

AI Widens the Gap between the Rich and the Poor

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Abstract. Since entering the 21st century, high technology has developed at a rapid pace. The development of high technology has changed the methods of production and lifestyle of human beings. While enjoying the efficiency, comfort, and convenience brought by high technologies, people find that the gap between the rich and the poor has been widening. More and more attentions have been paid to the influences on the gap between the rich and the poor arising from the development of high technologies, especially from the development of artificial intelligence (AI) technology. This paper focuses on this social phenomenon and demonstrates that the development of AI will widen the gap between the rich and the poor. The paper will proceed with the discussion from three levels of human actives: individual, company, and country.

1 Introduction

Artificial intelligence (AI) is a new technological science that studies and develops theories, methods, technologies and application systems used to simulate, extend and expand human intelligence. Human beings are currently in the era of weak artificial intelligence. According to the China Artificial Intelligence Development Report 2019, the output value of the core industry of artificial intelligence is expected to reach more than \$160 billion in 2020 (Figure 1).

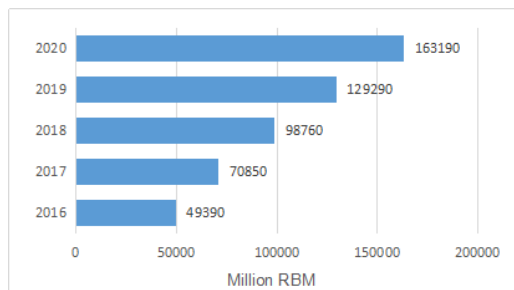


Fig. 1. Output value of artificial intelligence core industries in China (2019)

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The core industries of artificial intelligence mainly include service fields, medical fields, business fields, and education fields, providing alternative products and services in computer vision (such as industrial inspection, medical image analysis and unpiloted driving), medical diagnosis, voice recognition, service robots, and precision marketing. (Figure 2).

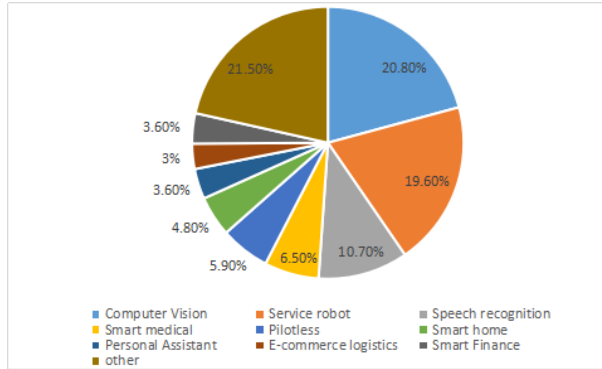


Fig. 2. Main products and services provided by artificial intelligence

In this paper, the poor group refers to people who only master low-level skills, companies that use low-level technology, some backward countries and developing countries. In contrast, the rich group refers to high-level talents who master AI technology, companies that use AI technology, and developed country with core AI technologies. According to the statistics provided by the United Nations Development Program in 2019, the wealth of the wealthiest 1% of the population in various countries accounts for more than 20% of the total wealth of society. Among them, the data is 39% in the United States and 30% in China. In China, 10% of the population holds 67% of the wealth. The data indicate that, at present, the wealth gap between the rich and the poor is large, and a few people hold the majority of the wealth.

2 AI affects the life of human

The products and services provided by artificial intelligence mainly change the methods of production and life of human beings in two aspects: assisting human beings and replacing artificial ones. While artificial intelligence is changing people's production and lifestyles, it will inevitably turn some people into a "useless class" due to its substitution for humans.

2.1 AI is causing massive unemployment

According to the prediction of the US Bureau of Labor Statistics, due to the development of artificial intelligence in the next ten years, people engaged in occupations such as cashiers, bank tellers, postal staff, assemblers, and administrative assistants will face elimination. Yang (2020) illustrates that from the data published by BCG Ali Research Institute, within the next 5 years, 7.1 million jobs will disappear due to the popularity of AI. 702 occupations and 47% of jobs may be replaced by artificial intelligence [1]. While technological progress promotes employment growth, it will "also harm full employment, leading to a dilemma in macroeconomic policies" (Yang, 2020) [1].

Nowadays, the fields in which human beings are traditionally thought hard to be replaced have also been changing. Harari (2018) compares the situation of the "useless class" to the carriage drivers who switched to taxi drivers in the 19th century when cars

replaced carriages. He demonstrates that switching from low-skilled jobs to slightly high-skilled jobs does not require much learning, and only short-term training is needed to meet the job requirements [2].

However, in the era of artificial intelligence, the threshold for changing careers has increased. The unemployed are predicted to be more miserable than coachmen/carriage drivers. Their low level of knowledge and lack of learning skills determines that it is difficult for them to engage in jobs provided by artificial intelligence applications. In the future, the industry will change, and the speed of information refresh will become faster and faster. The "useless class" will face not being exploited and not being needed, which is equivalent to facing unemployment.

2.2 AI Makes wealth more concentrated

On another aspect, various services and products provided by AI for humanity have brought specific jobs and made brilliant careers for big data architects and data scientists, enabling these people great opportunities to leap to the rich class. Capitalists also gain opportunities for future development through capital operation and investment in the fields of artificial intelligence and enjoy their success. This process shows a phenomenon that rich person become richer and the poor person become poorer.

The Derwent World Patents Index (DWPI) analysis the public data of patentees in the area of AI research, it indicates that large companies such as IBM and Microsoft have filed a large number of patent applications in the field of artificial intelligence, as shown in Figure 3.

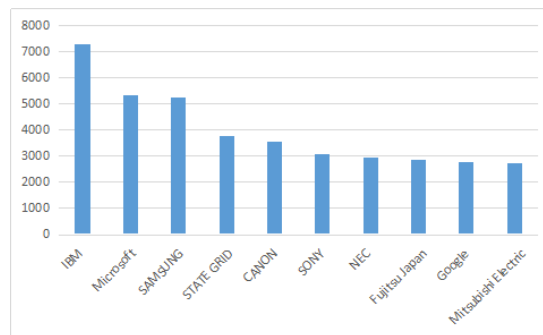


Fig. 3. Global top 10 artificial intelligence patentees

The nature of the research in Artificial intelligence makes wealth more concentrated. On the one hand, investment in artificial intelligence research and development is very high. Only large companies have the economic strength to invest in artificial intelligence. Therefore, capital has become the economic foundation for the development of artificial intelligence; On the other hand, in the future, the patent rights obtained by large companies will surely bring more long-term benefits to these companies.

For example, in the financial industry, AI affects the operation of the entire industry. On the one hand, banks are committed to improving their information technology application capabilities, expanding the scope of their main business, and obtaining more significant benefits. Bank capital holders will become richer. On the other hand, banks use AI technology to build new automated and intelligent outlets. According to statistics, from October 2018 to July 2019, the total number of outlets of the 6 state-owned banks in Mainland China decreased by more than 500, showing a clear contraction trend (Figure 4) [3].

It can be seen that intelligent banking services have led to a substantial increase in the unemployment rate of front desk staff, therefore increasing the number of poor people.

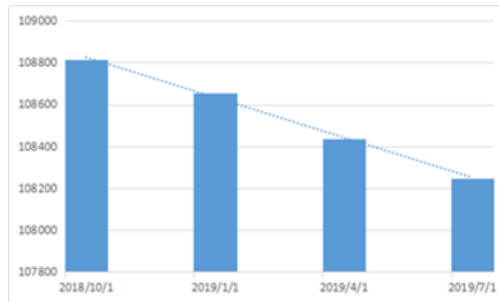


Fig. 4. Changes in the number of offline bank outlets

3 AI affects the company's development

Artificial intelligence and big data are closely related, and big data is the foundation for the learning and training of AI. Big data and AI affect all areas of human beings' life in this internet era. For example, when opening an online APP shop, people will find that the products recommended by artificial intelligence are based on the data of past users' browsing and purchase; listening to music, artificial intelligence can select music for listeners from a large number of songs they may like based on the frequency of music downloads and listening in the past.

In the era of artificial intelligence, when people's various traces of life are in the hands of these big companies in the form of data, people's lives will be manipulated by data. Everyone has no secrets under AI. As consumers, AI guides people to face their desires, stimulates their willingness to consume, and pays more for their interests or "personalization" products. As a result, wealth will be easily controlled by large companies that provide goods and services, creating a situation where large companies own more and more money and even monopolize the industry.

AI will also help large companies improve productivity and production efficiency. Today, AI technology is not yet widespread, large companies that take the lead in mastering AI technology will use AI to optimize the internal structure of the company to enhance the company's core competitiveness. Companies that do not have a good grasp of AI technology cannot complete the process.

Nowadays, Amazon is launching a series of industrial monitoring tools that use AI to help companies identify potential equipment failures, productivity bottlenecks, and worker safety violations [4]. This type of AI can automatically detect anomalies in industrial activities, improve industrial processes, and improve staff deployment to facilitate Amazon to create more wealth with the least amount of time and staff. This process further creates a gap between large and small companies that have mastered high-end technologies.

4 AI affects the gap between rich and poor in different countries

Each country has different levels of AI technology; there is a gap between rich and poor. The different impacts of AI on the wealth gap in developed countries and developing

countries can be discussed with the use of the Gini coefficient. The Gini coefficient refers to a standard index used internationally to measure the income gap of residents in a country or region. The maximum Gini coefficient is 1, and the minimum is 0. The closer the Gini coefficient is to 0, the more equal the income distribution is [5].

Goyal & Aneja (2020) demonstrated that the Gini coefficient of developing countries is higher than that of developed countries, which indicates that the degree of income inequality in developing countries is higher than that in developed countries [6]. The critical reason is that developing countries still have a significant gap in artificial intelligence technology and automation, and their production methods are still relatively primitive. The developed countries have taken the lead in mastering artificial intelligence technology, which can transform AI technology into new productivity.

5 Conclusion

AI technology has various influences on people's life and methods of production and brings advantages to society. AI also widened the gap between the rich and the poor. For individuals, the development of artificial intelligence technology inevitably leads to the circumstances that: many jobs that people depend on for their livelihoods would be replaced, causing a large number of low-skilled workers to become unemployed and poverty due to unemployment. At the same time, AI has led to the rise of new professions, those high-quality talents become richer. For companies, on the one hand, large companies with AI advantages can rely on their advantages to produce new high-tech products, reduce the pressure on human and material resources, and achieve efficient revenue. On the other hand, small companies that do not have technological advantages need to use primitive production methods, which have low production efficiency and low product quality, thus having a low revenue. Besides, they also need to pay high labour costs. For countries, AI can divide the poor from the rich so that it will increase the country's Gini coefficient. So, it can be concluded that AI can widen the gap between rich and poor, The 21st century may be the most unfair era.

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