

## China and the Future of AI

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### Abstract

*The progress of technology is currently remarkable and very fast, especially Artificial Intelligent or AI. China, as the largest emerging and biggest developing country, has significant AI growth. It is apparent that China will probably become the pioneer in the fifth generation of technologies, making the US worry. Along with its remarkable economic growth, China makes research and development agenda as the top priority. In this regard, this paper seeks to explain China and the future of AI, including its current progress.*

**Keywords:** *China, Artificial intelligence, future AI*

### Introduction

As the second world's largest economy and the most populous country, China is now gaining its step ahead in many aspects of life, including technology. The giant Asia has put more concern on Artificial Intelligent or AI. When we talk about China and the future of AI, first, we have to know about the definition of AI. It is the thoughts and performances of human minds or brains by a machine called AI or machine intelligence, for example, computer and robot. This process involves the acquisition of information and the rules for using this information. In essence, AI is science and engineering that puts in the making of intelligent machines, especially in the design of smart computer programs.

There is no solid definition for intelligence that does not depend on the intelligence of a human. We still have not been able to figure out which types of computational methods are intelligent because, until now, we do not know all of the intelligence mechanisms. But still, we can define that intelligence shows the computational amount of capacity and skill to succeed in the world, and there are different types of intelligence with diverse degrees in humans, animals and machines (McCarthy, 2019).

Two kinds of AI can be recognized as strong and weak. First, the strong AI can be understood as a general artificial intelligence system or machine intelligent. It is true intelligence and full AI. This has ability to understand just like humans and have a broader and stronger recognizing power. For example, when someone experiences something unpleasant, this system can get a solution without human intervention. It

means this type of AI technology can do its job without any external assistance. AI development and research are only intended to reflect human abilities, such as solving problems, emotions, creativity and self-awareness, and so on. Even in the structure of strong AI, there are existing theories that are similar to human development. In some cases, it is also interpreted that strong AI is like the mind of the child, and over time, trained to become like a great person's mind.

Second is the weak or narrow AI. This can be recognized as limited AI, which is designed for understanding specific work. We see a lot of things around us, such as intelligent systems that are configured to perform a specific task. This type of device can detect specific speeches like Apple's Siri, unmanned aerial vehicles, a machine which can help in modern agriculture or specific cameras which can help infrastructure for oil pipelines, customer service systems, hotel reservation at different times and places, online food requests or different contrasted machines such as x-ray and other devices. These are known as weak or narrow AI.

Major differences between strong and weak AI can be understood as following:

- (1) The weak AI can only do the things that are taught and cannot execute other objects. A strong AI can think and able to do any action without external intervention.
- (2) The actions of weak AI are planned by humans but strong AI has stored algorithms that independently perform their actions when dealing with different states.
- (3) Weak AI machines can only stimulate human behaviors, but strong AI has minds and can decide independently (Maxbrainfunction.com, 2019).

At the moment, AI offers a wide range of new capabilities for work, marketing and producing. However, in some cases, it is also directly related to the culture of people's understanding. Some people believe that AI device will replace their work. But they do not know that AI is improving product services, not by replacing people who use it. Not only a product of service, AI constitutes an essential technology that can provide more accurate, useful and workable services. AI is not just a fabric, but different dimensions like Perception AI, Internet AI, Autonomous AI and Business AI (Shacklett, 2019).

### **Waves of AI development**

At least, there are four waves of AI. First, Internet AI, that is related to internet and website programs as the largest source of data usage. In the current era, we can say Facebook, Amazon, Google, Alibaba, Baidu, and Tencent are internet giants. In this regard, China has the Alibaba as an Amazon's competitor, Baidu is Chinese Google, and Tencent probably would be Chinese 'version' of Facebook.

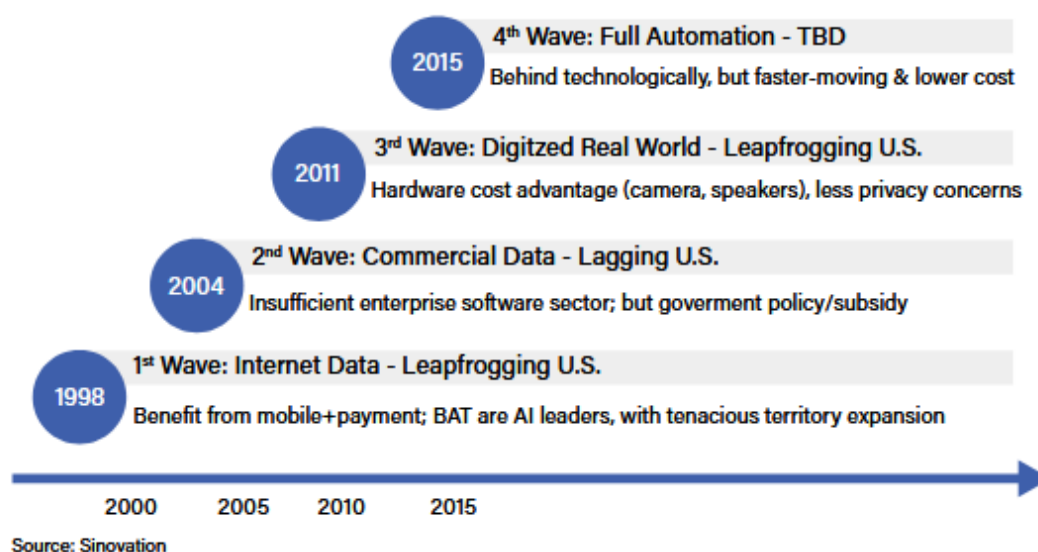
Second is Business AI. Businesses with large scale and data sources can implement AI to store historical and new data. This can then be used in business

processes, especially to help the company's decision-making process. Of course, China will need time to catch up with AI Business. But sooner or later, Chinese companies will be able to adapt immediately, especially when the government promotes the importance of AI technology integrity to various aspects of business (Roberts et al., 2019).

The third is Perception AI. This involves digitizing the world physically by intelligent devices. This wave began in 2015. This type of AI is also used in independent stores to identify customers' faces in product selection, understand these gestures and self-assess clients' pay. Hence, China will also lead this part of AI because there are a lot of data facilities available in this country.

Fourth is Autonomous AI. The three parts of the previous waves are mostly software but Autonomous AI tactile and movement to create AI into robots, self-driving and etc. this wave will begin soon. As China constitutes the world's biggest in self-contained, China still has the chance to lead this kind of technology development (Eurasigroup.net. 2017).

### AI products: Who's ahead? China versus US



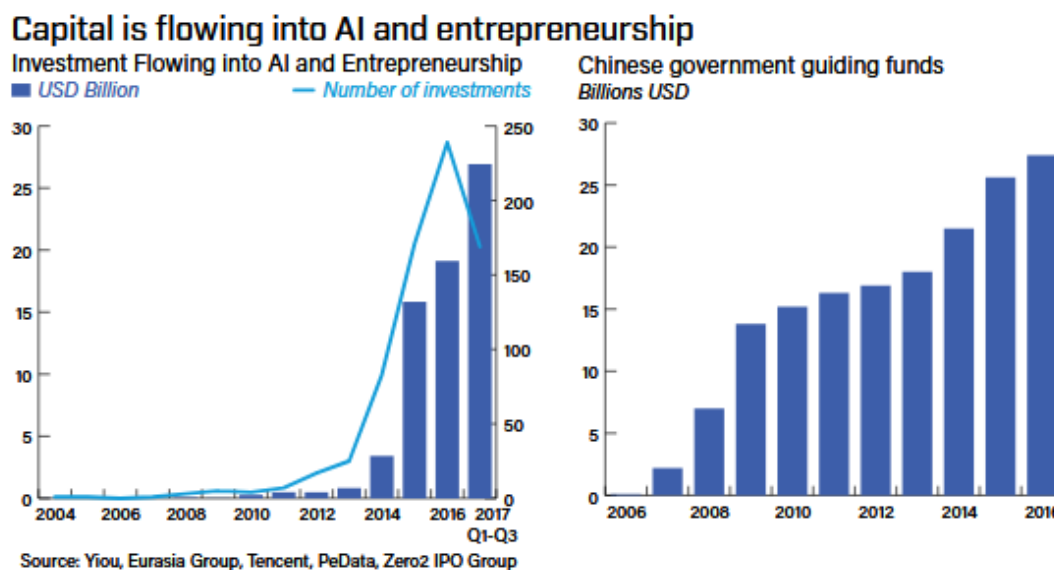
Moreover, Arend Hintze, a scientist and professor, classifies the existing AI systems in various forms, such as Reactive machines. For example, Deep blue is a chess program which won Garry Kasparov champion of a chess game in 1990. This program can recognize the section of chess and make guesses but cannot use past skills inform coming move because it does not have a memory capacity. Deep blue was designed for weak and narrow kinds of AI and it is not easily possible to use in other conditions.

The second type of AI is limited memory. This kind of AI can use the past skills and experiences to report future action. Most of these kinds of functions are designed as seen in without-driver cars (self-driving cars). The third type of AI is theory of mind. This type of AI in psychology means beliefs, intentions and long-term desires that affect the decisions of others, and will be a futuristic AI and not exist now.

For better understanding, these are a few examples of different kinds of AI technology: (1) Automation: this kind of technology facilitates the process of jobs automatically like robotic automation, which can be set to do repeatable tasks with high volume; (2) Machine vision: this type of AI permits computers to realize and see. These technologies examine optical data and information by using a camera. This kind of machine can be more sensitive compared to human eyesight. For example, this device is designed to analyze medical images, signatures, handwritten and other materials; (3) Self-driving vehicles: this kind of cars use a mixture of computer ideas to recognize in-depth knowledge and shape automatic ability and skill for vehicles; (4) Robots: these types of AI machines often designed and used to perform tasks that are usually difficult for humans. Especially in the area of moving large objects from one place to another and assembling and connecting different parts of vehicles; (5) Processing of natural language: it means a computer program processing a language. This program looks for email's subject and text and decides if it is rubbish or junk. Processing of natural language responsibilities to translate and analyze text and recognize speeches (Rouse, 2019).

### **AI in China**

Currently, all countries and companies in the world are competing for monetization and exploitation of AI. Meanwhile, China has invested heavily in applications and research of AI. Comparatively, the US investment in this sector is declining in last few years. Overall, after US, China has strong AI technology in the world. Although AI technology research has begun in China after the United States and European countries, unless the industrial revolution and economic boosting, the country has given special attention to the AI industry.



China has very strong plans for increasing AI in the future. In 2017, the Chinese government announced that it would lead the world's industry leadership in AI by 2030. And it is expected that the country will invest 30\$ billion in AIs and technology with state-owned companies recently. It is also planned to invest \$ 16 billion in the AI industry in the famous port of Tianjin. Such kinds of projects will support the scientific research of AI in the country. Moreover, China currently uses AI technology for political and social control. An example is the use of AI for face recognition and social credit system. The system has been graded on the social behavior of people in the society that is currently being implemented (Davenport, 2019).

Although the social credit system may not be the first system in the world, but if completed, it will be a unique system for this country to manage the world's largest population. The concept of social credit was created in 2007, and almost in 2014, the project began. China's Social credit system affects all aspects of life, like self-confidence and judgment in the behavior of individuals such as performing certain acts. It will be deprived of certain privileges. For example, hearing music loudly in train or in plane could lose the right to buy a train ticket in the future. It means that the use of AI technology can be easily controlled for the correction and mistreatment of individuals in the community.

Moreover, police have a goal of almost doubling China's current DNA trove to 100 million records by 2020. It took 20 years and stored with subject other biometric information including fingerprints, portraits and voiceprint. The main goal of DNA is marrying DNA profiles with real-time surveillance tools such as monitoring online activity and cameras hooked to facial recognition software.

All of this was the thought that China is very skilled in capping. But in fact, China is an excellent in innovation especially in AI (Arenal, 2020). Now, the country

becomes the emperor of AI technology. China, under the leadership of its country's most powerful leader Xi Jinping, has become a major step in all directions, especially in AI, which builds vast and wide-ranging plans for building up China with the most prominent AI upgrade by 2030. Some great Chinese companies can be mentioned here such as Alibaba, Tencent, and Baidu in the AI technology sector.

Moreover, AI also becomes the national priority of China. Under the leadership of President XI, for the first time, the issue of AI was raised in the report of the Communist Party. In July 2017, the New York Times published an article that the Chinese government expects by 2020 that research facilities and companies in the country will equalize the level of AI with countries that they lead AI, such as the United States. Five years later, this field could be a key motive for the transformation of the economy. By 2030, it will become the centerpiece of the world of AI. A new route will open for a strong economy, which at that time could easily lead the world's AI technology leadership.

The Chinese government has created an office called AI plan promotion office within the Ministry of Science and Technology to support and strengthen AI. Also, this office is in charge of the implementation and management of AI projects and directly driven by the government. Not only had this but a Strategic AI Advisory Committee also set up to provide advice to investigate strategic issues. In addition to this, an AI industry development association has been established that supports over 200 organizations across the country to become an integral part of the development of public AI technology in China. These facts provide a picture on how the government is putting a great attention on AI's development in the country (Fischer, 2018).

If we look at 2016, China's three-year program for Internet and Artificial Intelligence (AI) from 2016 to 2018 aims to make AI a strong driver for the development of the economy and society. This three-year plan is to support growth for the new industry of AI to fortify the goal for 2018-2020. The Three-Year Action Plan for Promoting Development of a New Generation Artificial Intelligence Industry (2018-2020) reinforced this goal. These plans include developing intelligent products such as image identification systems, robots, network vehicles, and fostering the development of smart production. To the support of this national project, local governments across the country have their own plans. For example, the government of Shanghai distributed its operation plans for the next generation of AI in 2017. In 2018, the Beijing Local Government announced that an industrial park containing more AI would be build in Guangzhou, and such investments will be made in other parts of the country as well (Future of Life Institute, 2019).

China is more concerned for AI than US. In the last few years, of the government's average funding, 48 percent goes to China AI and US covers only 38% of the finance and 13 per cent by rest world. Also, such concerns also go to the

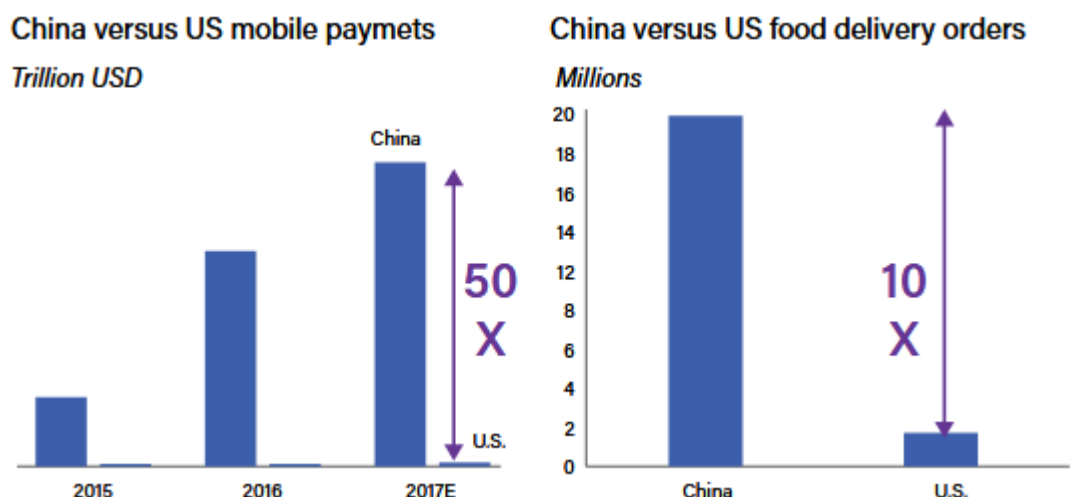
development of 5G (Davenport, 2019). 5G or 5th generation is much faster than 4G. It reduces the costs, waiting time, and energy consumption. New generations of wireless technology provide more reliable and faster internet access. There are three major benefits to 5G. First, it is faster, meaning that if a high-quality movie is downloaded usually in about ten minutes, it will be downloaded by 5G in less than one second. Second is no delay. It is beyond short delay, one can watch a video. The third is increasing communication. With 5G, more and more people will be able to communicate over time so country like America (Amy, 2018).

China wants to lead the world AI by 2030. Therefore, in the last few years, China has released several next-generation AI development plans (Wu et al. 2020). This can pave the ground to approach this aim. These plans consist of three major parts. In the first step of plan, China should put all AI technology needed to be in a special coordination and its main focus on the AI foundational theories, swarm, big data, autonomous, cross-medium and hybrid enhanced intelligence, to catch up US by 2020. This is because currently US is at top of IA of the world.

Second part of the plan of AI will applied to AI regulation and laws, national defense manufacture, security assessment and control abilities, cities infrastructure, smart agriculture, manufacturing and medicine. This will be the future breakthroughs of China in 2025. Third part of the plan in 2030 will lead China to become the world's AI leader, which mainly focus on industrial value, national defense and social government (Robles, 2018).

### **Other AI Related Developments**

In the area of using technology, perhaps the greatest advantage of China is using data. For example, if we only look at the use of Wechat Platform in China, there are about one billion active users per month, which is almost more than all European population. Currently, China's e-commerce is twice more than US. And also user's expense or payment for data in US have different stages but in China have formed online that focus all in one place.



Similarly, if we look at mobile phone payments in 2016, America's mobile payment amounted to 112 billion dollars, while China's mobile payments in the same year were more than 9 trillion dollars. On the other hand, we can look at Sense time which is a kind Chinese computer idea skillful to judge our age, recognizing our face and even purchasing our habits. In 2018 Sense time became an appreciated artificial intelligent technology leader in face recognition in the world (Peter, 2018).

The use of AI in China was very interesting. In Guangzhou, for example, there is a child and women medical care center that has a computer program. It has the ability to recognize different child diseases with almost 85% exactness rate. This type of program is vital for the survival of children that cannot say what kind of problem they have. This kind of software can examine and kept more than 600,000 common patients' illness records.

Meanwhile, at Zhejiang province in hotel named Xianheng, they use a high-quality computerized AI system to recognize the disobedient behavior of staff, especially in misbehaving employees in the kitchen. With this system, if the chefs do not take care of the cleanliness or waters, or if they do not do their job on time or the security guards do not do their job in a fundamental manner, these cameras immediately capture a picture and send to the hotel manager.

## Conclusion

At the moment, the technology revolution has sweeping. Countries that have the greatest power of technology and AI will likely dominate the 21st century in the world. AI will change in the development of society. Moreover, countries that lead AI would first be securing a strategic advantage in making a book of guidelines for future global development. There is currently a view in the world that China and America have begun a two-tier competition to dominate AI because AI is a major element of



future economy. The most Flexible and massive datasets for use in AI applications will be the main core of China's AI advantage (Zhu et al., 2018).

China could be the leader of this field with heavy investment in AI research and development. At the moment, the United States knows that, in light of this advance, China may be stronger in the technology sector than the US by 2025, and could lead the world's AI by 2030. China might dominate the industry of AI. China's ability in AI is very strong and very soon the country could become world leader in AI technology. China realizes this direction because it has a favorable regulatory environment. Because of the development of technology, information research is carried out by indirect government support. This is the main reason that China could simply reach its goals and become the centerpiece of the world's most modern AI.

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