

A driverless vehicle on display at an exhibition in Shenzhen, South China's Guangdong Province, on June 19, 2015.

# Bona Fide Intelligence

The AI industry is flourishing despite obstacles along the way

By Lu Yan

On the streets of Zhongguancun, a science and technology hub of some repute in northwest Beijing, a yellow box, half a meter wide and one meter high with a black semicircular head and six wheels, is running smoothly. Pedestrians hurry by with some giving the occasional curious glance. Little do they know that they are passing a prototype of China's first independently developed self-driving delivery robot.

"Adorable" is the word its creator, Liu Zhiyong, founder and CEO of Zhen Robotics, used to describe it, but inside it is far more sophisticated than it looks. The robot is based on three core technologies: simultaneous localization and mapping, deep learning object detection, and machine learning control technology.

According to Liu, logistics has become an important market with the surging of e-commerce, demonstrated by the 15-percent share the logistics industry holds in China's GDP. Human cost accounts for 50 percent of the courier service industry, and there are 2 million couriers in the entire country.

"I hope as artificial intelligence (AI) and the automated delivery industry mature in the future, robots like ours can free humans from hard labor and make life more convenient for people," he told *Beijing Review*.

Now the "delivery minions" developed by Liu's company, a pioneer in the application of self-driving technology in delivery services, have been bringing convenience to several enclosed residential and work units by providing services to customers who want instant, unscheduled deliveries.

In recent years, AI has become a buzzword for the government, the media, business communities and the public in China. According to a market report released in April 2017 by iiMedia Research, an Internet data analysis firm in Guangzhou, the scale of the country's AI industry exceeded 10 billion yuan (\$1.59 billion) in 2016, with the figure expected to reach 34.43 billion yuan (\$5.48 billion) in 2019.

## Unstoppable trend

AI has already become an important focus for the government, evidenced by the inclusion of the concept for the first time in the

Central Government's work report in 2017.

The State Council, China's cabinet, issued the Next Generation Artificial Intelligence Development Plan in July 2017, setting the goal of becoming a global innovation center in the field by 2030.

"We will work faster to build China into a manufacturer of quality, and develop advanced manufacturing, promote further integration of the Internet, big data and AI with the real economy," said President Xi Jinping, also General Secretary of the Communist Party of China (CPC) Central Committee, in his report delivered at the 19th CPC National Congress in October 2017. A series of policies have since been rolled out to this end.

In December 2017, the Ministry of Industry and Information Technology published an action plan for the AI industry from 2018 to 2020 as a complement to the Made in China 2025 strategy, the country's blueprint for upgrading manufacturing, and previously issued plans. These policies more clearly laid out the schedule and roadmap for the industry's development.

These developments reflect a wider trend. In October 2016, the White House released a report titled *Preparing for the Future of Artificial Intelligence*, expounding upon the potential impact of AI across multiple industries.

Elsewhere, the International Telecommunication Union (ITU) of the UN held the AI for Good Global Summit in June 2017, where government officials, representatives of other UN agencies and NGOs, industry leaders, and AI experts met to discuss ethical, technical, societal and political issues as well as promotion of international dialogue and cooperation in support of AI innovation.

Business circles have wasted no time in making moves to capitalize on the new technology. Baidu is investing in deep learning and voice and image recognition technologies, among others, indicating the company's plan to go all in on AI. In early July last year, Baidu's driverless car hit the Fifth Ring Road in Beijing, generating a buzz among netizens. Several months later, the company announced that its AI-

powered self-driving minibuses would go into large-scale production in 2018.

## Improving lives

Alibaba and Tencent, China's largest Internet companies, are also investing heavily in AI technology to better facilitate their respective focuses in new retail and social media services.

Besides the biggest names in business, small and medium-sized enterprises as well as startup companies are also striving to transform AI from incomprehensible jargon into something of tangible benefit to ordinary people.

An important focus of these efforts is the medical treatment and healthcare industry. Take Beijing Linking Medical Technology as an example. Established in March 2016, the company focuses on building a data platform, mainly in oncology, for doctors and hospitals.

According to its CEO, Zhang Hua, for a long time, the core medical data was mainly managed by hospitals. But as volume increased, traditional data management was unable to optimize treatment, sometimes even wasting the valuable time of patients.

"It would take a doctor five to six hours in front of the computer to design a treatment plan based on data that had been collected in a traditional way. It was inefficient for both the patients and the doctors," Zhang told *Beijing Review*.

An oncologist himself, Zhang resolved to change the situation. Together with his team, he came up with a solution, using AI algorithms to collect and manage medical data. Now the design of treatment plans is mostly automated by the system itself, with the doctors spending just 20 to 30 minutes verifying the results and making necessary revisions. Zhang said the method not only saves time for treatment, but is also more accurate, since the algorithms are less prone to error than human doctors.

In addition to treating diseases, AI is helping to manage social issues. China has an aging society, and according to the Ministry of Civil Affairs, the number of elderly citizens aged 60 and above topped 230 million in 2016, 16.7 percent of the country's population.

Identifying the potential issues caused by this situation, some companies are working out how to use AI to make the life of the elderly better. Leading technology company Xiaomi introduced a smart iHealth blood pressure monitor, which automatically sends results to the smartphones of the elderly users' children.

Xin Yu Connect PTE Ltd. has patented a smart lighting system that can monitor the actions of the elderly at home and detect and report accidents such as falls. "Smart home appliances have become a crucial part of elderly care," said Cai Zhen, the company's founder and CEO.

## Gradual progress

While some observers seem overwhelmed by the power of AI technology, many experts in the field are encouraging people to keep their feet on the ground.

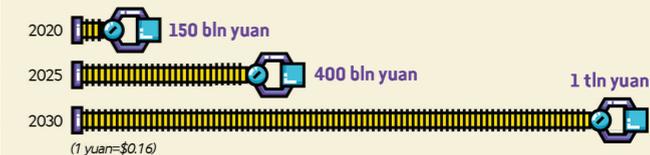
"The concept of AI is kind of 'deified' by the media, when it should be treated as a common part of people's daily life," Cui Hongyu, Technical Evangelism Director of Microsoft's Developer eXperience and Evangelism, told *Beijing Review*.

"Often, people overestimate the technological changes that will take place in the coming two years, without paying enough attention to the revolution in the coming 10 years," said Hao Xizhe, Marketing Director of RealDrive, a VR technology company. Hao believes that the industry still needs to undergo significant development and overcome various bumps in the road.

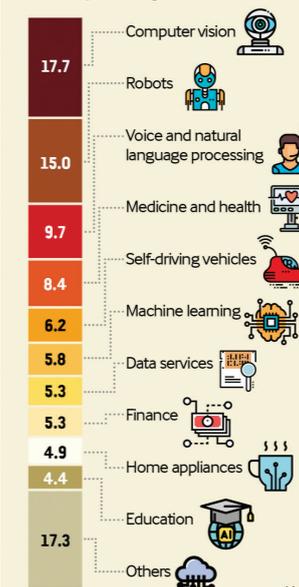
## China's Artificial Intelligence

(By the end of October 2017)

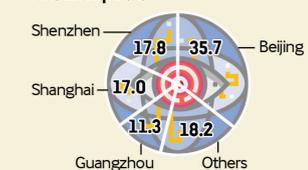
### AI Industry Projections



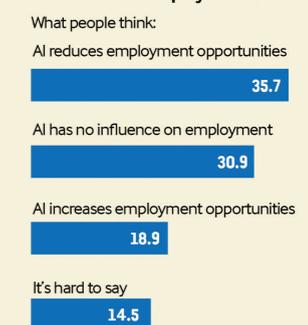
### AI Companies by Sector (%)



### Geographic Distribution of China's AI Startups (%)



### Views on AI & Employment (%)



Note: All interviewees were mobile phone users.  
(Source: iiMedia Research; designed by Pamela Tobey)

One of the challenges facing the AI industry is a lack of high-caliber professionals. According to a report released by LinkedIn, at the end of the first quarter of 2017, there were over 1.9 million professional and technical AI personnel worldwide, with 50,000 of them in China.

Yi Jianqiang, a professor at the Institute of Automation of the Chinese Academy of Sciences (CAS), argued that the influence of Chinese scholars' research is less than that of counterparts from the U.S. and the UK, even though they produce a large number of theses on AI.

Apart from a shortage of professionals, many other issues including data security and the ethical and legal impact of AI still need to be addressed as time goes by.

"If you compare AI to a 100-meter dash, it is just now getting off the mark," said Dr. Eric Chang, Senior Director of Technology Strategy and Communications of Microsoft Research Asia. "The current phase of AI is comparable to where the Internet was at the beginning of the 1990s."

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