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A biweekly newsletter on AI and autonomy developments in China

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Welcome to the *China AI and Autonomy Report,* a biweekly newsletter published by CNA. Read in browser.

We begin this issue with coverage of the PRC exercises around Taiwan that followed Speaker of the House Nancy Pelosi's trip there on August 2-3. According to Taiwan media, PRC UAVs overflew Jinmen and other islands belonging to Taiwan, leading the Taiwan military to fire flares as warning shots. We also discuss three indicators that PRC commercial unmanned systems are being used for military purposes: (1) The Russian embassy in Beijing deleted a Weibo post praising the military utility of drones manufactured by the PRC company DJI. (2) A "robot dog" carrying an anti-tank weapon demonstrated at a Russian arms exhibition appeared to be of PRC origin. (3) The US-based website *The War Zone* reported extensively on strikes against the Russian Black Sea Fleet headquarters and a Russian oil refinery that were conducted using UAVs similar in appearance to a PRC commercial drone. In non-military news, the Cyberspace Administration of China (CAC) has published a list of 30 recommendation algorithms, along with short descriptions of their use. The normally tightly held algorithms were submitted to CAC by many of China's top tech companies in accordance with a regulation that came into effect on March 1. Meanwhile, the Beijing city government has announced a plan to develop the market for virtual humans—digital avatars often used in advertising and entertainment.

THIS WEEK'S CONTENTS

PRC EXERCISES AROUND TAIWAN

PRC UAVs overfly Taiwan's offshore islands. Taiwan media reports that PRC UAVs overflew Taiwan's offshore islands as part of its military exercises conducted after Speaker of the House Nancy Pelosi visited Taiwan on August 2 and 3. *Taiwan News* reports that the first incursion occurred on the night of August 3, hours after Speaker Pelosi left Taiwan, when two PRC UAVs entered the airspace around Jinmen (also known as Kinmen and Quemoy).[1] One of the aircraft overflew the main island of Jinmen and the other overflew the island of Beiding, both at an altitude of 2,000 meters. Taiwan's *Central News Agency*, the national news agency of the Republic of China, reported that four drones flew over restricted waters around the main island of Jinmen and the nearby islands of Lieyu and Beiding on the night of August 5.[2] In both cases, the Taiwan military fired flares to warn away the UAVs. Around the same time, drones overflew Liang Island and Dongyin Island, part of the Matsu Archipelago located northwest of the island of Taiwan close to the PRC coast.

RUSSIA-UKRAINE WAR

Russian embassy praises DJI drones as "true symbol" of modern war. According to a report by the *South China Morning Post*, the Russian embassy in Beijing has deleted a post that first appeared on the PRC microblogging service Weibo extolling DJI drones for bringing "a real revolution" to traditional artillery weapons.[3] The Weibo post quoted Russian Army General Yuri Baluyevsky, the former Chief of the General Staff of the Armed Forces of the Russian Federation, whose recent book described the "pinpoint accuracy and efficiency of DJI's Mavic quadcopter drones." Citing General Baluyevsky, the Weibo post stated that "when drones hover over a target area to guide the artillery, its pinpoint accuracy and efficiency are comparable to precision-guided missiles. The Mavic quadcopter drone made by China's DJI has become a true symbol of modern warfare." Mavic quadcopters are small commercial quadcopter drones, that, according to the DJI website, weigh less than 1 kg and have a flight time of less than 50 minutes.[4]

DJI Mavic quadcopter Source: DJI.

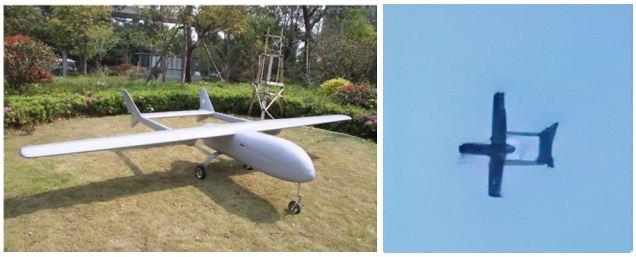
PRC-based DJI, the world's leading manufacturer of small commercial drones, responded to the post on its Weibo account, stating that "all DJI products are designed for civilian purposes and cannot meet the requirements of military specifications…We do not support applications for military purposes." In April, DJI announced that it had suspended business activities in Russia and Ukraine after allegations that the

company was purposely limiting the capabilities of drones used by the Ukrainian military (see Newsletter Issue 14).

UAVs used in attacks against Russian targets appear similar to those manufactured by PRC company. *The War Zone* reports (see here and here) that recent attacks against Russian military and economic targets may have been carried out using PRC commercial UAVs.[5] The drone in question may be the Super Eye Skyeye 5,000mm Pro built by Mugin UAV, a PRC company based in Xiamen.[6] According to the company website, the UAV, called the "Mugin-5 Pro 5000mm Carbon Fiber UAV Platform," has a wingspan of 5,000mm (nearly 16.5 feet), a cruise speed of 120 km/hr, a maximum flight time of more than 7 hours, and the ability to carry a 25kg payload. Although the UAV was available for sale on the PRC e-commerce giant Alibaba website for US$8,000, a check of the website reveals that it is no longer available. The UAV is list priced at US$9,499 on the Mugin website.

The War Zone report includes several videos showing twin-tail-boom fixed-wing UAVs similar to the Mugin UAV being used in an attack against Russia's Black Sea Fleet headquarters in Sevastopol in Crimea involving one UAV on August 20, and an attack against a Russian oil refinery in southern Russia by two UAVs on August 17. *The War Zone* notes that the targets attacked are within the range of the Super Eye Skyeye 5,000mm Pro and that modifying the drones for military use would be well within Ukrainian capabilities. In addition, using UAVs would be less costly than using other types of precision strike methods and would add a measure of deniability.

Mugin UAV stated on its website on June 24 that "we absolutely condemn the use of our platforms being used for military purposes," and that the company does not design its UAVs for military use, "condemns attaching weapons and explosives to its UAVs," and "does not provide after sales service for military purposes."[7]

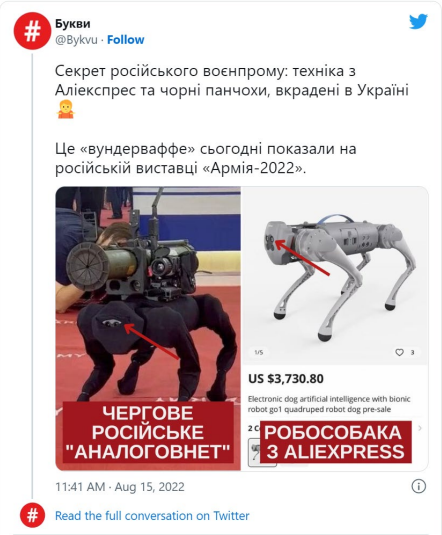


Left: The Mugin-5 Pro 5000mm Carbon Fiber UAV Platform. Right: Screenshot of UAV that attacked Russian oil refinery. Sources: "Mugin-5 Pro 5000mm Carbon Fiber UAV Platform," Mugin UAV, https://www.muginuav.com/product/mugin-5-pro-5000mm-carbon-fiber-uav-platform/ and Thomas Newdick, "'Kamikaze Drones Strike Oil Refinery, Looks Like Model Sold on Alibaba, *The War Zone*, June 22, 2022, 'Kamikaze' Drones Strike Russian Oil Refinery, Looks Like Model Sold On Alibaba (thedrive.com).

RUSSIAN USE OF PRC UNMANNED SYSTEMS

Russia demonstrated UGV appears to be of PRC manufacture. *The War Zone* reports on the M-81 "robot dog" demonstrated at "Army 2022," a Russian arms exhibition.[8] A video taken of the robot at the exhibition shows it fitted with a Russian RPG-26 anti-tank rocket launcher, moving forwards and backwards, and mysteriously shrouded in black fabric. *The War Zone* speculates that the fabric is intended to hide the actual manufacturer of the robot, the PRC company Unitree Robotics. Indeed, the M-81 shows remarkable

similarities to the UnitreeYushuTechnologyDog (see below), a UGV available on the website of the PRC e-commerce giant Alibaba at a price of US$2,700 to US$3,500.



Twitter post comparing the Russian M-81 to the Unitree Robotics UnitreeYushuTechnologyDog. Source: "Russia's Rocket-Toting Robot Dog Is Chinese, For Sale on Alibaba," *The War Zone*, Aug. 15, 2022, https://www.thedrive.com/the-war-zone/russias-rocket-toting-robot-dog-is-chinese-for-sale-on-alibaba.

POLICY

Cyberspace Administration of China (CAC) publishes list of 30 recommendation algorithms. On August 12, CAC published a list of 30 recommendation algorithms, with brief descriptions of their purpose, that are used in some of China's most popular apps, such as Alibaba's online retail apps Taobao and Tmall, short-video app Kuaishou, and the Twitter-like Weibo.[9] Recommendation algorithms can be used to target users with ads and news based on information about the customer and are tightly held by companies because they can give a company an advantage in driving revenue by influencing customers' viewing and purchasing preferences. The list of algorithms and their brief descriptions are intended to give more transparency to consumers over how tech companies use their data.[10]

The companies submitted the recommendation algorithms in accordance with the Internet Information Service Algorithmic Recommendation Management Provisions, which went into effect on March 1 of this year. As companies continue to submit their algorithms, CAC plans to update the list continually on its website (see Newsletter Issue 10).

China's Ministry of Science and Technology (MOST) announces first batch of AI pilot application scenarios. On August 12, MOST and five other ministries published "Guiding Opinions on Accelerating Scenario Innovation Using High-level AI Applications to Promote High-Quality Economic Development" (hereafter referred to as Guiding Opinions). The Guiding Opinions are intended to implement China's 2017 *New Generation Artificial Intelligence Development Plan*, guide local entities in accelerating the development of AI application scenarios, and promote economic development.[11] According to the Guiding Opinions, scenario innovation refers to the "creative application of new technologies and the linkage of supply and demand to achieve new technology iteration upgrades and accelerate industrial growth." Guiding Opinions

puts forward four basic principles for the AI application scenarios: they should be enterprise-led, innovation-led, open and integrated, and characterized by collaborative governance.

On August 15, in accordance with Guiding Opinions, MOST published a list of the first batch of 10 AI application scenarios: smart farms, intelligent ports, intelligent mines, intelligent factories, smart homes, intelligent education, autonomous driving, intelligent diagnosis and treatment, smart courts, and intelligent supply chain.[12] New-generation AI innovation and development pilot zones (see Newsletter Issue 5) will be the backbone of this effort. The effort also seeks to leverage the capabilities of companies selected as China's "open innovation platforms for next generation AI," which are responsible for developing open-source platforms in a specific sector. Local science and technology departments and pilot zones are to recommend AI application scenarios to MOST, which will review the proposals and decide whether to support them.[13]

Beijing city government seeks to develop multibillion dollar digital human industry. On August 3, the Beijing Municipal Bureau of Economy and Information Technology published the "Beijing Action Plan for Promoting the Innovation and Development of Digital Human Industry (2022-2025)."[14] A digital human is an avatar that can be used for advertising and entertainment and can range from cartoon characters to life-like representations of humans.

The plan sets several goals to be achieved by 2025. It calls for Beijing's digital human industry to exceed 50 billion yuan (US$7.37 billion) and for the establishment of one or two digital human enterprises with a revenue exceeding 5 billion yuan (US$737 million). The plan also calls for 10 key digital human enterprises to achieve revenues of more than 1 billion yuan (US$147 million). One of the plan's main tasks is to optimize tools for digital human production, which includes AI technologies such as voice recognition, speech synthesis, and natural language processing. The plan further advocates research and development for "smart brain" and effective computing algorithms to enhance the interaction experience with digital humans.

The plan also endeavors to use the characteristics of Web3—a "loosely defined vision for a decentralized internet built around blockchain technology, with applications often involving cryptocurrencies and non-fungible tokens."[15] Although the plan does not define Web3 characteristics specifically, the *South China Morning Post* highlights that the plan seeks to explore building blockchain-based trading platforms for "digital human data factors," such as "models, skins and textures." The *South China Morning Post* also reports that, although Web3 remains under a "regulatory cloud" in China because of its ban on cryptocurrency, PRC authorities have generally praised the adoption of digital humans, especially because they avoid the scandals of real celebrities and social media influencers.

INDUSTRY

For the first time, PRC national AI champion SenseTime launches a product on the consumer market—a chess-playing robot.[16] On August 9, SenseTime launched SenseRobot, a chess-playing robot equipped with a mechanical arm, camera, and chess board that is capable of responding to a human opponent by moving pieces around a chessboard. *According to the South China Morning Post,* the product, which costs US$299 for the standard model, comes at a time when the company is struggling to turn a profit. SenseTime's core AI product has traditionally been aimed at manufacturing and surveillance.

Currently, the company is subject to US sanctions because of allegations of complicity in human rights violations in Xinjiang and its role in China's military-industrial complex.

Baidu wins permit to operate driverless robotaxis in two Chinese cities. The *Financial Times* reports that Baidu has secured a permit to operate China's first fully driverless licensed robotaxis in Wuhan and Chongqing.[17] The move is significant because the company's Apollo Go cars will be able to operate in these cities without an onboard safety supervisor, which previous permits had required. However, the robotaxis will be able to operate only in certain areas during restricted hours: in Wuhan they are available in a 13 sq km area from 9:00 am to 5:00 pm, and in Chongqing, they will be available in a 30 sq km area from 9:30 am to 4:30 pm. The permit will allow Baidu to carry out more testing on its vehicles and reportedly gives the company an edge over its rivals Pony.ai, WeRide, and AutoX, which are also developing fully autonomous driving systems.

RESEARCH AND DEVELOPMENT

Aviation Industry Corporation of China (AVIC) conducts maiden flight of AR-500 CJ unmanned helicopter. The state-owned AVIC announced that it has conducted the maiden flight of the AR-500 CJ unmanned helicopter and that it will undergo further test flights with the goal of passing its technical appraisal in 2023. The helicopter is designed specifically to take off from ships.[18] According to *Aviation Week,* reports have suggested that the UAV "has been designed to have a maximum take-off weight of 500 kg, carry a payload of 80 kg, offer endurance of five hours and reach a maximum speed of 90 kt." The PLA Navy (PLAN) currently uses the less-capable CW-20 and CSC-005 light vertical takeoff and landing UAVs on its vessels. *Aviation Week* notes that "if deployed, the AR-500CJ could potentially provide the PLAN or its carrier group with over-the-horizon surveillance and targeting capability, a feature currently lacking without a true airborne early warning platform."[19]

EVENTS

Global Digital Economy Conference (GDEC) showcases domestic achievements in AI. The GDEC was held in Beijing from July 28–30 with participants from more than 30 countries attending virtually.[20] The event, co-hosted by the Beijing municipal government, the National Development and Reform Commission, the Ministry of Industry and Information Technology, the Ministry of Commerce, the State Internet Information Office, and the China Association for Science and Technology, showcased several of China's digital economy achievements, including those related to AI.[21]

The conference gave the Digital Economy Industrial Innovation Achievement award to the Starlight Smart No. 3 NPU processing chip (VC0768) made by Vimicro— a Beijing-based fabless chip company that develops advanced mixed-signal multimedia chips.[22] According to reporting by PRC media sources, the chip was independently developed and designed by Vimicro, and its NPU supports deep-learning algorithms.[23]

The conference also hosted the final round of China's Global Big Data AI Competition, which began in June.[24] Tsinghua University's "AI for communications" won a gold medal, the China Academy of Sciences' Institute of Automation's ""Holistic Approach to Extractive Reading Comprehension Modeling Based on Interval Joint Learning" won a silver medal, and Guangdong University of Technology's "CobotVisionLab" won a bronze medal. Reporting from Xinhua highlights that competitions have become an important way

for China to engage in international exchanges and to cultivate and improve AI talent to support the digital economy. [25]

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