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# CHINA INSIDER



## EMP THREAT

CHINA DEVELOPING  
ELECTROMAGNETIC PULSE WEAPONS  
TO DECIMATE US POWER GRID,  
EXPERTS WARN

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GREG BAKER/AFP VIA GETTY IMAGES



Military vehicles carrying DF-5B intercontinental ballistic missiles participate in a military parade at Tiananmen Square in Beijing on Oct. 1, 2019.

## MILITARY

# ‘Society Would No Longer Be Intact’: Experts Warn of Threat of Electromagnetic Attack From China, Russia

ANDREW THORNEBROOKE

The United States is vulnerable to attack from an electromagnetic pulse (EMP), according to experts. Such an attack could devastate the nation's power grid and wipe out vast swaths of the population.

“The risk of an EMP attack on U.S. infrastructure is very high, particularly in this international environment,” said Sam Kessler, a geopolitical adviser at North Star Support Group, a multinational risk management firm.

The news comes amid growing concerns about the Chinese regime's expanding military capabilities and its alleged development of first-strike nuclear capabilities.

## What Is an EMP Attack?

An EMP is a burst of electromagnetic energy that disrupts communications and damages electronic equipment. An EMP can be created by nuclear missiles, radio-frequency weapons, and natural phenomena such as geomagnetic storms.

While any nuclear weapon can create an EMP, specialized EMP weapons such as so-called super-EMP bombs generate particularly strong gamma radiation that multiplies the effect of the pulse, extending the destruction over a greater range.

Such an attack, if centered over New York City, for example, would cover the entirety of the northeastern United States, according to a statement to Congress by Peter Pry, an EMP expert and the executive director of the Task Force on National and Homeland Security, an advisory body.

In a slide deck from 2018, Pry expressed that a high-altitude EMP blast could knock out 74.4 percent of U.S. power generation capacity. Such an attack could cause months-long losses of electrical power and create cascading effects for food, water, and heat supplies, resulting in a mass loss of life.

“EMP weapons offer Russia, China, and

the ICBM-armed rogue states a fast, cheap and effective means to make most Americans feel immediately the horrors of war.

Rick Fisher, senior fellow, International Assessment and Strategy Center

is DHS's [Department of Homeland Security] responsibility. And then when I talk to DHS, I get answers that the protection should be done by the Department of Energy, since they are the infrastructure's sector-specific agency.”

Pry spoke at the same hearing. He called the FERC and NERC “extremely dysfunctional,” and questioned the ability and will of both organizations to protect American citizens.

He ultimately advised that Congress abolish both organizations and replace them with a new regulatory commission. His advice wasn't taken.

For the next few years, reports by federal agencies continued to regard EMPs as a “low probability/high consequence” threat. That changed in 2019, however, when satellite imaging appeared to uncover secret EMP testing facilities in China.

Then-President Donald Trump then signed an executive order to bolster both civilian and military defenses against EMP attacks, though the response to the order has been slow going.

“Those who have organized, led, and staffed the train of EMP Commissions deserve our deepest thanks,” Fisher said. “Our relative unpreparedness for this threat is not their fault, but that of successive administrations who have not given this threat a useful priority.”

DHS released a report in 2020 highlighting some progress in carrying out the order. The report said that DHS was engaged with the private and public sectors in carrying out demonstrations of pilot programs to test EMP resiliency. It named one such example, the San Antonio Electromagnetic Defense Initiative, a public-private event dedicated to developing a resilient grid.

A spokesperson from FERC said that the organization remained committed to the executive order.

“FERC is in touch with other federal agencies, such as DOE and DHS, regarding Executive Order 13865 to assist with its implementation,” the spokesperson said.

The Epoch Times also reached out to NERC, the Department of Defense, the Department of Homeland Security, and the Department of Energy for comment, but didn't hear back by press time.

The new Blitzkrieg  
Though the persistent threat of EMP attack has gone largely without response, the seriousness of such an attack is difficult to comprehend, surpassing as it does the effects of most any conventional warfare.

A 2017 statement by the EMP Commission

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KCNA VIA REUTERS



A new submarine-launched ballistic missile during a test, in this undated photo released by North Korea's Korean Central News Agency on Oct. 19, 2021.

quoted Ambassador Henry Cooper, former director of the U.S. Strategic Defense Initiative, who wrote that a high-altitude EMP blast could result in the shutdown of the U.S. electric grid for an indefinite period, leading to “the death within a year of up to 90 percent of all Americans.”

“Few Americans have any idea what it is like to live without electricity, constant digital communication, or immediate access to medical or transportation services, which can be taken away by EMP weapons,” Fisher said.

“The damage of an EMP attack destroys anything with an electrical circuit, and that means electrical systems and infrastructures that we rely on as a society would no longer be intact,” Kessler said. “It would create societal chaos and unpreparedness in a society that would be transitioned back to a 19th-century way of life.”

A key concern now is the potential role that new hypersonic weapons such as those tested by the Chinese regime in July might play in either delivering or concealing EMP weapons.

The hypersonic weapon tested by the Chinese regime also reportedly launched a second missile while in hypersonic flight, for example, and it's possible such a system could be used in an EMP attack.

Fisher said that such a system could be used to conceal a surprise EMP strike, but was unlikely to be used to directly launch an EMP strike, as the hypersonic vehicle travels at a lower altitude than is required by an EMP detonation.

If the second missile launch from the hypersonic vehicle went to a higher altitude, however, it could theoretically field an EMP bomb.

Kessler described such a scenario as “very realistic,” and added that there were reports that such a technology is being

developed in both China and the United States.

Moreover, Pry warned in 2015 that EMPs wouldn't be used alone, but in conjunction with sabotage and information and cyberwarfare initiatives, designed to wholly overwhelm and stun the U.S. defense effort.

He referred to this strategy as a “new Blitzkrieg,” a reference to the Nazi strategy of lightning warfare during World War II, in which German tanks, planes, and artillery would quickly swarm and incapacitate allied defenses.

Pry also warned that, because the nuclear blast that causes an EMP is detonated at a high altitude and doesn't cause direct casualties, adversaries may not consider it a nuclear first strike. This fact may encourage adversaries to use the technology, as they wouldn't fear nuclear retaliation.

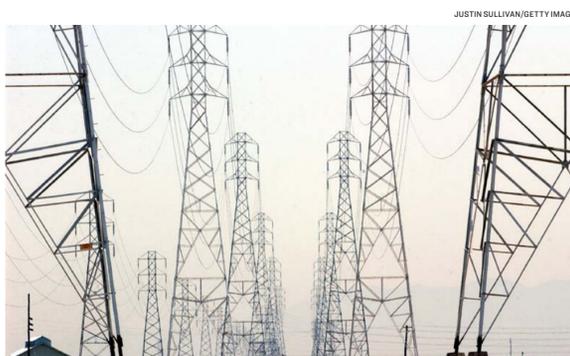
That warning is in line with a recent report by the U.S.-China Economic and Security Review Commission, an influential U.S. congressional advisory body, which considered an EMP to be part of China's nuclear counterforce capabilities. It suggested that the Chinese regime could use a limited demonstration of nuclear weapons to create an EMP.

“Chinese leaders could employ this strategy during a crisis to shock U.S. political leaders and demonstrate their resolve to escalate to higher levels of nuclear violence should the United States fail to ‘back down’ over the issue at hand,” the report stated.

Andrew Thornebrooke is a reporter for The Epoch Times covering China-related issues with a focus on defense, military affairs, and national security. He holds a master's in military history from Norwich University.



An E-4 advanced airborne command post on the electromagnetic pulse simulator for the testing on Kirtland Air Force Base in Albuquerque, N.M., in this file photo.



Power line towers in Palo Alto, Calif., in this file photo.

DADO RUVIC/ILLUSTRATION/REUTERS



Chinese yuan and U.S. dollar banknotes are seen in this illustration taken on Feb. 10, 2020.

## OPINION

## China's Currency Weapon a Boon for US

ANTONIO GRACEFFO



If China “dumped” all of its U.S. debt and U.S. Treasury bills in a single day, it would lose a lot of money, decrease its ability to purchase raw materials, and benefit the U.S. Fed that would buy up the Treasury bills at a discount.

There are five international currencies that central banks around the world commonly hold in reserves: the U.S. dollar, euro, Chinese yuan, Japanese yen, and the UK pound. China's foreign currency reserves, the world's largest, now stand at \$3.218 trillion. This number is divided among the international currencies, with the dollar being the largest percentage.

The total U.S. debt held by China is \$1.095 trillion, which represents about 4 percent of the U.S. national debt of \$28 trillion. Over the past 20 years, either Japan or China has held the most U.S. debt. Currently, Japan holds slightly more than China.

According to the Fed and U.S. Department of the Treasury, \$7.03 trillion of U.S. dollars are held in the reserves of foreign countries. The U.S. dollar represents 59.2 percent of global foreign currency reserves, while the yuan is only 2.5 percent. Countries hold U.S. debt and U.S. dollars, as a store of wealth, to back their own currency, and to use for purchases of imports and raw materials.

Global commodities—such as steel, cobalt, magnesium, and even petrol—are priced in U.S. dollars. Purchases of these raw materials and other global trading are largely settled with hard currency, which generally means dollars. The second-largest currency reserves are in euro. But dollars are much more useful. They are considered safe and stable, and are accepted everywhere. The euro tends to be used mostly for investment in the European Union, but not in North or South America, or most of Asia, and only in some parts of Africa.

The usefulness of the U.S. dollar makes it the most popular paired currency, meaning that most other currencies are traded into and out of U.S. dollars. The dollar accounts for about 88 percent of all foreign exchange trading. About \$5 trillion worth of currency is traded each day, on foreign currency exchanges.

Countries diversify their foreign reserves according to the amount of each currency they will need for trade settlement. Consequently, central banks hold a small quantity of yuan. Most global trading is settled in dollars, while only about 1.7 percent is settled in yuan.

Hu Xijin, the editor-in-chief of state-run media Global Times, said that experts in China have discussed disposing all of the country's U.S. dollar holdings in one go. Some media have dubbed this move “China's nuclear currency option”—meaning that China could liquidate its U.S. holdings in a single day, crashing the U.S. dollar, and damaging the U.S. economy. This option is actually a non-option, however, as it would not work. Additionally, it would hurt China and benefit the United States.

China needs to keep large sums of U.S. dollars to pay its own debts, which are denoted in U.S. dollars. A large reserve of dollars is also a hedge against a future financial disruption, such as a potential default by the Evergrande property de-

veloper, whose debt is equal to 2 percent of the country's GDP. Another reason why China needs to hold U.S. dollars and hard currency reserves is to back the yuan.

In the 19th century, countries backed their currencies with gold. After World War II, only the United States had enough gold to support its currency. So the Bretton Woods system was established, whereby other countries backed their currency with U.S. dollars. This system continues until today, even though the U.S. dollar has not been backed by gold, since 1971.

If the PBOC liquidated its dollar holdings, it would have no way of defending the yuan.

China's central bank, People's Bank of China (PBOC), uses U.S. dollars to buy up yuan, when the price of yuan drops beyond a certain level. If the PBOC liquidated its dollar holdings, it would have no way of defending the yuan.

When China buys U.S. debt, it increases the amount of yuan in circulation, which brings down the price of the yuan, making China's exports cheaper. By selling its U.S. dollar debt, China would decrease the amount of yuan in circulation—this would drive up the price of the yuan, making China's exports more expensive.

Former President Donald Trump called China a currency manipulator. This means that the Chinese Communist Party (CCP) artificially controlled the price of the yuan, in order to increase China's exports. Selling off China's dollars would have the opposite effect.

In short, there is no threat that the CCP could crash the dollar by “dumping” the \$1 trillion of U.S. government debt that China holds. In 2014, China sold off roughly \$1 trillion of U.S. debt, but it had no significant impact on the U.S. economy.

If Beijing liquidated all of its U.S. debt at once, the selling price of China's U.S. Treasury bills would drop. China would lose money. And the Fed would buy back its own debt at a discount. This is exactly what the United States did in response to the 2008 global financial crisis. As other countries liquidated U.S. debt securities to fund their stimulus packages, the Fed went on the open market and bought them at a discount. Since June 2020, the Fed has been buying \$80 billion of Treasury securities per month. It would be very happy to buy these at 80 or 90 cents on the dollar, if China suddenly flooded the market, driving down the price.

Views expressed in this article are the opinions of the author and do not necessarily reflect the views of The Epoch Times.

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Gen. Charles Brown, Jr., nominated for reappointment as chief of staff of the U.S. Air Force, testifies on Capitol Hill in Washington on May 7, 2020.

## ANALYSIS

# US and China Race to Control the Future Through Artificial Intelligence

SHI SHAN &amp; ANNE ZHANG

As every aspect of modern life becomes more and more digitized, not just the economies of nations, but their sovereign influence will rely more and more on their command of technology, and especially the emerging technology of artificial intelligence (AI).

In the 21st-century information technology revolution, whoever reaches a breakthrough in developing AI will come to dominate the world.

"Artificial intelligence is a resource of colossal power," Russian President Vladimir Putin said at AI Journey 2019 conference, a major Eastern European forum on AI held in Moscow on Nov. 9, 2019. "Those who will own it will take the lead and will acquire a huge competitive edge."

Putin expressed his concern about Russia's role in the artificial intelligence race in the forum—its two competitors, the United States and China, are far ahead of other countries in the AI race.

"We must, and I am confident that we can become one of the global leaders in AI. This is a matter of our future, of Russia's place in the world," Putin added.

Though the United States is still the world leader in terms of AI, China is quickly moving to take its place.

On Oct. 16, Nicolas Chaillan, the former chief software officer of the U.S. Air Force, told The Epoch Times that the United States is set to lose the AI race against communist China if Washington doesn't act fast.

"We're losing this battle," Chaillan said. "If we don't act now and don't wake up right away... we have no fighting chance in succeeding 10 to 15 years from now."

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Nicolas Chaillan, former chief software officer, U.S. Air Force

Chaillan suggested if the United States doesn't take aggressive action, it will lose its advantage over communist China in the AI field within ten years.

The U.S. advantages in AI that Chaillan mentioned primarily refer to the military field. However, in the non-military field, China may have the advantage. The Chinese Communist Party's (CCP) AI applications such as digital surveillance, big data, and cloud computing have long been used to strengthen its authoritarian rule.

## CCP's 'New Way' of Strengthening Authoritarian Rule

The CCP has prioritized AI development in recent years, making it a "key national development strategy." It has mandated AI into many aspects of ordinary citizen's life, not only to surveil and control its people but also to use its massive population to spur development.

To bolster the rapid development of AI, the CCP has issued a number of supporting policies and regulations, including its "Made in China 2025" and "13th Five-Year Plan."

In 2017, China's State Council issued the "New Generation Artificial Intelligence Development Plan," emphasizing the significance of AI in helping the government understand and control society.

"Artificial intelligence technology can accurately perceive, predict, and early-warn the major trends of society. [It can] grasp people's cognition and psychologi-

cal changes and proactively decide the responses. [This technology] will significantly improve the ability and level of social governance. It is irreplaceable for effectively maintaining social stability," according to the plan.

"It will have a profound impact on government management, economic security, social stability, and global governance."

Hong Kong finance and economics columnist Alexander Liao said the CCP believes the emerging technology revolution—artificial intelligence—can bring new life to the authoritarian system, which was on the verge of collapse.

In 2013, the CCP proposed the "Modernization of National Governance System and Governance Capacity" plan and adopted it five years later in its 2019 plenary. According to Xinhua News Agency, a Chinese state-run media, the project is "a series of institutional arrangements aimed to make China's governance system increasingly complete, scientifically standardized, and operate more effectively."

In 2014, the CCP launched the "Social Credit System," which linked the social behavior of all ordinary citizens with the large-scale monitoring system in mainland China. It adopted facial recognition and big data analysis technology to carry out large-scale social control with AI.

By 2020, the system has been integrated into almost all public service fields, including employment, education, loan services, travel ticket purchases, and more. This control method has been fully popularized in the form of "health codes" during the CCP virus pandemic.

"All measures of 'modernization of governance' are the basis for strengthening the CCP's authoritarian rule to ultimately achieving totalitarian control, and everything is rooted in artificial intelligence," Liao added.

## China's AI Surveillance

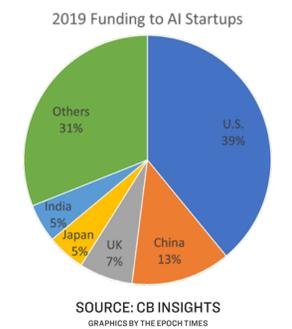
Industry researcher IHS Markit said the number of cameras used for surveillance would climb above 1 billion by the end of 2021, according to a 2019 report by The Wall Street Journal. That would represent an almost 30 percent increase from the 770 million cameras today. China would continue to account for a little over half the total.

Former NASA Jet Propulsion Laboratory (JPL) engineer Qu Zheng told The Epoch Times that the CCP's facial recognition technology was already mature in 2018.

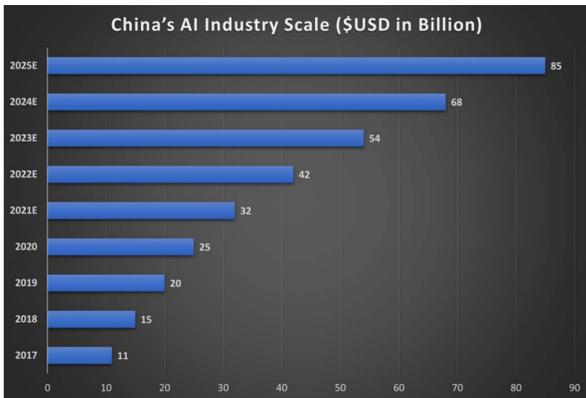
"They put the entire AI system inside the cameras; there is no need for them to monitor through screens anymore," Qu said.

According to a new analysis released in May by research service Comparitech, 16 out of the top 20 most surveilled cities are in China, based on the number of cameras per 1,000 people.

The CCP built the world's largest video surveillance network "Skynet" in 2017. To test out the system's capability, BBC reporter John Sudworth went to Guiyang, Guizhou, to challenge it first hand, according to Newsweek. Tasked with trying to remain undetected for as long as possible in Guiyang, a capital city of about 3.5 million in southwestern China, Sudworth



The 21st century is called the century of information technology. Whoever reaches a breakthrough in developing AI will rule the world. Though the United States is still the world leader in AI, China is quickly moving to take its place.



attempted to evade the facial recognition system but was captured by the authorities in just seven minutes.

In April, the U.S. National Security Commission on Artificial Intelligence released a report listing the CCP as a strategic competitor and viewed China's development in the field of AI as a threat. "China's domestic use of AI [surveillance and repression] is a chilling precedent for anyone around the world who cherishes individual liberty," the author asserted.

Washington think tank Brookings Institution chairman John Allen and vice-chairman Darrell West co-authored Turning Point, a book on artificial intelligence, discussing how society can best utilize AI technology. The book mentioned creating ethical principles, strengthening government oversight, defining corporate culpability, tightening personal privacy requirements, and penalizing malicious uses of new technologies.

Qu believes that Western countries should formulate a convention in the field of AI as soon as possible. Once the CCP violates the agreement, it can impose sanctions accordingly.

## US Remains a Major Investor in China's AI Development

China's great leap forward in artificial intelligence is driven by large-scale capital. However, despite the emerging threat, Wall Street remains the largest investor in the Chinese AI industry, according to Liao.

Almost all large tech companies in mainland China are supported by American capital. For example, Chinese tech giants Baidu, Tencent, Alibaba, and ByteDance—the parent company of TikTok—have been publicly listed and heavily invested in by Wall Street over the years. In turn, these Chinese tech giants invest heavily in China's domestic tech companies, including Chinese AI startups.

Wall Street's direct investment and venture capital have brought its high-tech business incubation mechanism to Mainland China, helping China create high-tech industries that compete with the United States. And yet, it is the CCP that controls these industries.

The Center for Security and Emerging Technology (CSET), a U.S. think tank, estimated the CCP's total R&D investment in artificial intelligence in 2018 was between \$2 billion and \$8.4 billion.

According to CB Insights, a business analytics company, AI startups raised a record \$26.6 billion in 2019, spanning more than 2,200 deals worldwide. Startups in the United States accounted for 39 percent, China 13 percent, followed by the United Kingdom 7 percent, Japan 5.3 percent, and India 4.9 percent.

AI is not a standalone technology but a part of the entire high-tech industry, including 5G, cloud computing, big data, Internet of Things, mixed reality (MR), quantum computing, blockchain, edge computing, and other new generations of information technology. AI and the high-tech industries mutually support and constitute the future of the entire social economy.

Beijing is the CCP's primary training base for AI experts. Tsinghua University's "Experimental Computer Science Class" was founded in 2005 by the world-renowned computer scientist Andrew Yao. And Peking University's "Turing Talent Training Program" was started in 2017 by American computer scientist John Hopcroft who designed the training program and curriculum. Hopcraft personally taught and trained Beijing's AI experts from undergraduate to doctoral degrees.

Andrew Yao and John Hopcroft are both recipients of the Turing Award from the Association for Computing Machinery (ACM). The Turing Award is often referred to as the computer science equivalent of the Nobel Prize.

Yao was both a Taiwanese citizen and a naturalized U.S. citizen before he renounced his U.S. and Taiwan citizenship to obtain Chinese citizenship. He completed his undergraduate education in physics at the National Taiwan University before completing a Doctor of Philosophy in physics at Harvard University in 1972, and then a second Ph.D. in computer science from the University of Illinois in 1975. Yao has taught at MIT, Stanford University, UC Berkeley, and Princeton University. In 2004, he became a professor at Beijing's Tsinghua University.

Hopcroft is a well-known American theoretical computer scientist. He received his master's degree and Ph.D. from Stanford University in 1962 and 1964, respectively. He has taught at Princeton University and Cornell University. Hopcroft's textbooks on the theory of computation (also known as the Cinderella book) and data structures

ILLUSTRATION BY THE EPOCH TIMES

are regarded as standards in the field of computer science.

Presently, there are about 2,600 artificial intelligence companies in China. Most located in Beijing's Haidian District technology hub, working closely with Tsinghua University, Peking University, and Beijing University of Aeronautics and Astronautics.

## Controlling the Future

Artificial intelligence (AI) was initially an idea to mimic and augment human intelligence. However, AI technologies today are rapidly proliferating around the world. They are replacing humans in manufacturing, service delivery, recruitment, communications, the military, the financial industry, and other sectors, generating enormous financial interests in many sectors, according to Harvard Business Review.

According to a 2019 report compiled by Deloitte, a global professional services network, experts predict that using artificial intelligence (AI) at a larger scale will add as much as \$15.7 trillion to the global economy by 2030.

At the same time, AI developments have also created geopolitical contests. In a meeting with students in 2017, Russian President Vladimir Putin said that "the one who becomes the leader in this sphere will be the ruler of the world," according to an Associated Press report.

"When one party's drones are destroyed by drones of another, it will have no other choice but to surrender," Putin added, predicting that future wars will be fought by drones.

That same year, the CCP incorporated the AI developments into its national strategy and set goals to become the global leader by 2030.

The United States has long been the leader in the AI field. Ahead of the CCP, the Trump White House had already outlined its National AI R&D Strategic Plan in 2016.

However, the CCP has become a major competitor to the United States in the field of AI with its rapid expansion in recent years. Deloitte's report shows that from 2015 to 2020, the average annual compound growth rate of the global artificial intelligence market was 26.2 percent, while the growth rate of the Chinese AI market during the same period was 44.5 percent. Another report by Deloitte suggests that in 2025 the scale of China's artificial intelligence industry will exceed \$85 billion.

According to Stanford University's 2021 AI Index Report, China's number of AI journal publications has surpassed the United States since 2017. China's AI journal publications in 2020 will account for 18 percent of the global total, ranking first in the world, followed by the United States' 12.3 percent. However, with respect to citations of AI conference publications, the United States still tops the world with 40.1 percent of overall citations in 2020, which is significantly ahead of China's 11.8 percent. The number of citations corresponds to the publications' impact on the AI fields' research and development (R&D).

## Controlling the Data

Artificial intelligence leverages computer software and machines to mimic the problem-solving and decision-making capabilities of the human mind. Its features include text, speech, and image recognition, as well as robots with specific skills.

More specifically, it is "a system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation."

There are two crucial elements in the broad applications of AI; the graphics processing unit (GPU) and data. The GPU determines the computing power and the quality of data determines the time required to train the AI.

The central processing unit (CPU) has been known as the brains of the computer where most calculations take place, yet it is composed of a few cores with lots of cache memory that can only handle a few software threads at a time.

A graphics processing unit (GPU), on the other hand, consists of hundreds of cores through which parallel computing is possible. In AI applications, the architecture prefers graphics processors (GPUs) over the central processing units (CPUs). GPUs are particularly suitable for performing calculations such as analysis and prediction and machine learning.

In the GPU industry, the United States has an absolute advantage due to NVIDIA and AMD. According to Tom's Hardware, during Q1 2021, NVIDIA commanded a whopping 81 percent of the discrete GPU market, with AMD capturing the remaining 19 percent. The two American companies dominated the discrete GPU market.

A 2019 report by the Center for Data Innovation compared the relative standing in the AI race between the United States, China, and the European Union by examining six categories of metrics—talent, research, development, adoption, data, and hardware. It finds that the United States currently leads in four categories—talent, research, development, and hardware—while China leads in the remaining two categories—adoption and data.

China uses its massive population for gathering and developing its local AI technology. Tang Bohua, a patent examiner in the United States Patent and Trademark Office, told the Chinese publication of The Epoch Times that the CCP's lack of regard for human rights and privacy opens up a huge data set for them, while the United States' respect for this rights keeps data incomplete.

According to Tang, the CCP forces Chinese tech companies to collect data of its users through various means. The collected data are used to train AI, rapidly speeding up the development of its AI applications.

"Western society believes there are dangers in AI technology; hence there are moral and legal restrictions. Also, there is privacy protection. As a result, the quality of the collected data may not be good and is unlikely to produce good applications," Tang said. "AI is not an easy industry [in America]."

"However, the CCP has no such concerns." That lack of concern allows for wide-scale data gathering and surveillance.

**All measures of 'modernization of governance' are the basis for strengthening the CCP's authoritarian rule to ultimately achieving totalitarian control, and everything is rooted in artificial intelligence.**

Alexander Liao, Hong Kong finance and economics columnist Alexander Liao

## China's Internet Giants and Big Data

Three major data gatherers for the CCP are the nation's massive internet companies: Baidu, Alibaba, and Tencent (BAT). They have long-established plans in AI applications. The companies rely on massive data and infrastructure to offset their shortcomings in the semiconductor industry.

U.S. officials previously named these companies as de facto tools of the Chinese regime. The three gather data from internet users, then feed it into a massive AI platform, according to national security expert and retired U.S. Air Force Brig. Gen. Robert Spalding.

According to "China's Rise in Artificial Intelligence," a 2017 report released by Goldman Sachs, the only shortcoming of BAT is the shortage of quality chips. The report identified "talent, data, infrastructure, and silicon" as the key inputs to AI and that China has the "talent, data, and infrastructure [but the silicon] needed to fully embrace AI."

In terms of infrastructure, the three internet giants have their own complete platforms for collecting data and attracting experts. In addition, China's nearly one

billion internet users give BAT a massive advantage on data.

According to CCID Consulting, China's largest think tank, the computing power required for AI training will increase exponentially due to the accelerated data growth rate.

Internet giants will require thousands of petabytes of data volume, while smaller enterprises will require petabytes, and personal data will require terabytes. One petabyte is equal to 1,024 terabytes.

Big data is the foundation of machine learning and the key to rapidly developing AI. The CCP obtains a massive amount of big data with the cooperation of China's tech giants.

## Developing Advanced Chips

According to the 2017 Goldman Sachs report, the only shortcoming of BAT is the shortage of quality chips. In fact, the chip production issue is not exclusive to the AI field but is also a problem in China's high-tech industry. China is incapable of producing advanced chips and primarily relies on purchasing them overseas.

According to the Deloitte report, since 2015, chips have become China's largest import item. Before 2015, China's chip imports were close to oil imports, but suddenly, it more than doubled its chip imports to \$220 billion in 2015. This figure exceeded \$300 billion in 2018 and \$350 billion in 2020. And its chip imports increased more than 30 percent from January to May 2021.

However, all three companies (BAT) announced new developments in 2021 for domestic chip manufacturing.

On Oct. 19, Alibaba unveiled a self-use Yitian 710 chip to help the development of its cloud computing business. The chip was reportedly manufactured using an advanced 5nm process.

In August, Baidu announced its self-developed second-generation Kunlun AI chip had achieved mass production using a 7-nanometer process. The chip is said to be suitable for cloud services, autonomous driving, intelligent transportation, and other related uses.

In July, Tencent opened online job recruitment related to chip R&D in AI and video codec, mainly cooperating with its gaming and online video businesses. In addition, Tencent has also invested in chip companies, such as Shanghai-based startup Enflame Technology, which designs deep learning chips for cloud data centers and AI acceleration products.

From January to May this year, China produced a total of 139.92 billion chips, an increase of 48.5 percent compared to the same period last year; the total number of imported chips during the same period was 260 billion, an increase of 30 percent compared to the same period last year.

## Closing the Gap

The Pentagon's efforts to maintain a strategic advantage against China in the domains of artificial intelligence and machine learning are being undermined by bureaucratic waste and a lack of urgency, according to a former Department of Defense cybersecurity official.

Chaillan said his departure from the U.S. Air Force was to protest the slow progress of the U.S. military's technological transformation. He said he did not want to watch China surpassing the United States.

He said that Beijing is taking the lead in artificial intelligence, machine learning, and network technology and is moving towards global dominance. In an interview with The Epoch Times, Chaillan stated that the U.S. artificial intelligence is still ahead of China in general but rapidly losing its edge.

According to Chaillan, the Pentagon was not doing enough to make contractors comfortable with working with the U.S. military partially due to a lack of transparency, resulting in big private companies such as Google abandoning government contracts and development opportunities. Beijing, in contrast, can mandate any company inside its borders to develop technology in any direction it chooses, thus leading to much more rapid development.

In addition, Chaillan is strongly critical of the bureaucracy of the Pentagon and plans to testify to Congress in the future about the threat the CCP poses to America's superiority.

CSET says China's People's Liberation Army is using artificial intelligence to simulate the invasion of Taiwan, according to an October report. Among other military objectives such as intelligence analysis, information warfare, autonomous vehicle navigation, and target recognition, the research showed that the Chinese military hopes to counter U.S. military superiority with AI.

A researcher at Taiwan's National Defense Security Research Institute, named Xie Peixue, said both the Chinese civilian and military players use video games such as

Command: Modern Operations to simulate the invasion of Taiwan, according to Taiwanese news outlet Democratic China on Nov. 1.

Command: Modern Operations is a war simulation video game using AI, enabling players to simulate every military engagement from post-World War II to the present day and beyond. Although it can simulate tactical attack scenarios, strategic scale operations are also possible.

Xie pointed out that this simulation software has a commercial version and a professional version. Not only are there many players in the private sector, but the U.S. military and national defense companies also use the professional version for wargames and military simulation analysis.

"The use of artificial intelligence in wargames is the future trend," Xie suggested that both the U.S. and Chinese military are trying out AI in war simulation, but there is still a long way to go.

Big data is the key to AI's research and development; the more relevant data, the better the AI is trained.

"The biggest advantage of the U.S. military is that they collect a large amount of data directly from the battlefield and actual combat training every day for AI training," Xie said. "The AI trained in this way is more in line with the needs of the real battlefield." He added that Beijing's reliance on foreign software stems from its lack of battlefield experience and data.

Data is critical to AI learning. The more data available, the better the AI can learn. And China has one of the largest data sets in the world, though it's not necessarily for military use.

In addition to strategic AI applications, the Chinese military is also catching up in tactical applications such as unmanned shooting systems, modern robot fighters, and airspace simulators. Although the U.S. military started its R&D 20 years ago, the CCP is catching up at full speed with the rapid development of artificial intelligence and machine learning systems in recent years.

Chinese Lt. Gen. Liu Guozhi believes that AI will accelerate the process of military transformation and bring fundamental changes to troop allocation, combat styles, equipment systems, and combat effectiveness, even triggering a profound military revolution.

According to Liu, the CCP's "information revolution" will advance in three stages: digitization, networking, and intelligence. Presently, the CCP military has successfully introduced information technology into its internet platforms and systems. At the same time, it is gradually advancing the integration of command, control, communications, computers, intelligence, surveillance, and reconnaissance capabilities, seeking to increase its warfare capability further.

Amid China's accelerated progress in AI, Chaillan believes that if the United States does not take immediate proactive action in winning the AI race, it will have "no fighting chance in succeeding 10 to 15 years from now," as the rules of the game will have changed.

## Threat of Communism

"Communism seeks to destroy all human beliefs, morals, and culture in order to achieve world hegemony and global control. The development of artificial intelligence technology has enabled the Chinese Communist Party to see the possibility of using new scientific and technological forces to achieve its global dominance," current affairs commentator Richard Hui said.

"Thirty years after the disintegration of the Soviet Union, people suddenly discovered that the Chinese Communist Party had replaced the Soviet Union as a new threat to Western society. In many areas, the CCP has more global control than the Soviet Union back then.

"During these three decades, the CCP took advantage of the negligence of the free world. Through unfair trade and intellectual property theft, it turned China into the world's second-largest economy and a manufacturing superpower. The authoritarian regime monopolizes social resources to rapidly develop AI technology seeking to surpass the United States in the new technological era.

"If the CCP wins the AI race, the destiny of mankind will face a huge turning point. AI technology can give birth to a new generation of intelligent weapons such as cyber weapons, which may be more threatening than nuclear weapons. These technologies can control and destroy a country's infrastructure and weapon systems instantly. This will be the mode of future warfare, completed by touching a few buttons on the computer. This is no longer a scene from a science fiction movie but real threats facing mankind," he said.

"The most important question is who will control such technology?"

## ANALYSIS

# China's Shipping Goes Dark, Enabling Criminality and Militarism

China is now hoarding its shipping geolocation data, which will only increase concerns in Washington about Beijing's intentions



REUTERS/ALY SONG

## ANDERS CORR



Beijing's hoarding of ships' geolocation data is another indicator of its future plans to use commercial shipping for military purposes. The United States and allies should demand more transparency.

China's shipping fleet is going dark, potentially endangering maritime transport, and causing major problems for supply chain managers and shipping coordinators as they struggle to map shipping flows in Chinese ports with insufficient data. Beijing is supposedly imposing the blackout due to national security concerns, which indicate that it will continue to illegally use its commercial shipping fleet for military purposes. But the ship geolocation blackout could also help China's huge illegal fishing fleets.

Beijing's "gray zone" tactics—such as the surrounding of islands it plans to take by its maritime militia disguised as fishing boats—along with its coast guard and then further afield, its navy, is called its "cabbage" strategy. China's fishing fleets— for example, its illegal night-time squid trawlers—often turn off their automatic identification system (AIS) when fishing in other countries' exclusive economic zones (EEZs).

Even more shocking, Beijing's strategy to launch missiles from containerized cargo is arguably a violation of the Law of Naval Warfare.

AIS provides geolocation data to the world's public for ship safety, tracking, and logistics. When Beijing instead turns off China's AIS shore-based receivers, and ship-based transponders, to facilitate military aggression or the theft of economic resources in another country's EEZ, it is not only unethical, but sometimes a violation of the U.N. Convention on the Law of the Sea.

Restricting access to AIS data effectively restricts public knowledge of state-sponsored criminality.

Beijing's new national security crackdown against sharing data with foreigners will facilitate its use of commercial shipping for criminal and military purposes. The Chinese Communist Party's (CCP) information security (InfoSec) rules are now extending beyond consumer tech companies, such as ride-hailing firm Didi Chuxing, to affect the visibility of ships close to

China's shores in what should be seen as a danger to shipping, a boon to criminality, and a threat to trade and peace.

## Beijing Degrades Its Provision of Commercial Maritime Data

The quantity of AIS data that geolocate ships near China and is distributed to foreigners has plummeted due to espionage fears that are apparently driving the crackdown by the CCP. Fixed-point terrestrial AIS receivers on China's coastline and interior waterways, which used to transmit the locations of nearby ships dozens of times per minute, are now mostly dark. This is forcing the international community to rely on satellite data that only provides the locations of a subset of the best-equipped ships, much less frequently.

According to Lloyd's List maritime intelligence analyst Jean-Charles Gordon, "we are only getting a few data points per hour from satellites versus terrestrial which collects data every few seconds."

Cichen Shen of Lloyd's List noted in an article that "China is still capturing all the AIS signals albeit not sharing them."

He believes that the continued AIS "data gap could cause headaches and dangers for foreign companies trying to monitor their fleet or the underlying trade flows in Chinese waters because of a loss in visibility."

The failure to provide foreign shipping companies with an even playing field will put them at a disadvantage in Chinese shipping markets, and is arguably a violation of World Trade Organization rules.

The Financial Times summarized the views of Anastassis Touro, who leads the AIS team at MarineTraffic, that "decreased visibility would likely cause more congestion at Chinese ports, which have been gridlocked amid poor weather and pandemic-related disruptions, because it would become harder to time vessel arrivals with low-traffic periods."

## Beijing Thinks Spies Are Using Its Data

The culprit, according to Cichen Shen, is a new Personal Information Protection Law that took effect on Nov. 1. He described it as "part of China's legislative efforts to control how and whether its sovereign data can be accessed by domestic and foreign organisations."

The Times described the new data protection regime as the restriction of sensitive

Shipping containers at a port in Shanghai on July 10, 2018.

information overseas through the requirement of advance vetting of important data transmissions through a security assessment by the country's data watchdog.

The Times cited Chinese state media that warned, about AIS stations in coastal Guangdong, that the "intelligence extracted from this data endangers China's economic security and the harm cannot be ignored."

According to the Times, "Authorities interviewed in the report said foreign intelligence agencies, companies and think-tanks use the system to keep tabs on China's military vessels and analyse economic activity by surveying cargo traffic."

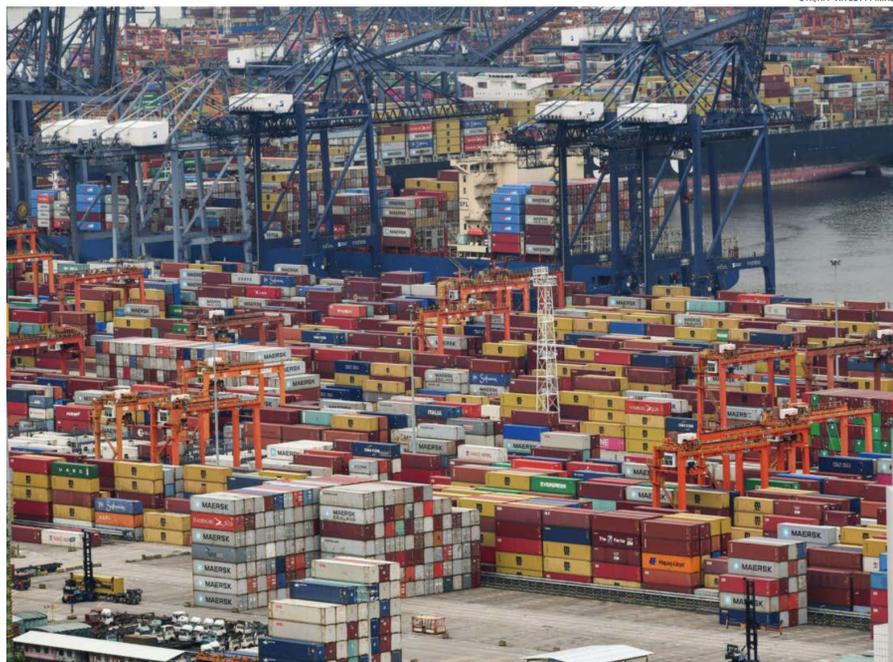
## The Dramatic Drop in Chinese Ship Data Transmissions

Lloyd's List noted that Chinese data provid-

ers are shutting down their AIS transmissions to foreigners just in case they could be considered in violation of the new rules. It reported, for the first week of November, 12 percent fewer AIS positions recorded in China's EEZ, which normally extends 200 nautical miles from the shoreline.

According to the Times, the number of AIS signals dropped from ships in Chinese waters from 15 million per day in October, to just more than 1 million in early November.

International shipping supply chain managers will now find it more difficult to plan shipping routes, logistics, and throughput in Chinese ports. But if the ban expands further, it could seriously endanger shipping and violate Beijing's international commitments. China's allies could follow, extending the degradation of previously freely available ship-



STR/AFP VIA GETTY IMAGES

China's aggression and fear are economically decoupling itself, or worse, in an erosion of the international system of trade that could be an own goal of epic proportions, and part of a downward spiral of mutual suspicion toward military conflict.

The automatic identification system provides geolocation data to the world's public for ship safety, tracking, and logistics. When Beijing instead turns off China's AIS shore-based receivers, and ship-based transponders, to facilitate military aggression or the theft of economic resources in another country's EEZ, it is not only unethical, but sometimes a violation of the U.N. Convention on the Law of the Sea.

Cargo containers are stacked at Yantian port in Shenzhen in China's southern Guangdong Province on June 21, 2021.

ping data globally.

Already, according to Greg Poling, a maritime law expert at the Center for Security and International Studies, "Vietnam doesn't feed much shore based AIS data to the commercial providers so in its waters we're wholly reliant on satellite."

According to Professor James Kraska, who has dual appointments at the U.S. Naval War College and Harvard University, "AIS is the primary means" of visibility into global ship movements, and is required by the International Convention for the Safety of Life at Sea (SOLAS) for ships of at least 300 gross tons (GT). He said that "turning it off makes maritime domain awareness more challenging."

Most Chinese ships near Chinese shores have kept their AIS transponders on, according to Poling.

The transponders, also known as transmitters, can receive and send geolocation data. This makes them visible to satellites and able to broadcast their positions to other nearby ships.

But some ships use weak transmitters that can only be seen by the shore-based, not satellite, receivers.

Analysis of satellite data by non-profit Global Fishing Watch shows that illegal fishing ships from China and North Korea do turn off, or fail to install, AIS transponders.

As Beijing is turning off China's AIS data flows to foreigners at a more systematic level, international shipping managers must send shipments in and out of Chinese ports with less information about local maritime traffic conditions than they had previously done. Academics and non-profits concerned about overfishing and Beijing's subsidized and militarized fishing militia, will have less data necessary to track and publicize Beijing's transgressions.

There is no theoretical reason for Beijing to stop the Chinese data ban at terrestrial AIS. It could almost as easily, in the name of national security, limit the transmission of its shipping industry's maritime locations transmitted by satellites or the ships themselves, anywhere in the world.

While the AIS transmitters of Chinese shipping have in general not been shut off to foreign receivers, this is a possibility that should be planned for given deteriorating relations between Beijing and most of the rest of the world, and the CCP's sledgehammer approach, where a scalpel might have sufficed.

Professor Salvatore Mercagliano at Campbell University wrote that a requirement by Beijing that ships turn off their AIS, if Beijing extended their data ban in this way, would be a violation of its international commitments.

## China's AIS Blackout Is Not Dangerous, According to Experts

"The blackout imposed by the PRC [People's Republic of China] deals with the relay and transmission from shore of AIS data," Dr. Mercagliano wrote. "Ships are still broadcasting and any vessel can query another so there is no concern about navigation hazard. What happens with AIS, is that there are shore operators that have receivers that gather the AIS data."

Chinese shore-based receivers have in the past shared the AIS data they collect with international data aggregators such as MarineTraffic, IHS Markit, and Windward, according to Poling.

Now those data sources have less data. "The issue is the quality of info," wrote Salvatore. "The loss of this data makes it difficult for freight forwarders and shippers to track cargoes and coordinate elements of the supply chain."

Poling wrote that "the reason the AIS blackout isn't a threat to safety of navigation is that the ships haven't actually stopped broadcasting." And that "Chinese authorities have just banned the sale of shore-based AIS to commercial firms abroad."

The shore-based receivers and harbor masters still see the vessels, according to Poling. The vessels can also see each other when they are within range, which varies depending on the quality of their transmission and reception devices.

That the China shore-based data is now hoarded instead of shared with international data aggregation platforms "makes it moderately harder for shipping companies and insurers to track their ships when they're near the Chinese harbors for purposes of planning logistics and the like (but they can see them fine everywhere else by satellite)." Poling wrote, "and it makes it a little harder for those of us in academia to keep an eye on Chinese activity (but again, we still have satellite-based and the shore based data from all the other coastal states)."

Poling acknowledged that individual Chinese ships could turn off their AIS transmitters, but claimed that there was no systematic evidence of them doing so. He said that China's navy and coast guard are under no legal obligation to keep their AIS on, so they could go dark on occasion.

"But we don't see evidence that the commercial boats or [Chinese maritime] militia systematically turn the[m] off. The reason they disappear from commercial platforms as they get farther from China's coast is that most of them are equipped with weaker Class-B transmitters, not the Class-A required by the IMO [International Maritime Organization] for international transit."

The weaker Class-B transmitters sometimes cannot be registered by satellites so are only visible from shore or ship if they are close enough, according to Poling. "Chinese domestic law requires AIS on all ships for safety, so the fishing boats get the cheapest option to tick that box."

## Chinese Shipping That Goes Dark

Increasing International Tension  
Decreasing visibility of commercial ships near China is a self-imposed casualty and follow-on effect of Beijing's increasing military aggression. As part of this aggression, the CCP has attempted to hide its military activities behind steel-reinforced fishing boats that are in fact a maritime militia and extension of the Chinese navy.

Perhaps this explains why China is one of the only countries that sees release of its near-shore AIS data as a national security threat.

However, democracies are on to this ruse, and developing new ways to identify which of China's thousands of fishing boats are associated with the maritime militia, and which are not.

Poling's own research, conducted with coauthors Tabitha Grace Mallory, Harrison Prétat, and in conjunction with the Center for Advanced Defense Studies, has used AIS data as indicators of a particular ship's membership in the militia.

"On-site photography and video, as well as ship-to-ship automatic identification system (AIS) data collection, offer the greatest potential to directly identify militia vessels and document their behavior," according to Poling's study, published on Nov. 18. "This both enhances the opportunities for follow-up research and creates an immediate impact by revealing the militia's size, scope, and activities to a broad audience in a convincing fashion."

Beijing was likely not amused. Its original use of fishing boats, militia, and other naval assets for aggressive purposes caused a higher level of international scrutiny, including academic examination of AIS data from militia vessels, which Beijing in turn called espionage. That national security justification led to Beijing's overdone InfoSec that will make imports and exports to China more difficult.

Lloyd's List coverage of the AIS blackout cited an espionage case in the shipping sector that "has added to the concerns" of Chinese data providers that is leading them to cut off their data transmissions in anticipation.

"An unnamed 'foreign consultancy' was said to have been caught by [the] state security department in May to provide its compatriot 'spy agency' with shipping and cargo data obtained from its Chinese business partners," according to Lloyd's.

When asked whether his research and prior studies had caused Beijing's crackdown on terrestrial AIS in China, Poling replied, "I think it [is] likely that the whole body of work from us and others in Vietnam probably contributed to the national security rationale. But I think the proximate trigger early this month (before anyone in China knew about our report) was the new information security law."

Thus the United States, China, and their allies appear to be in a classic downward spiral of insecurity and fears of exactly the type that increase the chance of military conflict.

"What the PRC has just done is bad, goes against global trends of best practices and progress, and is part of larger ill winds of opacity and undermining of international rules and norms under Xi [Jinping]," according to one U.S. military source who asked to remain anonymous.

China's aggression and fear are economically decoupling itself, or worse, in an erosion of the international system of trade that could be an own goal of epic proportions, and part of a downward spiral of mutual suspicion toward military conflict.

Views expressed in this article are the opinions of the author and do not necessarily reflect the views of The Epoch Times.

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