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A biweekly newsletter on AI and autonomy developments in Russia

CNA Russia Studies Program

HIGHLIGHTS OF ISSUE 32

- Sber conducts exercise modeling impact of US technological sanctions as development of AI-enabled systems continues across Russia's regions.
- Kalashnikov seeks to export its KUB loitering munition drone.
- Russian AI startup Cognitive Pilot announces that freight trains equipped with company's technology are now being tested in conjunction with Russian Railways.
- Sber announces a new AI track for its accelerator programs for high school, vocational, college, and graduate students.
- Russia's Ministry of Digital Development will establish a digital attaché service as part of the system of Russian trade representative offices around the world responsible for promoting Russian software products and providing support to Russian IT companies abroad.

THIS WEEK'S CONTENTS

GOVERNANCE AND LEGISLATION

US SANCTIONS ON TECHNOLOGY MAY HAVE DETRIMENTAL EFFECTS ON RUSSIA

A February 1 report in *Izvestiya* suggests that if Russian companies are disconnected from Western hardware and software, this may complicate the provision of services as well as hinder Russia's policy of import substitution. According to the paper, because of the threat by the US to impose technological restrictions on Russia, in recent weeks Sberbank has "conducted technology exercises during which it simulated a shutdown from foreign software and electronics, including Microsoft, Nvidia, VMware, SAP, Oracle and Intel." Though the findings of the exercise are unknown, experts quoted by the newspaper suggested that the more devastating impacts could be on hardware, because Russian production capacities are insufficient.

Source: "Expert states of the impossibility of import substitution in case of technological sanctions" (Эксперт заявил о невозможности импортозамещения в случае технологических санкций), *Izvestiya,* Feb. 1, 2022, https://iz.ru/1285062/2022-02-01/ekspert-zaiavil-o-nevozmozhnosti-importzameshcheniia-v-sluchae-tekhnologicheskikh-sanktcii.

GOVERNMENT AGENCIES WORKING ON PLANS TO ALLOW DATASET ACCESS TO BUSINESS

Russia's Ministry of Digital Development, Communications and Mass Media is working on a plan that would allow Russia's industry access to the state's anonymized datasets. This would start with those belonging to Federal Service for Veterinary and Phytosanitary Supervision; the Federal Tax Service; the Federal State Statistics Service; the Ministry for Development of the Russian Far East and Arctic; and the Federal Service for State Registration, Cadastre and Cartography. The datasets are to be utilized for machine learning via neural networks and, prior to that, they reportedly need to be tested via AI hackathons and competitions. Government plans to create a unified "data lake" in order to increase experimentation and decrease learning time are also set to take center stage in 2022, according to *Kommersant*.

Separately, TASS reported on January 28 that the government plans to change legislation so that even anonymized personal data are treated like personal data, thereby taking into account citizens' rights.

Sources: Tatyana Isakova, "Network representation" (Сетопредставление), *Kommersant,* Jan. 25, 2022, https://www.kommersant.ru/doc/5181417; "In Russia, there are plans to process anonymized personal data like personal data" (В России обезличенные персональные данные планируют обрабатывать как персональные), TASS, Jan. 28, 2022, https://tass.ru/obschestvo/13556481.

INTEGRATION OF INTELLECTUAL TRANSPORT SYSTEMS TO PROCEED IN 42 REGIONS

Early February reports suggest that the Russian government has concluded agreements with 42 regional governments and dedicated funding to incorporate intellectual transport systems. These systems would "automate traffic management processes and, as a result, improve road safety." Projects

include public transportation tracking, modernization of traffic lights, introduction of air pollution sensors, and the development of traffic visualization and prediction tools.

Source: "Agreements to receive subsidies in 2022 to incorporate intellectual traffic systems have been concluded with 42 regions—government" (Соглашения на получение в 2022 году субсидий на внедрение интеллектуальных транспортных систем заключены с 42 регионами – правительство), D-Russia, Feb. 7, 2022, https://d-russia.ru/soglashenija-na-poluchenie-v-2022-godu-subsidij-na-vnedrenie-intellektualnyh-transportnyh-sistem-zakljucheny-s-42-regionami-pravitelstvo.html.

GOVERNMENT DEBATES SAFE CITY PROGRAM COSTS

According to *Kommersant,* Russia's Ministry of Economic Development is reportedly critical of the costs of a software-hardware platform for the Safe City program proposed by the Ministry of Emergency Situations. This platform would "unite all urban and commercial security systems of the country ["facial recognition, traffic analysis cameras on the roads, smoke detectors"] on one government platform" with the goal of improving emergency response. According to the project, regions would implement the Safe City program and would then have to plug it into a unified system. The opposition is built on concerns about costs for program implementation in the regions as well as the challenges of plugging commercial (or private) security systems into a unified government system.

Source: Nikita Korolyov, "Safe City ended up being expensive" («Безопасный город» оказался дорог), *Kommersant*, Feb. 7, 2022, https://www.kommersant.ru/doc/5204899.

MILITARY AND SECURITY

RUSSIAN DEFENSE MANUFACTURER IS BULLISH ON LONG-RANGE COMBAT DRONES

Russia's largest drone-manufacturing company sees UAV production increasing in the future, with unmanned aerial technology playing an increasingly greater role in the Russian military. Russia's Kronstadt Corporation is one of the main UAV-manufacturing companies in Russia and has already delivered the first domestically produced UCAV—the Orion—to the Russian military. Kronstadt is manufacturing an entire drone line-up that includes a long-range Sirius combat UAV (an upgrade of the Orion medium-latitude drone), Helios long-range ISR and radar drone, Grom loyal wingman combat drone, and Molniya swarming military UAV. Recently, Kronstadt made several announcements about its ongoing UAV R&D. First, its planned Sirius UCAV will be designed as antisubmarine, reconnaissance and target acquisition, search and rescue, and re-transmitter versions for the Russian Navy, with research and development conducted jointly with the Navy's aviation department.

Second, Sirius will be part of reconnaissance and strike circuit (contour) with manned combat aircraft, with the UAV as a reconnaissance and operational strike weapon against ground and maritime surface targets. In this scenario, manned aircraft primarily act as strike weapons against targets detected by Sirius drones. The first Sirius test flight is expected in May 2022, with possible mass production commencing in 2023. Third, Kronstadt announced that the Helios radar patrol long-range drone prototype will be test-flown in 2024. This long-range UAV can potentially replace certain ISR manned aircraft in operation today, in line with MOD's policy of developing robotic technologies to take humans out of dangerous missions.

Finally, Kronstadt noted that state contracts were concluded for the preliminary design of Grom and Molniya drones, indicating that the MOD is interested in testing prototypes in the coming years. The Grom UAV is deigned to penetrate adversary layered defenses and can launch its own drones and unmanned aerial vehicle swarms, including Molniya drones. In public press releases, Kronstadt notes that its UAV products are made with domestic components, without relying on any high-tech imports—a key Russian MOD acquisition policy that seeks to wean domestic defense manufacturers from dependence on foreign imports, such as sensors, engines, and microelectronics. All the above-mentioned drones are expected to be mass-produced at the Dubna facility near Moscow, where Kronstadt is expected to manufacture large unmanned aerial vehicles and helicopter-type drones.

Sources: "Russia's seaborne strike drone to get rescue/reconnaissance capabilities," tass.com, Feb. 7, 2022, https://tass.com/defense/1398817; "The Sirius UAV naval version will function as a rescue and reconnaissance drone" (Морская версия ударного БЛА "Сириус" получит функции спасательного средства и разведки), Tass.ru, Feb. 7, 2022, https://tass.ru/armiya-i-opk/13632141; "Sirius UAV will be part of reconnaissance and strike circuits with manned aircraft" (БЛА "Сириус" смогут работать в разведывательно-ударных контурах с пилотируемой авиацией), Tass.ru, Feb. 4, 2022, https://tass.ru/armiya-i-opk/13614703; "Helios radar drone will fly in 2024 for the first time" (Беспилотник "Гелиос-РЛД" совершит свой первый вылет в 2024 году), Tass.ru, Jan. 27, 2022, https://tass.ru/armiya-i-opk/13547731.

URAN-6 UGV USED IN INTERNATIONAL TRAINING

According to the Russian MOD, eight military personnel from Djibouti will be trained on using the Uran-6 demining unmanned ground vehicle (UGV) at the Russian Armed Forces' International Mine Action Center near Moscow. The Russian military stood up the center in 2014 as a training ground for the Russian and foreign personnel. The Djibouti training will take place both in classrooms and outdoors. African military personnel will receive skills in Uran-6 operations, with UGV drills based on the Russian lessons learned in Syria. Uran-6 was used widely by the Russian sappers in Syria and in the Nagorno-Karabakh region. This UGV is remote-controlled by an operator at up to 800 meters, making it one of the key tools used by the Russian forces in clearing terrain of mines and unexploded ordnance. Uran-6 is already acquired by the demining and engineering battalions, making it one of the most widely used UGVs in Russian military service today.

Sources: "Specialists from Djibouti will be trained in the Russia on the use of the Uran-6 complex" (Специалисты из Джибути пройдут обучение в РФ по применению комплекса «Уран-6»), TvZvezda.ru, Jan. 24, 2022, https://tvzvezda.ru/news/2022124177-qf8yc.html; "Specialists from Djibouti will be trained in Russia on the use of Uran-6" (Специалисты из Джибути пройдут обучение в РФ по применению комплекса "Уран-6"), tass.ru, Jan. 24, 2022, https://tass.ru/armiya-i-opk/13509313; "Russian peacekeepers use Uran-6 mine clearing robot in Nagorno-Karabakh," Tass.com, Dec. 11, 2020, https://tass.com/defense/1233857; Official Russian MOD webpage for the International Mine Action Center, https://stat.mil.ru/mpc/info.htm.

RUSSIAN KUB LOITERING MUNITION DRONE HEADED FOR EXPORT

Russia's Kalashnikov Corporation (part of Rostec) received official permission to export its KUB loitering munition drone. KUB is one of two loitering munition (or "kamikaze," as it is widely called) UAVs produced in Russia by Kalashnikov, with the Lancet being the other model. Kalashnikov noted that it is ready to start promoting the KUB internationally, including during intergovernmental commissions and arms/military technology exhibitions. The company also noted that this UAV was already successfully tested in combat in Syria. However, the KUB has not yet been delivered to the Russian military, which has priority

over any planned export sales. KUB can be used to strike infrastructure facilities, adversary units, and lightly armored vehicles. The drone operates silently (via an electric engine) at a speed of up to 130 km/h and can spend up to 30 minutes in flight.

Russian military commentators note that KUB (and Lancet) will be sought after internationally, given this type of drone's successful use by Azerbaijan against Armenian forces in the 2020 Nagorno-Karabakh conflict and by military forces in other conflicts such as Syria and Libya. They also note that given the loitering munition's generally low price, there is now a wide demand for such technology from nations and armies that also utilize small reconnaissance UAVs. According to several Russia-based commentators, Kalashnikov could export KUB to North Africa, Latin America, Southeast Asia, and former Soviet states, where Moscow already has military-to-military contacts and ongoing exports.

Sources: "Kalashnikov's "kamikaze" drones are headed for export" (Дроны-камикадзе "Калашникова" КУБ начнут поставлять на экспорт), Ria.ru, Jan. 25, 2022, https://ria.ru/20220125/boepripasy-1769384097.html?fbclid=IwAR3BENJLqQyL7zXpeS4ipUqKKZ6CdaFRoABLMiEx1fQGdCu5wVeHZpaL8JA; "KUB loitering munition received an export passport" (Барражирующий боеприпас КУБ получил паспорт экспортного облика), Tass.ru, Jan. 23, 2022, https://tass.ru/armiya-i-opk/13515121.

RUSSIAN MILITARY RESEARCHERS PATENT C-UAS DRONE

Researchers at the MOD's Military University patented a small counter-UAS drone that could potentially deal with incoming adversary swarms made up of small UAVs. According to the design, this system consists of a quadrocopter with a multi-barrel weapon station and four telescopic rails that face horizontally to the sides. Its operation is described as follows: The quadrocopter hangs in the air above a protected object/site with a net open on the rails. Network sensors read the movement of the attacking UAV swarm and send a signal to the electric capsules in the multi-barrel combat module. This causes the barrels to fire at the same time, creating a fragmentation field that destroys enemy drones. The design presumably does not damage the protected object itself. This novel design was conceived by Military University researchers because of their belief that existing methods of countering drone swarms—such as air defense, electronic warfare, fighter and army aviation, and even small arms—are not able to adequately cope with this threat.

Sources: "A new way to combat drone swarms is invented in Russia" (В России изобрели способ борьбы с "роями" беспилотников), Ria.ru, Jan. 31, 2022, https://ria.ru/20220131/bespilotniki-1770239096.html; "A quadrocopter with a net to combat UAVs is invented in Russia" (В России изобрели квадрокоптер с сетью для "ловли" беспилотников), RadioSputnik, Ria.Ru, Jan. 31, 2022, https://radiosputnik.ria.ru/20220131/bespilotnik-1770269219.html.

MARKETS AND PRIVATE SECTOR

COGNITIVE PILOT TESTS FREIGHT TRAIN SYSTEMS

The Russian AI startup Cognitive Pilot has announced that locomotives equipped with Cognitive Rail Pilot are now being tested in conjunction with Russian Railways. The programs are intended to be used to automate freight trains, and over 500 are expected to be integrated into existing locomotives by the end of 2022 to widen current testing. They assist train engineers in rail shunting operations (the process by which rolling stock is sorted into complete trains in a railyard) to achieve greater speed and efficiency. In the announcement, Olga Usakova, the CEO of Cognitive Pilot, stated that this should reduce accident

incidents by up to 70 percent, and that a major tender from Russian Railways is expected soon, in which Cognitive Pilot intends to participate. The testing is expected to be completed by 2024.

Source: Vladimir Fetisov, "Trains with artificial intelligence will appear in Russia in 2022" (Поезда с искусственным интеллектом появятся в России в 2022 году), 3DNews, Jan. 25, 2022, https://3dnews.ru/1058676/poezda-s-iskusstvennim-intellektom-poyavyatsya-v-rossii-v-2022-godu.

SBER RELEASES NEW DATASET PREPARATION TOOL

To aid in the development of large datasets, Sber has released a new dataset preparation tool, PyTorch-LifeStream. This software library contains algorithms that aid in building out event data arrays useful for dataset creation. The library relies on a neural network contrast learning approach that aids in building out event data in useful ways. The program was developed and patented by Sber's AI laboratory, which has released several other library packages based on AI advancements, such as machine learning text and visual algorithms such as RuDALL-E, ruGPT-3, LAMA, and RePLAY. The First Deputy Chairman of Sber's board, Aleksandr Vedyakhin, was quoted as saying, "The lack of cleaned, anonymized and labeled data is one of the main barriers to the further development of artificial intelligence, to the creation of new products and services that can solve the most important scientific and socially significant tasks."

Sources: "Sber provides developers with free access to dataset preparation tool" («Сбер» предоставил разработчикам бесплатный доступ к инструменту подготовки датасетов), CNews, Feb. 1, 2022, https://www.cnews.ru/news/line/2022-02-01_sber_predostavil_razrabotchikam; "Sber: PyTorch-LifeStream Software Library," TAdviser, Feb. 1, 2022, https://tadviser.com/index.php/Product:Sber:_PyTorch-LifeStream_Software_Library.

GAME INDUSTRY CEO RESIGNS IN WAKE OF BIG DATA BASED FIRINGS

The CEO of Xsolla, an IT startup based in Perm, resigned recently under a cloud of suspicion. The CEO, Aleskandr Agapitov, who founded the company in 2005, had gained notoriety in the Russian IT space, having used a big data algorithm to fire over 150 company employees in August 2021. This action resulted in a major set of lawsuits over wrongful termination that involved Russian state labor authorities. Although Xsolla denies that Agapitov's resignation is related to the bad press and legal trouble from the firings, the events remain connected in the Russian press. Xsolla specializes in software for game developers and has been successful in recent years.

Sources: "The head of the Russian IT startup who fired 150 people on the advice of Big Data, resigned" (Остался без должности глава российского ИТ-стартапа, по совету Big Data уволивший 150 человек), CNews, Feb. 3, 2022, https://www.cnews.ru/news/top/2022-02-03_gendirektor_rossijskogo; "Layoffs on the advice of Big Data in Russia: Authorities say there were none, workers say they are fired" (Увольнения по совету Big Data в России: Власти утверждают, что их не было, работники говорят, что они уволены), CNews, Sept. 10, 2021, https://www.cnews.ru/news/top/2021-09-10_rostrud_massovogo_uvolneniya.

HUMAN CAPITAL

PUTIN EMPHASIZES NEED TO TEACH MATH TO STUDENTS

According to a TASS article, Putin spoke about the vital importance of training schoolchildren in mathematics and computer science during a Student's Day speech on January 25. Putin stated, "Our

principal task is to ensure the availability of modern training in mathematics and informatics, and from the earliest years, so that any student, if they have a desire, can study these subjects at an in-depth level." Putin emphasized that "mathematics [is] not some kind of abstract, conceptual field of knowledge" but "the science of the future, a tool for the development of new technologies and the most advanced industries." He said, "We are talking about working with big data in industry, finance, medicine, genetics—anywhere…. And, of course, mathematical methods are the foundation that allows modern software solutions and developments in the field of artificial intelligence to be created."

Source: "Putin urged to ensure the availability of training of specialists in mathematics and computer science" (Путин призвал обеспечить доступность подготовки специалистов по математике и информатике), TASS, Jan. 25, 2022, https://tass.ru/obschestvo/13517915.

MINISTRY OF ECONOMIC DEVELOPMENT ASSESSES LEVEL OF AI DEVELOPMENT IN RUSSIA

The Ministry of Economic Development has developed a methodology to assess the level of development of artificial intelligence in Russia. According to a January 25 *Rossiiskaya Gazeta* article, "Regular monitoring will provide an objective picture as to the state of the industry as a whole and the dynamics of its change." The results of the analysis will help inform any necessary policy changes. The key indicators of assessment include the number of people who have received higher education / professional training in the field of AI; levels of satisfaction with working conditions for AI professionals in Russia; the number of companies that have received support under the federal project; and the number of publications at world conferences in the field of AI.

Source: "The development of artificial intelligence will be assessed by the number of scientists" (Развитие искусственного интеллекта оценят по количеству ученых), RG, Jan. 25, 2022, https://rg.ru/2022/01/25/razvitie-iskusstvennogo-intellekta-oceniat-po-kolichestvu-uchenyh.html.

RECRUITMENT AND TRAINING AGREEMENT FOR RUSSIAN DEFENSE INDUSTRY SIGNED

Polyus Scientific Research Institute, the Russian Technological University MIREA, MIPT Phystech School, and Moscow State Technological University have signed a nine-year agreement to recruit and provide training to specialists to work for the Russian defense industry. According to a January 26 Rostec press release, the agreement was signed with the Center for Quantum Electronics as part of the Shvabe holding of the Rostec State Corporation. In order to recruit talent, the institutions will "hold conferences, olympiads and scientific competitions, as well as open days at factories, research institutes, laboratories and design bureaus of the country." According to the director general of Polyus, the training will primarily be focused on photonics and electronics, "since the future lies in the development of these areas."

Source: "Shvabe Laser Center and technical universities of the Russian Federation will train personnel for the defense industry" (Лазерный центр «Швабе» и технические вузы РФ будут готовить кадры для ОПК), Rostec, Jan. 26, 2022, https://rostec.ru/news/lazernyy-tsentr-shvabe-i-tekhnicheskie-vuzy-rf-budut-gotovit-kadry-dlya-opk/.

SBER LAUNCHES AN AI-FOCUSED TRACK TO ACCELERATOR PROGRAM

Sber has reportedly launched a new AI track for its "accelerator" programs, SberZ (for high school and vocational students) and SberStudent (for college and graduate students). The free acceleration programs consist of three stages and take a total of eight months. During the first stage, participants attend lectures and learn how to create AI solutions. In the second phase, participants team up with mentors to develop AI startups. In the third phase, qualifying teams present to Sber executives and university rectors at a demonstration day. According to the articles, winners will receive points toward the Unified State Exam and other preferences when applying to universities. Winning projects by university students will receive grants from Moscow Seed Fund. The track was designed in collaboration with the Artificial Intelligence Academy for Teens, created by Sberbank Charitable Foundation Investment to the Future.

Sources: "PJSC Sberbank : Sber youth accelerators now accepting applications for AI track," MarketScreener, Jan. 25, 2022, https://www.marketscreener.com/quote/stock/PJSC-SBERBANK-6494829/news/PJSC-Sberbank-Sber-youth-accelerators-now-accepting-applications-for-AI-track-37637578/; "Sber youth accelerators open acceptance of applications for a track on artificial intelligence" (Молодежные акселераторы Сбера открывают прием заявок на трек по искусственному интеллекту), Dostup1, Jan. 27, 2022, https://dostup1.ru/finance/Molodezhnye-axeleratory-Sbera-otkryvayut-priem-zayavok-na-trek-po-iskusstvennomu-intellektu_145987.html.

AI HACKATHONS AND EVENTS

The All-Russian Exhibition Center will host a regional qualifying round of the national competition titled "First Robotics Championship—Moscow 3.0" on February 17-20. There are four sub-competitions, each open to students aged 4 to 18 years old, and almost 100 teams will take part. Those who qualify will take part in the competition in March 2022.

Source: "Almost 100 teams will take part in the robotics championship at VDNKh" (Почти 100 команд примет участие в чемпионате по робототехнике на ВДНХ), CNews, Feb. 4, 2022, https://www.cnews.ru/news/line/2022-02-04_pochti_100_komand_primet_uchastie.

INTERNATIONAL COLLABORATION

RUSSIA ESTABLISHES DIGITAL ATTACHÉ SERVICE

Russia's Ministry of Digital Development, Communications and Mass Media, in cooperation with the Ministry of Industry and Trade and the Russian Foundation for the Development of Information Technologies, has announced that it will establish a digital attaché service as part of the system of Russian trade representative offices in several countries around the world. In 2022, such attachés will operate in 16 countries at first and then in 28 countries by 2024. The first countries where digital attachés will work include Brazil, Vietnam, Germany, Egypt, India, Iran, Kazakhstan, Cuba, Malaysia, UAE, Singapore, Thailand, Turkey, South Africa, and South Korea. Candidates for the position will be responsible for developing the export of Russian digital solutions abroad by promoting Russian software products and providing consulting, information and analytical, and legal and organizational support to Russian IT companies in the countries where they will operate. They will be expected to be well versed in Russian and foreign software products, understand the competitive advantages of Russian solutions, and have knowledge of Russian and international legislation in the field of trade.

Source: "Ministry has started to develop digital attaché service in Russian trade representations" (Минцифры приступило к созданию службы «цифровых атташе» в торгпредствах РФ), DRussia, Feb. 7, 2022, https://d-russia.ru/mincifry-pristupilo-k-sozdaniju-sluzhby-cifrovyh-attashe-v-torgpredstvah-rf.html.

RUSSIAN TECHNOLOGY AT THE NIST INTERNATIONAL COMPETITION

The TsRT group of companies (part of the Sber ecosystem) showed outstanding results in testing voice biometrics in a recent NIST SRE21 (Speaker Recognition Evaluation) competition. According to the company's press release, the competition required contestants to develop voice recognition algorithms to recognize speakers by audio from different sources: telephone calls (conversational telephone speech, CTS), and sound from video (audio from video, AfV). They were also required to use a combination of algorithms for voice and facial recognition to achieve speaker recognition by audio and video from different sources: phone calls (CTS), audio from video (AfV), and just video.

This year's competition was unusual in having two options for learning algorithms: the Fixed option allowed the use of only audio data from the organizers, and the Open option allowed any data to be used. The difficulty was that the data were recorded both through ordinary telephone conversations and through the use of microphones in recordings from video cameras. In addition, the people on the recordings spoke different languages: English, Chinese, Arabic and others. The TsRT scientific team was one of the first to successfully apply a combination of neural network architectures of the transformer type, which is popular in computer vision, natural language understanding, and wav2vec, which is used in speech recognition tasks, to solve the problem of human recognition. This approach made it possible to achieve a low level of error in verifying a person by voice.

The TsRT group team also demonstrated strong results in another competition—the NIST CTS Speaker Recognition Challenge. This is an ongoing competition, with intermediate results periodically being calculated. The main objective of the CTS Challenge is to recognize the speaker from telephone recordings in which the person can speak different languages (English, French, Arabic), using various smartphone models. Thirty-three teams from leading universities and commercial companies take part in the competition. Among the participants of the competition are the strongest scientific teams of the world's leading universities and teams of commercial companies—researchers from China, the USA, Japan, Italy, France, Spain, Israel, Singapore, and the Czech Republic.

The TsRT group (part of the Sber ecosystem) is a global developer of products and solutions based on conversational artificial intelligence, machine learning and computer vision (with 30 years of experience in the field of speech technologies), and facial and voice biometrics. It focuses on creating AI solutions for the B2B and B2G segments and has implemented more than 5,000 AI projects around the world, including on a national scale in Mexico, Ecuador, and the Middle East. In Russia, MDG solutions are used in various industries, including banking, telecom, fuel and energy, and in the public sector, and are used to implement the Safe&Smart city concept. Its technologies for detecting voice fakes and speech recognition occupy leading positions in the world rankings of NIST, VOiCES, and CHiME.

Source: "Russian technologies of voice biometric demonstrate exemplary results in the NIST International Competition" (Российские технологии голосовой биометрии продемонстрировали выдающиеся результаты в международном конкурсе NIST), CRT press release, Jan. 27, 2022, https://www.speechpro.ru/media/news/rossijskie-tehnologii-golosovoj-biometrii-prodemonstrirovali-vydayushiesya-rezultaty-nist.

RUSSIAN-IRAQI COOPERATION IN USING AI FOR FORESTRY

Researchers from Russia and Iraq have taught a neural network to use drone images to identify forested areas affected by the large spruce beetle, a pest beetle. The accuracy of the algorithm is about 95 percent. In the future, this will improve the monitoring of forest areas to protect against pests. The results of the study were published in the scientific journal *IEEE Access*. The large spruce beetle is a large beetle whose larvae feed on spruce and pine bark in northern and central Europe, as well as in Russia. It usually lives on old, rotten trees; however, due to an increase in the population, caused partly by climate change, in recent years such beetles have also attacked healthy trees. This process causes serious damage to the forest areas of different countries and requires the development of tools for the operational control of the pest population.

The data for the study were collected in a biosphere reserve in Bulgaria. Modern high-resolution images created by cameras from unmanned aerial vehicles made it possible to visually identify areas of the forest that are damaged by beetles. To train the neural network models, the scientists used 400 pre-processed images provided by the Bulgarian Academy of Sciences. Scholars from the St. Petersburg Electrotechnical University collected a set of such images and, based on it, trained several neural networks to independently detect beetles. In order to detect infected trees in images collected using drones, the scientists used an adaptation of the already existing YOLO neural network.

Source: "Neural network taught to locate damaged forest portions from drone imagery" (Нейросеть научили выявлять пораженные вредителем участки леса по снимкам с дронов), TASS, Jan. 28, 2022, https://nauka.tass.ru/nauka/13554183.

DIGITAL ECONOMY ORGANIZATION EXPANDS INTERNATIONAL PARTNERSHIPS

Representatives from Russia's Digital Economy organization recently visited Uzbekistan and the United Arab Emirates. In Uzbekistan, they met with representatives of the Ministry for the Development of Information Technologies and Communications, the Ministry of Innovative Development, the Center for E-Government Project Management, the Center for Digital Economy Research, and the IT Park of Uzbekistan. They discussed the Digital Pumping project—a series of strategic sessions aimed at a comprehensive analysis of existing digital transformation strategies in a country or a separate region and the development of mechanisms for accelerated achievement of indicators through the introduction of digital solutions and services. In the UAE, representatives met with representatives of the UAE 4IR Center, known as the center for the fourth industrial revolution and part of the Dubai Future Foundation. The two sides agreed to cooperate in the development of Industry 4.0 technologies, including additive technologies, robotics, artificial intelligence, and big data analysis in industry. They identified three priority projects for cooperation in 2022: AI Maturity Index, NYBL, and AI Procurement. Opportunities will also be explored for Russian companies to participate in the Dubai Future Accelerators (DFA), a program implemented by the Dubai Future Foundation that attracts international companies to solve government digital transformation challenges in the UAE. According to the parties, Russian solutions in the field of logistics, the agricultural sector, unmanned vehicles, and smart cities, and developments in the field of artificial intelligence will be most in demand.

Sources: "ANO Digital Economy is creating conditions to expand cooperation between Russia and Uzbekistan" (АНО «Цифровая экономика» создает условия для расширения сотрудничества между Россией и Узбекистаном), Novosti trifrovoi ekonomiki, Dec. 28, 2021, https://data-economy.ru/tpost/lm7bfglkr1-ano-tsifrovaya-ekonomika-sozdaet-usloviy; "ANO Digital Economy is developing cooperation with partners from UAE" (АНО «Цифровая экономика» развивает сотрудничество с партнёрами из Объединенных Арабских Эмиратов), Novosti trifrovoi ekonomiki, Jan. 18, 2022, https://data-economy.ru/tpost/rvlba8v891-ano-tsifrovaya-ekonomika-razvivaet-sotru.

SPOTLIGHT

DEFENSE MINISTRY TESTS NEW UGVS

Source: This screen grab is one of the two UGVs shown in the video and listed in the video description. MOD's *Krasnaya Zvezda* YouTube channel, Jan. 23, 2022, https://www.youtube.com/watch?v=QAvkYqz7t8Y.

The Russian military is continuing to experiment with different UGV types for combat and logistics application. To that end, the MOD recently conducted testing and evaluation of ISR and logistical unmanned ground vehicles at the Alabino grounds outside Moscow. The ISR ground robot is reinforced with armor plates and is capable of performing "kamikaze" functions to destroy mines, targets, and obstacles via self-detonation to clear the way for troops and other vehicles. The logistics UGV is built to supply ammunition to the front lines, deliver medicines, and evacuate the wounded, with AI elements allegedly allowing the vehicle to independently navigate the terrain, avoid obstacles, and be relatively independent in operation once the final decisions are approved by a human operator. Both UGVs can navigate using satellite signals and cellular communication channels. The testing at Alabino was supervised by the MOD's Main Directorate of Armored Forces Combat Training (similar to US TRADOC). The official announcement did not indicate the UGV manufacturer. This experiment is in line with MOD's policy for future combat that envisions autonomous vehicles, unmanned systems, and military robots replacing soldiers in most dangerous battlefield tasks, thereby helping save lives and make missions more effective.

Source: Konstantin Isaev, "New "scout-kamikaze" and "logistics" robots were shown at the Alabino training ground" (Новых роботов «разведчика-камикадзе» и «логиста» показали на полигоне Алабино), TvZvezda.ru, Jan. 23, 2022, https://tvzvezda.ru/news/2022123441-oLron.html.

This report, the thirty-second 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.

Approved by February 2022: Michael Kofman, Research Program Director
Russia Studies Program / Strategy, Policy, Plans, and Programs Division

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