Threats Posed by Reliance on Chinese Lidar

NOVEMBER 13, 2023
Lidar, also referred to as laser scanning, emits laser light to capture enormous amounts of data and produce real-time 3D maps within millimeters of accuracy. The technology can determine the direction and speed of moving objects, including people. Lidar is a critical component of next-generation AV technology, as well as surveillance systems used to monitor infrastructure, including the power grid, manufacturing facilities, and airports. We must ensure that data is safe and secure — both now and in the future.

**U.S. IS LOSING TO CHINA**

China is advancing quickly in the lidar space, with subsidized technology flooding the U.S. market and Chinese lidar companies benefiting from U.S. investment.

The commercial lidar industry was founded in the U.S. But even though U.S. firms have led lidar to date, Chinese firms are advancing quickly — in large part due to the support of China’s industrial policies and access to the U.S. market and technology. Several Chinese lidar companies, including Hesai, Innovusion, Leishen, Livox and Robosense have received funding from U.S. venture capital firms. Hesai is listed on the NASDAQ and continues to receive investments from U.S. institutional and individual investors. In August, Innovusion filed for an initial public offering on NASDAQ.

**THE FEDERAL GOVERNMENT NEEDS TO PROTECT THE U.S. LIDAR INDUSTRY BEFORE IT’S TOO LATE**

The U.S. government has historically been late to the game when it comes to protecting American companies in the emerging technology space. Chinese lidar companies, like other Chinese entities before them, receive generous government support via subsidies, grants and other unfair trade scenarios, and engage in questionable practices to obtain U.S. intellectual property. If left unchecked, the U.S. will cede market dominance in lidar to China, in the same way they were overtaken on drones and 5G.

One example — Due to its strong connection to the Chinese government, Hesai is able to sell its lidar systems below cost, putting its rivals at a significant disadvantage. Hesai has denied stealing rivals’ intellectual property despite settling a patent dispute with U.S.-based Velodyne. As further evidence of linkage to the Chinese government, Hesai warned investors in its IPO filing earlier this year that “the PRC government has significant authority in regulating our operations and may influence or intervene in our operations at any time.”

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1 “U.S. firms have led in lidar to date, but PRC firms are advancing with the support of PRC industrial policies and access to the U.S. market and technology … PRC firms may be selling below cost to gain market share…PRC firms are poised to quickly take a leadership position,” Congressional Research Service - “U.S.-China Competition in Emerging Technologies: lidar,” August 14, 2023.
3 https://technode.com/2023/08/14/nio-backed-lidar-maker-files-for-us-ipo-regulator/
4 https://www.hudson.org/technology/spy-your-car-nadia-schadlow
5 https://www.hudson.org/technology/spy-your-car-nadia-schadlow
7 https://6sense.com/tech/video-surveillance/hikvision-market-share
8 https://www.axios.com/2022/12/07/huawei-alternatives-5g-cellular-equipment-oran
10 https://www.wsj.com/tech/the-latest-tech-caught-in-the-u-s-china-trade-war-lasers-64d582c0
11 F-1 SEC Filing, February 2, 2023
As a critical dual-use technology, lidar is key to military operations. **Today, the U.S. military has a robust number of domestic lidar suppliers to choose from and therefore should not be reliant on Chinese technology.** In fact, in October of 2023 Lockheed and DARPA demonstrated to the U.S. Army for the first time demonstrated how an uninhabited Black Hawk helicopter flying autonomously can safely and reliably perform resupply missions and rescue operations — a flight enabled in part by U.S. lidar company, Aeva.12 Likewise, U.S. lidar sensors from Ouster and Velodyne have been deployed in a number of unmanned air, surface and ground defense systems.13

There is another reason the U.S. government must act quickly to protect American lidar companies: Until future adoption of lidar technologies occurs across a host of industries, the AV space will remain the largest driver of demand for lidar. If Chinese government-backed lidar companies dominate orders from AV manufacturers over the next few years, it could displace the U.S. lidar market and America’s position as leaders of the newest, most cutting-edge technologies.

**CYBERATTACK CONCERNS: CYBER, DATA THEFT AND THREATS FROM CHINESE MILITARY**

The threats are real, significant and immediate — We must do more to protect the American people and our infrastructure against potential threats.

Lidar collects vast troves of sensitive information; reliance on Chinese lidar exposes the U.S. to potential data theft and cyber attacks.

- **Cyber Attacks:** Lidar sensors are used to secure sensitive sites, operate AVs, run traffic signals and intersection management used by Smart Cities,14 and move cargo at ports and aircraft at airports. A cyber attack that shuts off lidar sensors or causes them to malfunction could be catastrophic.

- **Data Theft:** Lidar servers are networked devices that collect and share large amounts of data. A lidar company with links to the Chinese government could program its sensors with malware during installation on a network or through a firmware update to surreptitiously send sensor data back to the company or to the PRC.15

- **Military Threat:** Chinese lidar companies are linked closely to the Chinese government and military. Data collected by Chinese lidar could be used to map U.S. infrastructure, conduct military or industrial espionage, and gain operational advantages in a military conflict. In addition, Chinese lidar companies are already installing their technology on Chinese advanced warfighting vehicles and automated military systems.16

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16 "Chinese lidar companies are already installing their technology on Chinese advanced warfighting vehicles and automated military systems,...Hesai makes autonomous warfighting vehicles for the military and is reportedly tied to the military’s China Electronics Technology Group Corporation," Congressional Research Service - "U.S.-China Competition in Emerging Technologies: lidar," August 14, 2023.
THE FEDERAL GOVERNMENT CAN AND SHOULD ACT BEFORE IT’S TOO LATE

There are concrete actions the U.S. government can take to protect the country against threats posed by reliance on Chinese lidar. The Administration and Congress should leverage existing tools and new legislation to protect U.S. economic and security interests in the following ways:

• China considers lidar critical or “strategic” technology. The U.S. government should match the Chinese government by designating lidar a critical emerging technology.
• PRC origin lidar should be prohibited across the U.S. Department of Defense and around military bases and other sensitive sites.
• PRC origin lidar should be prohibited across U.S. critical infrastructure, including utility, transportation and supply chain networks.
• The U.S. government should restrict the flow of U.S. investment to PRC lidar companies.
• The U.S. government should restrict the export of critical components to PRC lidar companies.

ABOUT COALITION FOR SAFE & SECURE TECHNOLOGY

The Coalition for Safe & Secure Technology is dedicated to protecting and promoting American technology interests. Our goal is to ensure U.S. policy addresses the defense, intelligence and surveillance threats of sensitive technologies from foreign entities, safeguards intellectual property, and promotes competition and innovation consistent with the protection of U.S. national security. Learn more at safesecuretech.com