs, which can be used either in observation mode or for search operations and are capable of operating in difficult weather conditions. The joint center has been operational for over a week and is directly connected to the military headquarters of both countries, as well as to the Russian peacekeeping force. Its efforts are described by CSTO leadership as helping stabilize the region.

Source: “Winged support for blue helmets” (Крылатое подспорье для «голубых касок»), *Krasnaia Zvezda*, Feb. 5, 2021, <http://redstar.ru/krylatoe-podspore-dlya-golubyh-kasok/>.

Spotlight: Russian Military Establishment Discusses AI

In February 2021, Defense Minister Sergei Shoigu said that it is necessary for the MOD to ensure the introduction of artificial intelligence technologies into weapons that determine the future appearance of the armed forces. According to Shoigu, robotic complexes, unmanned aerial vehicles, and automated control systems are increasingly used in combat training. Back in December 2020, Russian president Vladimir Putin held a meeting with permanent members of the Russian Security Council, where he discussed the neutralization of threats to national security associated with the development of military artificial intelligence technologies around the world.

AI is a popular topic among Russian military commentators and experts. Dr. Sergey Emelyanov—rector of the South-West State University, corresponding member of RAASN, and laureate of the Russian Government Prize in Science and Technology—thinks that a military robot should have the ability to perform autonomously, to travel from point A to point B while accomplishing a preset task. At the same time, Dr. Emelyanov thinks that this autonomy and independence in robotic activity will not eventually lead to the “rise of the machines.” He points out that when a combat UGV “glitches,” it does not then act in an unpredictable fashion, but simply stops until it is recovered or destroyed. Addressing military artificial intelligence, Victor Murakhovsky—chief editor of the military journal *Arsenal Otechestva* (Arsenal of the Fatherland), member of the Expert Council of the Collegium of the Military-Industrial Commission of the Russian Federation, and expert of the Russian Council on International Affairs and the Izborsk Club—cautioned about attributing too much importance to the current level of artificial intelligence development. He argued that considering learning recursive neural networks as “artificial intelligence” is a very big mistake, or a calculated move to “ride the hype” and receive funding for research.

Murakhovsky argues that so-called “artificial intelligence” can be of some use in decision support systems and in the processing of large databases, but that these are all auxiliary functions. In general, he believes, AI on the battlefield is useless and sometimes even harmful, since intelligence cannot be artificial—it either exists or it does not. He further reiterated that the object and the subject of research cannot be the same. He thinks there should be an independent coordinate system, an independent report of the parameters, and an independent observer examining the phenomenon or object. Yet today, the subject and the object of research coincide, so one should not expect really scientific results in the field of developing artificial intelligence.

He noted a philosophical paradox when it comes to AI as we are trying to understand it today. In the natural (not digital) world, there is nothing discrete at all; nothing is absolute. There are no numbers, no discrete processes in and of themselves, and everything that is digitized as part of AI RDT&E is a model of a real phenomenon. Murakhovsky thinks that we cannot verify the extent to which such models correspond to the real functioning of the human brain as it pertains to intelligence. He thinks that as a result developers run into a fundamental obstacle: it is impossible to combine the object and the subject of research and obtain objective data.

Viktor Litovkin, a retired colonel and another Russian military commentator, noted that weapons with AI are usually whole systems that work well. These technologies are used to move people away from the front line as much as possible in order to keep the military personnel alive while the vehicles are doing the fighting, and the Russian MOD is considering this principle as the primary guidance in developing such advanced weapons and systems. According to Litovkin, the network-centric warfare concept involves the use of artificial intelligence as a “human-in-the-loop.” In this concept, AI is a program that processes information and offers a solution to a human; it does not make decisions on its own.

Alexei Leonkov, another key Russian military expert, has a similar viewpoint. Leonkov notes that AI in the Russian sense works within the framework of automated weapons control systems, with overall control carried out by the headquarters. This system is called ESU TK, and it incorporates a number of different weapons. Artificial intelligence is involved in the processing of intelligence and other operational information—therefore, in the Russian military, weapons with AI are not autonomous, and a human operator is still very much involved. Leonkov noted that the United States is developing special programs to introduce AI into the defense sector. He thinks that the American approach has difficulties since some of the US military “elite” believe that such weapons can completely replace a person—e.g., that the weapons can independently assess the situation, identify the most dangerous objects, and ultimately strike without human intervention. Leonkov thinks this is the wrong strategy. It is unclear at this point whether Leonkov is referring to a specific RDT&E concept by a US defense contractor, or to the overall US strategy with respect to using artificial intelligence in combat. While mentioning US efforts, Leonkov makes no reference to the document *AI Principles: Recommendations on the Ethical Use of Artificial Intelligence by the Department of Defense*, released by the DOD in 2019.

Sources: “The Russian military will focus on the introduction of artificial intelligence” (Российская армия делает упор на внедрение искусственного интеллекта), Tass.ru, Feb. 9, 2021, <https://ria.ru/20210209/intellekt-1596625480.html>; “Military robotics’ developer noted their high intellect” (Разработчик боевых российских роботов отметил их высокий интеллект), Riafan.ru, Feb. 8, 2021, <https://riafan.ru/1383995-razrabotchik-boevykh-rossiiskikh-robotov-otmetil-ikh-vysokii-intellekt>; Oleg Odnokolenko, “Victor Murakhovsky: ‘Artificial intelligence on the battlefield is useless and sometimes even harmful, since intelligence cannot be artificial. It either exists or it does not.’” (Виктор Мураховский: “Искусственный интеллект на поле боя бесполезен и местами даже вреден, поскольку интеллект не может быть искусственным. Он или есть, или его нет”), *Zvezda Weekly*.ru, Feb. 2, 2021, <https://zvezdaweekly.ru/news/2021130031-7ckj1.html>; Nadezhda Alekseeva, Elizaveta Komarova, “Provides a person with ready-made solutions’: how weapons with artificial intelligence are developing in Russia” («Предоставляет человеку готовые решения»: как развиваются вооружения с искусственным интеллектом в России), *Rusisan.rtc.com*, Feb. 10, 2021 <https://russian.rtc.com/russia/article/830565-iskusstvennyi-intellekt-oruzhie>.

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