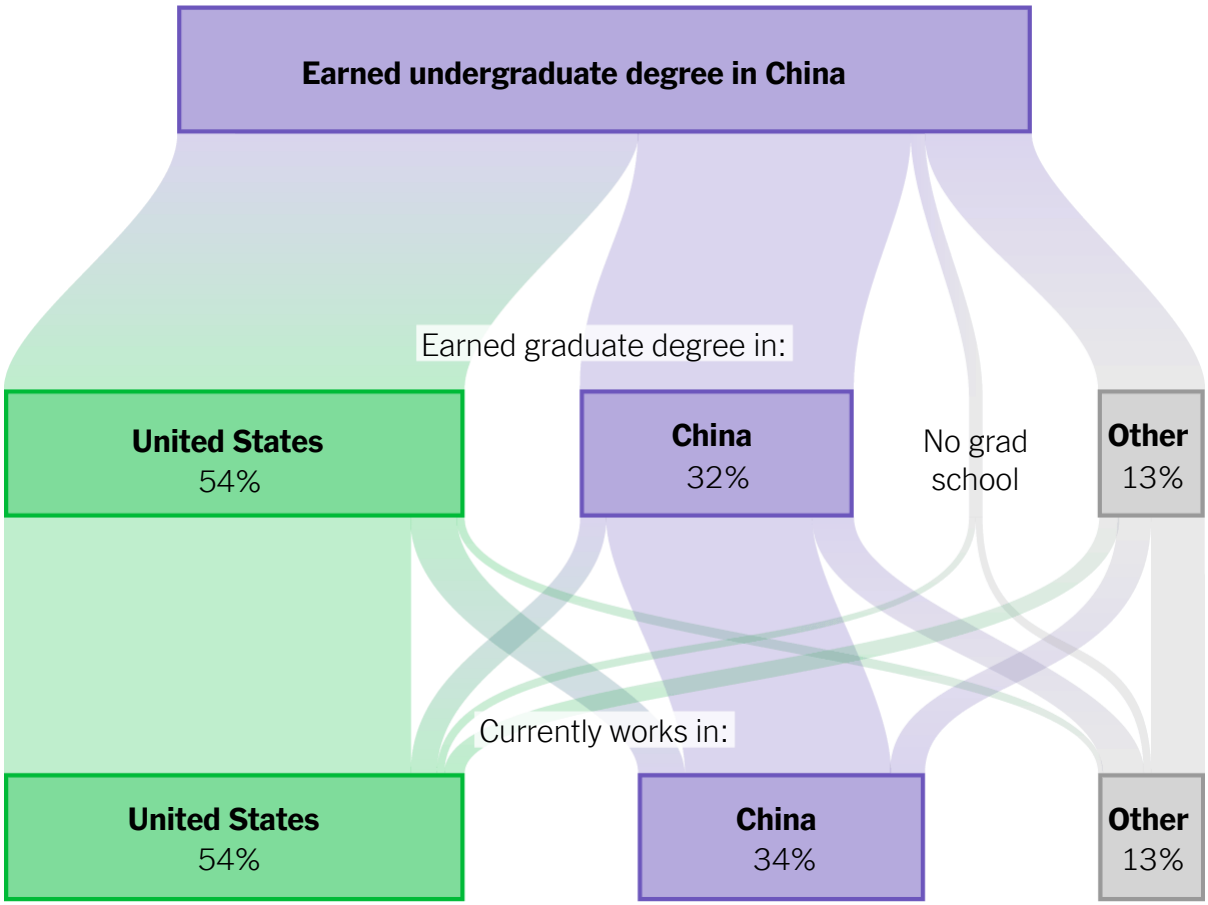
The New York Times https://nyti.ms/3hagu5t

A U.S. Secret Weapon in A.I.: Chinese Talent

New research shows scientists educated in China help American firms and schools dominate the cutting-edge field. Now industry leaders worry that worsening political tensions will blunt that edge.

More of China's top A.I. talent ends up in the U.S. than anywhere else.
Of 128 researchers with undergraduate degrees from Chinese universities whose papers were presented at the A.I. conference, more than half now work in the U.S.



By Ella Koeze ▪ Original sample was made up of 671 authors of a random selection of 175 papers selected from the over 1,400 papers presented at NeurIPS 2019, a top A.I. conference. None of the 128 researchers represented here are current students. Post-graduate work countries are based on where the researcher lives, not where their company or institution is headquartered. Data is current as of the first quarter of 2020. | Source: MacroPolo


By Paul Mozur and Cade Metz

June 9, 2020

When the Defense Department launched Project Maven, an effort to remake American military technology through artificial intelligence, it leaned on a team of about a dozen engineers working at Google. Many of them, according to two people familiar with the arrangement, were Chinese citizens.

The Pentagon was fine with that, they said, even amid rising tensions between Washington and Beijing. Classified data was not involved, the Pentagon reasoned, and the American military needed the most qualified minds for the job.

The Trump administration is now moving to limit Chinese access to advanced American research, as relations between the United States and China reach their worst point in decades. That worries many of the companies and scientists in the heady realm of cutting-edge A.I., because much of the groundbreaking work coming out of the United States has been powered by Chinese brains.

A new study from MacroPolo — a think tank run by the Paulson Institute, which promotes constructive ties between the United States and China — estimated that Chinese-educated researchers comprised nearly one-third of the authors of the papers accepted and promoted at a prestigious A.I. conference last year, more than from any other country. But it also found that most of them lived in the United States and worked for American companies and universities.

The study shows they are helping to power American dominance over a strategically important field, one that can enable computers of the future to make decisions, identify faces, find criminals, pick military targets and drive vehicles.

Many studied in the United States, grew comfortable living there and found work with American employers. They now worry that the flow of students and professionals will come to an end.

“Sacrificing international students is killing the goose that lays the golden egg,” said Lisa Li, a Chinese engineer who recently graduated from Johns Hopkins University. “It will eventually destroy the future competitiveness of America.”

China sees artificial intelligence as a field of strategic importance. It has thrown vast amounts of money at researchers with an aim of getting them to work for Chinese companies and institutions.

The United States has noted China's technology ambitions with alarm. It has cracked down on espionage and bolstered enforcement of disclosure rules at American universities and institutions. Last month, The New York Times reported that the Trump administration planned to cancel the visas of Chinese researchers and graduate students who have direct ties to universities affiliated with China's military.

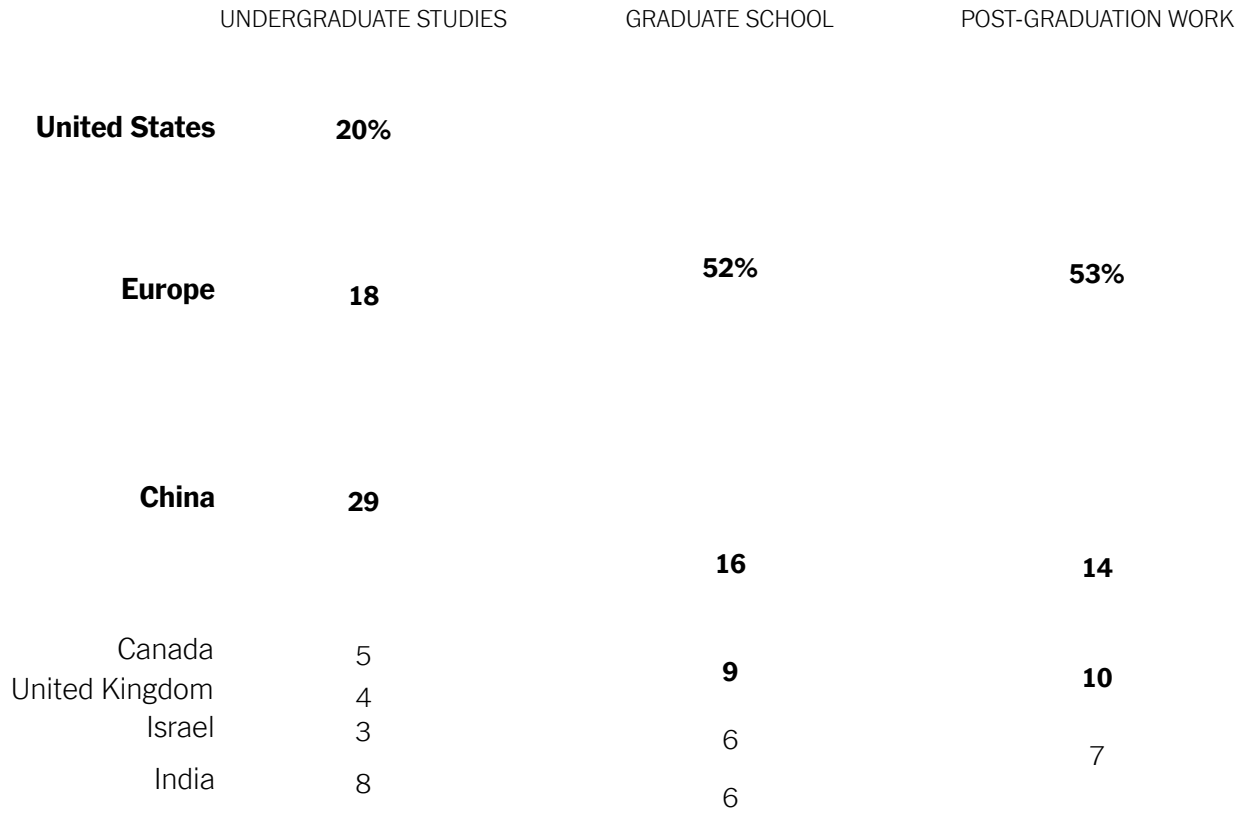
Efforts that broadly block Chinese talent could undermine the American lead in A.I., said Matt Sheehan, an analyst with MacroPolo and a co-author of the study.

"These are some of the brightest minds in China, and they're choosing to work for American research labs, teach American students and help build American companies," Mr. Sheehan said. "If the U.S. no longer welcomed these top researchers, Beijing would welcome them back with open arms."

MacroPolo looked at a sample of papers published last year at the Conference on Neural Information Processing Systems. NeurIPS, as it is known, focuses on theoretical advances in neural networks and deep learning, which have anchored recent developments in A.I. It found that more than half of the papers were written by authors in the United States.

Many top A.I. researchers start their academic careers in China, but they don't stay there.
Below are the work and education backgrounds of 671 authors of 175 papers selected randomly from over 1,400 papers presented at NeurIPS 2019, a top A.I. conference.

Share in each country of each stage of career



Iran	3		6
Other	10	9	7

By Ella Koeze ▪ Authors who are current undergraduate and graduate students are included in the totals for stages of their careers they've reached but not later stages. Post-graduate work countries are based on where the researcher lives, not where their company or institution is headquartered. Data is current as of the first quarter of 2020. | Source: MacroPolo

The think tank also looked at where the authors went to school. It found that nearly 30 percent of them pursued undergraduate degrees in China, more than any other country. But more than half went on to study, work and live in the United States.

Chinese A.I. researchers may have more opportunities in the United States. MacroPolo found that the top homes of the authors included Google, Stanford, Carnegie Mellon, the Massachusetts Institute of Technology and Microsoft Research. Tsinghua University and Peking University, two of China's best universities, were the only Chinese institutions among the top 25.

Multiple studies indicate that Chinese nationals who studied A.I. in the United States were likely to remain. Through 2018, nine out of 10 who completed doctorate degrees stayed for at least five years after graduation, according to a study from Georgetown University's Center for Security and Emerging Technology.

Those numbers showed no signs of decline, but some organizations say more recent tensions between the United States and China have already begun to affect talent flows.

"I am terrified by what the administration is doing," said Oren Etzioni, chief executive of the Allen Institute for Artificial Intelligence, a high-profile research lab in Seattle, which has seen a significant decrease in the number of applications from Chinese researchers. "How many times can you push people out the door and put obstacles in their way before they say, 'I am not going to try'?"

Chinese-born researchers are a fixture of the American A.I. field. Li Deng, a former Microsoft researcher and now chief A.I. officer at the hedge fund Citadel, helped remake the speech recognition technologies used on smartphones and coffee-table digital assistants. Fei-Fei Li, a Stanford professor who worked for less than two years at Google, helped drive a revolution in computer vision, the science of getting software to recognize objects.

At Google, Dr. Li helped oversee the Google team that worked on Project Maven, the Pentagon effort. Google declined to renew the Pentagon contract two years ago after some employees protested the company's involvement with the military. The Google team worked to build technology that could automatically identify vehicles, buildings and other objects in

video footage captured by drones. In the spring of 2018, at least five of the roughly dozen researchers on the team were Chinese nationals, according to one of the people familiar with the arrangement.

A certain amount of government restriction is natural. The Pentagon typically bars citizens of rival foreign powers from working on classified projects. China also has a long history of carrying out industrial espionage in the United States.

A.I. is different, people in the industry argue. Researchers generally publish what they find, and anybody can use it. So what the industry is looking for is not intellectual property but the minds that conduct the research.

“For much of basic A.I. research, the key ingredient in progress is people rather than algorithms,” said Jack Clark, policy director of OpenAI, a prominent lab in San Francisco, and a co-chair of the AI Index, an annual effort to track the progress of A.I. research, including the role of Chinese researchers.

“There’s a lot of open-source technology lying around for researchers to use, but relatively few researchers with the sorts of long-term idiosyncratic agendas that yield field-changing advances,” he said.

Peter Chen, a prominent Chinese-born researcher who is a legal U.S. resident, said further government crackdowns could hurt companies across the community, including his start-up, a robotics company called Covariant.AI in Berkeley, Calif. “If this continues, there will be people we can’t get,” he said. “It will definitely affect our ability to recruit talent.”

For many Chinese students, the decision to stay or go has been more personal than political. Robert Yan, a former Google employee, returned to China to work at an A.I. start-up. The Bay Area didn’t suit him. He hated driving and missed Chinese food. A native of Shanghai, he thought he could advance more quickly in his home culture.

Still, Mr. Yan said, only about one out of 10 of his Chinese colleagues in the United States chose to go home. For those looking to do high-end theoretical research, many Chinese companies still weren’t the best place, he said.

“Compared to Google I now have far less freedom,” Mr. Yan said. “At a start-up you need to have a reason to do each task. We’re chasing efficiency. That does not facilitate doing things because you’re curious.”

Ms. Li, the Johns Hopkins graduate, helped organize a petition supporting foreign student access to the United States. She prefers living in the United States in part because China’s tech industry is riddled with sexism.

“I’m big, and I’m loud,” Ms. Li said. “Respect for female engineers is very important to me.”

Lin Qiqing contributed research.