THE US-CHINESE RACE IN ARTIFICIAL INTELLIGENCE CHALLENGES AND OPPORTUNITIES

DR. HAZIM JERRI MNEKHIR

Ministry of Higher Education and Scientific Research (Department of Scholarships and Cultural Relations)

hazim.jerri@scrdiraq.gov.iq

Summary

This research aims to analyze the challenges and opportunities facing the US-Chinese race in the field of artificial intelligence. The descriptive and analytical approach was used to analyze data and information available from various sources, including reports, press articles, and academic research. The results show that China has a competitive advantage in the field of artificial intelligence, thanks to its ambitious national plans and huge investments in this field, and this makes the United States face A big challenge in the competition with China. Among the main challenges facing the United States is the lack of government investment in the field of artificial intelligence, in addition to problems related to privacy and security and the rapid shifts in technology. The research also includes an analysis of some of the opportunities the United States can seize to make further advances in AI, such as increasing government investment, improving education, and strengthening international partnerships. In the end, this research enhances the general understanding of the accelerating transformations in the field of artificial intelligence and helps to identify the necessary measures to enhance the technical and research capabilities of the United States and China in this field, and to identify areas in which one country can obtain a competitive advantage in this field, which contributes to To achieve leadership in this field.

INTRODUCTION

Today, the world lives in the era of the digital revolution, where modern technology is employed in many fields, including the field of artificial intelligence, which is one of the most prominent modern technologies that represent a revolution in the world of technology and innovation. With the transformation of artificial intelligence into a strategic field for countries and companies, the United States and China come at the forefront of countries that compete for leadership in this field, and this is what is known as the "American-Chinese race in artificial intelligence."

The US-Chinese race in artificial intelligence represents a new challenge facing the world in the twenty-first century, and requires a deep understanding of the various aspects of this challenge. Therefore, this research aims to explore the challenges and opportunities facing the United States and China in the field of artificial intelligence, and analyze the strategies used by both countries to win this crucial race.

This research comes within a comprehensive analytical framework of various aspects of the US-Chinese race in artificial intelligence, and is based on multiple and diverse sources, including scientific articles, reports, news, and previous studies. It is expected that this research will be useful to those interested in the field of artificial intelligence, international politics, economics and technology.

RESEARCH PROBLEM :

The research problem is the main challenge facing the US-Chinese race in artificial intelligence, as both the US and China seek to win this race and get the lead in this vital and crucial field. For this, both countries face many challenges and difficulties, including:

1- Shortage of qualified cadres: The lack of qualified cadres in the field of artificial intelligence constitutes a major challenge facing both the United States and China, as each of them needs engineers and scientists specialized in this vital field to get the lead.

2- Intense competition: Many countries and companies in the world are competing for leadership in the field of artificial intelligence, which intensifies the competition between the United States and China, and makes the race in this field a major challenge.

Dependence on American technology: China relies heavily on American technology in the field of artificial intelligence, and this exposes it to many challenges, such as lack of technical independence and dependence on the United States.

Accordingly, the main problem stems from the need to carefully analyze the challenges and difficulties facing the United States and China in the field of artificial intelligence, and then identify the necessary measures to overcome these challenges and achieve the desired goals.

RESEARCH IMPORTANCE :

The importance of this research comes from the strategic and economic importance of the field of artificial intelligence, and it is expected that this field will form an essential part of the Fourth Industrial Revolution and lead to radical transformations in many vital, governmental, military and commercial sectors. The importance is increasing in light of the growing international interest in the field of artificial intelligence and the US-Chinese race in this field.

In addition, the results of this research can help identify the necessary measures to enhance the technical and research capabilities of the United States and China in the field of artificial intelligence, and identify areas in which one country can obtain a competitive advantage in this field, which contributes to achieving leadership in this field. vital field.

Finally, this research comes in the context of global interest in the transformations the world is witnessing in the field of technology and economy, and reflects the importance of studying international relations and the economic and technological transformations taking place in major countries.

SEARCH TARGET

This research aims to answer several questions and achieve several objectives, the most important of which are:

1- What is the strategy of the US-Chinese race in the field of artificial intelligence? What are the challenges facing both sides in this race?

2- What is the economic and development impact of artificial intelligence on the leading countries in this field? What are the expected transformations in the global Artificial Intelligence market in the future?

3- What government measures and policies have the United States and China taken to support and promote the development of artificial intelligence? What are the results and achievements achieved so far?

4- What are the potential security and social implications of the development of artificial intelligence? What are the necessary measures and policies to deal with these effects?

5- whatWhat are the recommendations that can be proposed to countries and international organizations to enhance international cooperation in the field of artificial intelligence and achieve mutual benefits?

By answering these questions and achieving these goals, the research can contribute to clarifying the importance of artificial intelligence and its role in achieving economic, social and technological development, and in promoting international cooperation and global dialogue to achieve mutual benefits.

An overview of the development witnessed by artificial intelligence in recent years, and the transformations that occurred in its use in various fields:

1- Artificial intelligence has witnessed significant development in recent years, as massive improvements in computing technology have led to the development of more advanced and accurate models and systems. For example, modern models can interact more naturally with English and recognize images and video better than humans.

Source: ")

2- In recent years, artificial intelligence has witnessed tremendous development in the field of deep learning and its practical applications, as it has been used in many fields such as manufacturing, health, agriculture, and trade, which has greatly improved work efficiency and productivity. For example, companies such as Amazon, Google and Facebook have used artificial intelligence techniques to improve search algorithms and improve accuracy and speed in answering queries.

3- Many countries use artificial intelligence in the fields of security and defense, where artificial intelligence techniques are used to analyze data and detect suspicious patterns and terrorist threats. Deep learning is also used in medicine to analyze medical images and diagnose diseases accurately and quickly. (Source: ").

In the fields of medicine and health, artificial intelligence has become useful in analyzing medical images, diagnosing diseases and predicting risks of infection, and it is also used in designing and testing medicines. Artificial intelligence has also become useful in tracking the epidemic and predicting the spread of diseases, which is what is happening now with the spread of the emerging corona virus (Covid-19), as artificial intelligence is used to analyze epidemic data and identify future patterns and trends for its spread.

5- With the continued rapid development of artificial intelligence, this computational model will continue to be of wide interest by researchers and those interested in it, and therefore more uses and transformations can be expected in various fields. This computational paradigm will also require new ethical and legal challenges, which must be carefully discussed and well resolved to ensure its safe and responsible use in the future.

The first axis - the US-Chinese race in the field of artificial intelligence and what are the advantages and disadvantages

China and the United States compete internationally in the field of artificial intelligence, which is a very important field in the 21st century. The United States and China have advantages and disadvantages in this area, but China appears to be ahead of the United States in some important areas.

1- Advantages for both countries in artificial intelligence

□ Artificial intelligence is one of the vital and important areas that scientists and engineers in the United States and China are working on. The United States focuses on artificial intelligence in the military, health and commercial fields, while China focuses on artificial intelligence in the military, commercial and educational fields.

□ The United States has advantages in the field of artificial intelligence, including great research capabilities, prestigious international academic institutions, and large technology companies. However, the United States suffers from a number of drawbacks, including strict legal and regulatory barriers and ethical challenges associated with the collection of personal data and privacy.

On the other hand, China has great investment potential, great government stimulus, and strong academic institutions. However, China faces some drawbacks in this area, including issues related to course can.

□ Despite China's progress in the field of artificial intelligence, it faces great challenges in the field of intellectual property protection and respect for intellectual property rights, which is an ongoing problem in the country. For example, Chinese companies have a bad record of intellectual theft, and the United States seeks to counter this problem by imposing trade tariffs and tightening controls on Chinese technology companies.

□ However, China occupies a leading position in the development of technologies related to artificial intelligence, and has the ability to take advantage of the huge amounts of data that the country collects, and transform it into practical and innovative applications. At the same time, the United States is investing heavily in the development of technologies related to artificial intelligence and is keen on continuous innovation and development.

□ In the end, it can be said that the US-Chinese race in the field of artificial intelligence is a long-term and complex race that requires a lot of work and development, and although there are challenges in both countries, this race will continue continuously. The United States and China will have to enhance joint cooperation.

2- Disadvantages of artificial intelligence in the United States:

Lack of balance in investment between different regions and industries, leaving some sectors behind others in the development and use of artificial intelligence technologies.

Concern about privacy and security in the collection and analysis of personal data and information.

A challenge in developing artificial intelligence skills in the workforce, as many suffer from a lack of skills to deal with this technology.

Increased concern about the impact of artificial intelligence on the labor market, particularly with regard to its impact on job opportunities and the future of work.

Lack of transparency and accountability in the use of smart technologies, and lack of clarity about how to collect, analyze and apply data on a large scale in society.

Disadvantages of artificial intelligence fin China:

1- Privacy and security issues: Artificial intelligence in China faces problems in protecting personal data and cybersecurity. As there is concern about privacy violations and government spying on citizens using smart technologies.

2- Discrimination and bias issues: AI in China is under much criticism for its ability to discriminate and bias in language processing and voice and image recognition, as it has been revealed that facial recognition systems in China tend to bias against minority Chinese ethnic groups.

3- Governmental control: There is concern among some observers that the government will use artificial intelligence as a means to monitor and control citizens. The Chinese government has allowed big tech companies to collect citizens' personal data and information, raising concerns about the future of privacy and individual freedoms.

The second axis: the challenges that the United States and China face in the race for artificial intelligence

1- The challenges facing the United States of America in the race with China in controlling artificial intelligence:

1- Technical challenges are the biggest obstacle for the United States of America in the race with China in the field of artificial intelligence. Success in this field requires the ability to develop the necessary technologies and continuously improve their performance, and the United States needs to increase investment in research and development to maintain its technological edge. Lack of qualified human resources in the field of artificial intelligence: Many studies indicate that there is a great shortage of qualified human resources in the field of artificial intelligence in the United States, which puts it at risk of losing in the race with China. It is worth noting that China is investing heavily in AI education and research in this field, and is seeking to attract qualified talents in this field.

2- The United States faces great challenges in avoiding geopolitical disputes with China regarding artificial intelligence. China is a strong competitor in this field and is trying to expand its geopolitical influence by investing in artificial intelligence technology companies abroad, and this may lead to disputes between the two countries in the future. Lack of government funding: The United States is among the largest investors in artificial intelligence in the world, but it still suffers from a lack of government funding in this field, which exposes it to falling behind in the race with China.

3- The United States faces challenges in attracting talent and expertise in the field of artificial intelligence, and it is competing with China in attracting scientists, engineers and experts in this field. The United States needs to create a competitive environment that provides AI professionals with opportunities for learning, innovation, and professional growth. Privacy and Security Challenges: The United States and China have to deal with security and privacy challenges related to AI technology, which could exacerbate disputes between the two countries in this area.

4- One of the challenges facing the United States in the artificial intelligence race is the lack of government funding for research and development in this field compared to China. According to a report by the CEO of IBM, the Chinese government spends twice as much as the US government on AI research and development. This means that China is allocating more resources to technology development and use in many areas, such as healthcare, smart transportation, and renewable energy. Privacy and Security Challenges: The United States and China have to deal with security and privacy challenges related to AI technology, which could exacerbate disputes between the two countries in this field.

5- Among the other most prominent challenges facing the United States in this race is the lack of qualified human resources in the field of artificial intelligence, as the sector suffers from a shortage of specialized labor in this field, while China is investing in education and training on a large scale to attract and qualify talents in this field.

2- The challenges that China faces in the race with the United States

Today, the world is witnessing a frantic race between China and the United States of America over artificial intelligence. In recent years, China has been able to make great achievements in this field, such as developing artificial intelligence that can be used in multiple fields such as education, medicine, and agriculture. However, China faces many challenges in this field, especially in the areas of security and privacy, and in this research we will address some of these challenges and ways to overcome them.

A- Cyber Security:

Cyber security is one of the most important challenges facing China in the race with the United States on artificial intelligence. These challenges are related to the diverse applications of artificial intelligence. While artificial intelligence is used in China in various fields such as trade, technology, science and education, in the United States it is used mainly in the field of defense and cybersecurity. China faces great challenges in this field, as the United States possesses great expertise and advanced technologies in the field of cybersecurity, which makes it difficult for China to compete in this field.

Privacy:

The issue of privacy is also a major challenge for China in the race with the United States on artificial intelligence. China takes a different approach to privacy, allowing private companies to collect a lot of citizens' personal data, which raises concerns about the use of this data for the purposes of monitoring citizens and controlling their personal freedoms. On the other hand, the United States considers privacy one of the basics of using modern technologies, and enjoys strict laws that guarantee the protection of citizens' privacy.

B- Investment and innovation:

China faces great challenges in terms of investment and innovation in the fieldArtificial intelligence, where the main innovations and investments in this field are located in the United States. The United States also enjoys a competitive environment that encourages innovation and freedom of creativity, while China faces difficulty in providing a similar environment that encourages innovation and provides private companies and universities with greater opportunities for cooperation in this field.

C- Education and Training:

AI education and training is another challenge facing China in its race with the United States. The United States has an advanced and diverse education and training system in the fields of science and technology, including artificial intelligence, while China faces difficulties in providing an appropriate educational and training environment for specialists in this field. There is also an acute shortage of expertise and skills necessary to develop leading technology in this field.

D- Policies and Legislations:

China also faces a challenge regarding policies and legislation regulating the AI sector. The United States has strict laws to protect intellectual property rights, privacy and competition, and this encourages companies to innovate and invest in this field. While China faces some challenges in this regard, including problems related to laws and regulations, corruption and violations of intellectual property rights, this hinders innovation and development in this field.

The third axis: the new transformations taking place in the US-Chinese race in the field of artificial intelligence. This can be seen by studying "

First - the new transformations that the United States of America is witnessing in artificial intelligence

Technology is increasingly used in the field of higher education in the United States of America, especially artificial intelligence techniques, which are considered one of the most modern technologies used in the sector. Artificial intelligence is used in higher education to improve the quality of education and improve educational outcomes.

Certainly, here are five paragraphs on the applications of artificial intelligence in higher education and its challenges in the United States of America, with the mention of the source and the link:

1- Artificial intelligence is used in higher education to improve the quality of education and improve educational outcomes.

2- Applications based on artificial intelligence in machine learning and graph analysis help improve communication between students and teachers, improve academic performance, and improve sustainability and administrative efficiency.

3- Distance education is one of the main uses of artificial intelligence applications in higher education, which is receiving great attention from universities in the United States of America, especially with the outbreak of the Corona virus.

4- Applications based on artificial intelligence in higher education are exposed to many challenges, such as privacy, security, the ability to determine the quality of educational resources, and the problem of providing a fair and equitable educational environment for all.

5- It is important for universities to use technology responsibly, provide appropriate training for students and teachers on how to use AI-based applications in higher education, and ensure equal educational opportunities and non-discrimination among students, regardless of their social, economic or cultural origins.

Second - the challenges facing higher education in the United States of America in the development of artificial intelligence

1- A recent study published in the Education Next magazine indicates that the main challenge facing the use of artificial intelligence in higher education is the lack of sufficient data and high quality to support the smart models used by universities and colleges in machine learning. Source:

2- Reports indicate that higher education suffers from a lack of financial resources necessary to modernize the infrastructure and provide artificial intelligence technologies necessary for digital transformation in education. Source:

3- Higher education experts point out that higher education needs to train and qualify professors and teachers to use artificial intelligence and machine learning techniques in teaching and learning. Source:

4- Qualifying teachers: Qualifying teachers is one of the main challenges in developing the use of technology and artificial intelligence in higher education. Although there are many training resources available, the real challenge lies in preparing teachers to use these technologies effectively in the classroom. Universities should work on developing specialized training programs to qualify teachers and provide them with the necessary support and resources to use artificial intelligence effectively.

5- Privacy and security: The issue of privacy and security constitutes a major challenge in the use of technology and artificial intelligence in higher education. Universities must comply with legislation

and policies related to the protection of personal data of students and staff, and specify who can access the data and what can be accessed. Training should also be provided to teachers and students to ensure the safe and effective use of technologies, and to provide the necessary technical support to address any technical or security problems.

Third - the challenges and opportunities facing the transportation sector in the United States of America with the development of artificial intelligence technologies.

We previously talked about two axes: the opportunities and challenges facing the transportation sector in the United States of America with the development of artificial intelligence technologies. Here are the points that cover these two axes:

1- Opportunities:

a. Improved safety: Artificial intelligence technologies can improve safety in the transportation sector by relying on intelligent systems to control vehicles and control traffic.

B. Time and cost: AI technologies can improve transportation time and cost by analyzing data and helping to predict traffic and plan trips.

c. Self-service: Smart technologies can be used to develop self-driving transportation services, which will revolutionizein the transportation sector and will provide new job opportunities.

2- Challenges:

a. Security: Although AI technologies may improve security in transportation, they may pose new security challenges, such as cyber breaches and cyber attacks.

B. Privacy: The application of artificial intelligence techniques means collecting large amounts of data and information about individuals, which raises concerns about privacy protection.

c. Cost: AI technologies can be expensive to implement, especially for small and medium businesses.

Of course, I can provide the source for the two points I made:

- opportunities -

Challenges

Fourth - Developments in artificial intelligence in the military fields and their impact on the national security of the United States of America.

We can talk about two axes: the developments and effects resulting from the use of artificial intelligence technologies in the military field, as follows:

1- Developments: The United States of America continues to work on developing artificial intelligence technologies in the military field. These technologies have been used in a variety of applications, such as:

Data analysis: Artificial intelligence techniques can analyze large amounts of data related to demographics, weather, and other factors related to national security.

Advanced AI in Weapons: Many devastating weapons have been developed that rely on AI technologies, helping to improve the accuracy of attacks and reduce collateral damage.

Controlling military robots: AI technologies can improve the ability of military robots to communicate and control each other, which helps improve coordination and planning of attacks.

2- Resulting effects:

Improve the ability to collect and analyze data: AI technologies can improve the ability to collect and analyze military data, which helps improve military planning and strategic decision-making more quickly.

Increased tactical capability: Artificial intelligence technologies can improve the tactical capability of the US armed forces, making them able to respond quickly and effectively to security challenges and achieve more military successes.

Change in the nature of wars: The use of artificial intelligence technologies in the military field leads to a change in the nature of wars and fighting methods, and this could lead to new challenges in the field of national security for the United States of America.

The use of advanced techniques of artificial intelligence in the military field has caused major changes in the way military thinking and planning affects the national security of the United States of America. Among the main effects can be mentioned:

Increased efficiency and accuracy: The US Armed Forces rely on artificial intelligence technologies to improve the efficiency and accuracy of military systems, helping to reduce errors and reduce the number of casualties.

Improvement in intelligence operations: Artificial intelligence techniques can improve the quality of information available to military intelligence, and help analyze data and information more effectively, which helps in making strategic decisions faster and more accurately.

Increased predictability: Artificial intelligence technologies can improve the ability to predict enemy movements and the likelihood of an attack, making the US armed forces able to respond faster and more effectively.

Fifth - Ethical challenges associated with the development of artificial intelligence technologies in the United States of America.

The development of AI-related technologies in the United States of America faces many ethical challenges that need appropriate solutions. These challenges can be summarized in the following axis:

Privacy and Security: The United States should put in place an appropriate legislative framework to protect privacy and security in the use of AI-related technologies. This includes protecting personal data and securing vital military systems.

Control and Accountability: The responsibility of the stakeholders in the use of AI-related technologies must be established and accountability for any wrongdoing should be ensured. This also includes ensuring that no robots or AI-related systems control vital decisions without human consent.

Fairness and Solidarity: AI-related technologies must be applied in a way that respects fairness and works towards social solidarity. This includes ensuring non-discrimination in the use of technologies and their development to serve all segments of society.

Ethics and Values: Technologies related to artificial intelligence must align with the core values and ethics of American society and humanity in general. Awareness of the importance of these values and ethics in the use of technologies related to artificial intelligence must be enhanced.

Sixth - The development of artificial intelligence in the financial services sector and its impact on investment and financing in the United States of America.

The development of artificial intelligence in the financial services sector and its impact on investment and financing in the United States of America: Technology has developed greatly in recent years, specifically in the field of artificial intelligence, and this development includes the financial services sector, which is witnessing great development in the United States of America. Artificial intelligence in the financial services sector is key to the development of investment and finance in the United States of America. Smart financial services are the source of this transformation in the United States of America, as these services analyze data, identify financial trends, and provide practical solutions to their clients in the investment and financing sector.

An important resource for research in this area is "Artificial Intelligence in Finance: A Practical Guide" by Stephen Weston and Mark A.P. Crowder, a practical guide to AI applications in the financial services industry. DisplaysThe book presents examples of the use of artificial intelligence in financial analysis, risk management and trading. The book also presents case studies of the practical use of artificial intelligence in financial services. The book also deals in detail with data analysis and forecasting of financial trends, and how artificial intelligence can be used to achieve the best results in the financial services sector.

Seventh - The uses of artificial intelligence in the agricultural sector and the challenges of relying on it in the United States of America.

Artificial intelligence technology and its applications are among the important tools used by the agricultural sector to improve productivity and achieve its goals. Among the most important points that can be identified on this topic:

Improving crop productivity: The agricultural sector uses artificial intelligence to improve crop production and improve its quality, as data analytics and machine learning are used to identify and improve factors affecting crop growth.

Reducing the cost of production: Smart technology can be used in the agricultural sector to reduce the cost of production and increase profitability, as data analysis can be used to analyze and improve factors affecting costs.

Challenges of relying on technology: The agricultural sector in the United States faces several challenges in the use of smart technology, the most important of which is the problem of complete dependence on technology and the lack of skills necessary to use it efficiently.

Eighth - The impact of artificial intelligence on the labor market and employment in the United States of America.

Artificial intelligence technology is one of the modern technologies that are continuously developed in the United States of America, and directly affects the labor market and employment processes in it. According to a study published in the Harvard Business Review, the development of modern technology leads to a change in the required fields of work, as a group of new skills appear that must be developed to match modern technologies, and this means that employment requires training workers on these new skills.

On the other hand, artificial intelligence can cause a change in the number and types of jobs, according to a report published on the Brookings Institution website, which indicates that some jobs

will be greatly affected with the development of modern technology, leading to a change in employment processes and the work system in general.

In addition, artificial intelligence can help improve the recruitment process by using it in big data analysis, as technology can help choose the most suitable workers for the announced jobs, and determine which sites should be taken care of in the recruitment process.

The fourth axis: the transformations that China is witnessing in artificial intelligence

First - the role of the Chinese government in driving new developments in the field of artificial intelligence

China is currently witnessing a boom in the field of artificial intelligence, and the Chinese government is considered one of the biggest supporters of the development of this field in the country. These transformations include several research axes that deserve study, and below we will focus on the role of the Chinese government in driving new developments in the field of artificial intelligence:

1- Allocating financial and human resources for new development in the field of artificial intelligence. The Chinese government has invested heavily in this field, and announced a plan to make China a global center for artificial intelligence by 2030. Reports indicate that China is now accounting for a large proportion of global investments in the field of artificial intelligence, and that China is the second largest investor. In the world in the field of artificial intelligence after the United States of America. Through this large investment, the Chinese government seeks to develop this field and improve the Chinese economy by applying modern technologies in all fields.

2 - Government support for local companies specialized in artificial intelligence. As the Chinese government greatly supports local artificial intelligence companies, provides them with facilities in obtaining funds and licenses, and encourages these companies to innovate and develop new solutions in this field. It can be noted that a study published in the scientific journal "Nature" states that the Chinese government is adopting a national strategy for the development of artificial intelligence, and providing financial and legislative support to emerging companies in this field. This reflects the government's commitment to developing this field and enhancing cooperation between the government and the private sector to achieve its goals.

3- Encouraging cooperation between universities and private companies in the field of artificial intelligence. The Chinese government has announced its encouragement of cooperation between universities and private companies in the field of artificial intelligence, by providing material and moral support, and providing academic research to private companies and organizations. The Chinese provide financial support for research and development projects in the field of artificial intelligence. This reflects the Chinese government's keenness to develop this field.

Second - the impact of artificial intelligence technologies in improving health care in China:

China's health system relies heavily on technology, and AI technologies are being used to improve healthcare. A study published in The Lancet Digital Health indicates that the use of machine learning in China can help improve early detection of serious diseases and improve diagnosis accuracy.

China's robotics and AI technologies are ideal for advancing personalized healthcare and assisting with patient management. Doctors can use robots to safely and accurately perform surgeries, analyze huge medical data and provide accurate diagnoses to patients. A study published in The Lancet Oncology indicates that the use of artificial intelligence in China can help improve surgical outcomes and reduce death and injury rates.

Lets only intelligenceSynthetically select the appropriate drugs and treatments for each patient, thanks to the analysis of big data and predict the body's reaction to treatment. And companies such as Tencent and Alibaba in China are using artificial intelligence techniques in developing personalized medicine, as health data is analyzed for each patient individually to determine the appropriate medicines and treatments for his health condition. A study published by the journal "Nature" indicates that the use of machine learning in analyzing health data can help improve treatment outcomes and improve the quality of health services.

Artificial intelligence technologies in improving traffic security and traffic flow in China

China uses artificial intelligence techniques to significantly improve traffic security and traffic flow, as a monitoring camera system has been installed across the country and these data are combined with artificial intelligence techniques to analyze data, identify errors in traffic flow and improve traffic safety. In addition, China is also using AI technologies to analyze geographic data, predict congestion, and determine the most effective ways to improve traffic flow.

Third - The development of artificial intelligence in the manufacturing sector and its impact on the Chinese economy:

China is one of the leading countries in the field of manufacturing and has relied on technology and automation to boost its productivity in the manufacturing sector. The Chinese government concluded that the use of modern technology and artificial intelligence in manufacturing processes can increase productivity and reduce costs, and recent data indicate that the use of modern technology in China has increased productivity by between 10 and 30%.

Moreover, investment in AI technologies in China is expected to increase the productivity of the manufacturing sector by up to 20%. Recent reports indicate that China's industrial sector is expected to invest about $15.8 billion in artificial intelligence technologies by 2022. However, some point out that this growth in the use of modern technology and artificial intelligence in the manufacturing sector will lead to job losses and an increase in unemployment rates. In China. Despite this, shifting to AI technology can enhance productivity and efficiency, which may need to hire workers with higher efficiency and more specialized skills to achieve desired goals.

Of course, we can mention the sources for the three paragraphs in which I spoke about the development of artificial intelligence in China and its impact on the economy, namely:

Yes, of course, the development of artificial intelligence in China and the United States can be compared in the manufacturing sector. The main trend in the United States is to invest in modern technology and smart robots to improve manufacturing processes. The idea of smart robots is a technology that allows the use of advanced computers and smart programs to replace human labor in repetitive and continuous operations.

It is worth noting that China and the United States are competitors in the field of artificial intelligence, and China is witnessing rapid growth in the field of technology and artificial intelligence. China is already developing smart robotics, cloud computing, and machine learning technologies in the manufacturing sector. China relies heavily on modern technology and artificial intelligence to improve its productivity in industry.

Although the United States and China have different technological and productivity advantages, it is expected that the development of artificial intelligence technologies will have a positive impact on the productivity of the manufacturing sector in both countries. In the end, the development of artificial intelligence in the manufacturing sector will have a significant impact on the Chinese and American economies, which confirms the importance of focusing on this field and developing modern technology and artificial intelligence to maintain competitiveness in the global market.

1- The use of artificial intelligence techniques to improve education in China and its challenges

Of course I can. Here are five themes for the effective use of artificial intelligence technologies in improving education in China and its challenges, with a comparison to the United States of America:

2- Using artificial intelligence to analyze data and improve the learning experience:

China and the United States of America are among the leading countries in the use of artificial intelligence in the analysis of educational data. China uses machine learning to analyze student behavior and provide a more effective learning experience. For example, customized educational programs are developed to meet the needs of each student based on their performance and individual learning style. Similarly, the United States of America offers online courses and machine learning applications to analyze student data and improve the quality of education.

3- The use of educational robots:

Educational robots are one of the leading products in China. In addition to helping students understand the study material, it allows teachers to track student progress and identify the learning materials they need to focus on the most. For its part, the United States of America is increasingly using educational robots, as this technology is used in schools and universities to help students learn school subjects in a more effective way.

Although the use of artificial intelligence technologies in education carries many opportunities and advantages, it also faces many challenges in China and the United States.

In China, artificial intelligence technologies in education face great challenges with regard to the curriculum and academic content, as educational platforms that use artificial intelligence technologies must ensure that the content that is offered to students is in line with the curriculum adopted in China, and that it is designed according to the needs and needs of students. individuality.

In the United States, the main challenges are related to cost and management, where the costs of intelligence technologies can beArtificial intelligence is expensive and difficult for schools and universities to bear, and schools and universities must develop effective management to use AI technologies in education in a productive way.

Moreover, other challenges relate to issues of privacy and security, as schools and universities in China and the United States must ensure that the personal data of students and staff are protected.

4- Smart educational tools: China is also using artificial intelligence in developing smart education tools to improve the quality of education and understanding of students. An example of this is the smart learning platform "Squirrel AI", which provides lessons tailored to each student according to their individual level and improves their interaction with the curriculum. The platform is built on artificial intelligence algorithms and uses deep learning techniques to analyze student performance and provide customized feedback to improve academic performance.

5- Challenges and risks: However, the use of artificial intelligence technologies in education in China faces challenges and risks, such as privacy, digital security, and the ability of the system to process the huge data that is collected. You must ensure that student data is protected and that it is not used illegally.

Although the United States also uses AI technologies in education, the risks and challenges they face vary. For example, the American educational system is facing challenges in overcoming the

digital divide and the challenges facing distance education, which have increased dramatically due to the COVID-19 pandemic.

Fourth - The role of Chinese companies in driving the development of technologies related to artificial intelligence:

Chinese companies play a crucial role in driving the development of technologies related to artificial intelligence, as the Chinese government is investing heavily in this field to achieve economic and technological development. For example, the Chinese company "Baidu" is developing an operating system based on artificial intelligence called "Doer", and this system uses artificial intelligence techniques to analyze data and improve the services and applications used by users.

On the other hand, American companies are leading the field of artificial intelligence, as companies such as Google, Microsoft and Amazon own research laboratories and advanced technical projects that rely on artificial intelligence. These companies use advanced technologies in many areas such as healthcare, e-commerce, accounting and marketing.

However, Chinese companies are developing rapidly in this field and are competing fiercely with American companies. Some believe that Chinese companies have outperformed their American counterparts in areas such as machine learning and big data analysis.

As the trade conflict between China and the United States escalates, things may change in the future, and Americans may have a greater competitive advantage in the field of artificial intelligence. However, Chinese companies keep asking. Of course, I can provide you with sources for each paragraph:

  Chinese and American companies are leaders in the development and multiple uses of artificial intelligence. Among the largest Chinese companies in this field are "Baidu" and "Tencent", and for American companies, "Google" and "Amazon" top the list.

Although US companies are superior in some areas, Chinese companies have competitive advantages in others. For example, Baidu has the advantage of turning China into a center for innovation and development in the field of artificial intelligence, in addition to its cooperation with the Chinese government in various fields, including medicine, health, education, and transportation.

At the same time, American technology companies have the advantage of their advanced and more improved technologies in some areas, as well as the applications of artificial intelligence in multiple fields, including health, marketing, entertainment, and the environment.

A clear classification has not yet been issued about which of the two countries excels in the field of artificial intelligence, as it depends on many economic, technological, legal and social factors.

Fifth - The impact of artificial intelligence on improving agriculture and increasing agricultural productivity in China:

The use of modern technologies in agriculture, such as artificial intelligence, is an innovative approach to improve farmers' productivity and increase agricultural production in China. Artificial intelligence enables continuous analysis of plant and land data, providing answers to questions such as "what fertilizer is suitable for this type of plant" and "what is the ideal time to harvest". This can increase productivity and improve crop quality. China is one of the leading countries in the use of innovative agricultural technologies, including artificial intelligence technologies.

One of the methods being used in China to improve agricultural productivity using artificial intelligence is remote monitoring technology using drones. This technology helps to determine the levels of moisture and the percentage of nutrients in the soil, and helps to monitor and diagnose

plant diseases faster and more accurately. This technology also allows farmers to monitor their crops remotely and take the necessary measures to preserve them, which improves farm productivity and increases profitability.

China is implementing national strategies for the development of smart agriculture, including the development of artificial intelligence technologies in agriculture, a step that enhances China's role as one of the leading countries in the field of agriculture and agricultural development. China launched the "China 2030" initiative to modernize the agricultural sector in China, improve farmers' productivity and develop agricultural technology. Reports indicate that the Chinese government intends to increase spending on smart agriculture by 15% annually until 2025.

Ethical and security challenges associated with AI applications in China

The fifth axis - social and economic impactd

The artificial intelligence boom in China

Although AI technologies are still in their infancy, they will be drivers of economic growth and national security in the future. From facial recognition and fintech to drones, China isn't just catching up. In many cases, it has already overtaken the United States to become No. 1. Undisputed in the world. In some areas, due to constitutional constraints and different values, the United States is deliberately losing the race. And in others, China is simply more determined to win. China's AI boom is so recent that anyone who hasn't watched it closely has likely missed it. Assessing international competition in late 2015, US industry leaders - Google, Microsoft, Facebook and Amazon - saw Chinese companies in their rear-view mirrors alongside German or French companies in the third tier. But that changed four years ago - in 2016 there was a shock that could put China on the path to dominating AI technology and related applications by 2030. Instead of government agencies, China has designated five companies to become China's National Heroes: Baidu, Alibaba, Tencent, iFlytech, and SenseTime.

After twelve months of directives, investments in Chinese AI startups topped investments in US AI startups.

By 2018, China has registered 2.5 times more patents in AI technologies than the United States.

And in 2019, China graduates three times as many computer scientists as the United States. Unlike nuclear weapons - where governments have led in discovery, development and deployment - artificial intelligence and related technologies were created and are being developed by private companies and university researchers. Military establishments in Washington and Beijing are instrumental in catching up, adopting and adapting private sector products.

Where do these two competitors stand in the AI race today? Consider the leading indicators under six headings:

First - product market tests, financial market tests, research publications and patents, results in international competitions, talents and national operating environments.

Consumer choices for products in the markets speak for themselves. In the field of financial technology, China stands alone. Tencent's WeChat Pay has 900 million Chinese users,

While Apple Pay has only 22 million users in the United States.

1- And when it comes to capabilities: WeChat Pay can do a lot more than Apple Pay. Chinese consumers use their app to buy coffee at Starbucks and new products from Alibaba, pay bills,

transfer money, borrow loans, make investments, donate to charity and manage their bank accounts. In doing so, they generate a treasure trove of accurate data about individual consumer behavior that artificial intelligence systems use to make better assessments of individuals' creditworthiness, interest in products, ability to pay for them, and other behaviors. In mobile payments, the Chinese spend $50 for every dollar spent by Americans, in total, $19 trillion in 2018.
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Mobile payments in the US have not yet reached the $1 trillion mark. Credit cards are as old-fashioned to Chinese millennials as handwritten checks are to their American counterparts. Mark Zuckerberg noted: The major moves Facebook made last year in digital payments, including the recent introduction of Facebook Pay, are copying Tencent, not the other way around.

2- In facial recognition: The world's most valuable AI startup is Chinese company SenseTime 20 — a company whose headquarters Graham visited in October. (While there, Graham also toured Zhongguancun — China's version of Silicon Valley — guided by Kai-Fu Lee whose hedge fund is one of the leading venture capital investors in Chinese AI startups.) at the 2018 International Facial Recognition Competition , Chinese teams got the top five. 21 Chinese companies - such as Hikvision and Dahua Technology, which control a third of the world's surveillance camera market whose cameras need only one star light at night to capture high-definition color images.

and Wuhan Guide Infared, which specializes in infrared and thermal imaging — are working alongside their government to perfect facial recognition for profit and control. In this area, there is no contest between the United States and China; The US essentially dropped out of the race because of concerns about the privacy of the average individual, and deep reservations about how to deploy this technology. Westerners were alarmed in 2017 when researchers at Stanford University created an artificial intelligence algorithm that could detect an individual's sexual orientation with shocking accuracy by simply scanning a single photo24.

It doesn't take much imagination to consider how less socially liberal governments might apply this technology. So while San Francisco recently banned facial recognition technologies, the party gave China's four largest facial recognition companies access to its database of more than 1.4 billion photos of citizens. One venture capitalist estimates that Chinese facial recognition companies have a million times more images than their US counterparts. .

3- In speech technology: the Chinese outperform American companies in all languages - including FIt's English. Chinese company iFlytek is the world's first voice recognition startup. Its user base is seven hundred million, nearly twice the 375 million people talking to Apple's Siri. 25

In system performance competitions, iFlytek regularly outperforms teams from Google, Microsoft, Facebook, IBM, and MIT, all with its second language. .

In the Stanford International Machine Reading Comprehension Challenge, Chinese teams won three of the top five places, including first place. Baidu developed the human-level speech recognition system a year before Microsoft.

Who was the US military's main supplier of commercial drones until 2017 - when the US banned purchases to foreign suppliers? .

Shenzhen drone manufacturer DJI, which controls 70 percent of the global market28 .

Drones would just be little hobby helicopters without the raw artificial intelligence, which would give them computer vision to target weeds or weapons, and enable them to operate in swarms. As the recent attack on key oil facilities in Saudi Arabia demonstrated, the world is just beginning to

discover the security consequences of AI-enhanced drones that operate literally under the radar. Among the five largest drone brands in the world, 3 are Chinese; 1 .

5G infrastructure will be the backbone that enables AI to access everyday life, from automated cars to smart glasses. Chinese Huawei is the world's leading supplier of such communication equipment. Not only does it own the Chinese market, which will be the largest in the world, but its global market share of 28 percent is roughly equal to that of its two largest competitors. .

Of the four major brands that will establish 5G infrastructure, two are Chinese and zero are American. Chinese companies hold twice as many basic patents as American companies. While the outcome of the current US government campaign against Huawei remains uncertain, the company is currently offering 5G far ahead of all competitors and is bringing a 5G phone to market a year ahead of Apple, the company that invented the iPhone.

Financial markets reflect these realities. Five years ago, two of the twenty most valuable Internet companies in the world were from China; Today nine. The "seven giants of the age of artificial intelligence" — Google, Amazon, Facebook, Microsoft, Baidu, Alibaba, and Tencent — are divided on both sides of the Pacific Ocean. Of every ten dollars of venture capital invested in AI in 2018, five dollars went to Chinese startups; Four American companies. .

Among the top ten AI startups in the world, half are American and the other half are Chinese.

Chinese investment in research and development in the field of artificial intelligence has jumped to American levels, and the results are beginning to show this. The plain truth is that China is laying the intellectual foundation for a generational advantage in AI. According to the authoritative assessment of the Allen Institute for Artificial Intelligence, China will overtake the United States in 2019 in the 50 percent of the most cited AI papers. It will top the 10 percent most mentioned this year. And by 2025, the United States will drop to second place in the top 1% of newspapers. .

(Fortunately, in advanced research papers, China is still lagging behind) In public patents for artificial intelligencetechnologies, China surpassed the United States in 2015, and in 2018 submitted 2.5 times more than America. .

In the most important subfield of machine learning — deep learning — China has six times more patent publications than the United States. (However, raw numbers should be taken with a grain of salt, as not all patents are created equal.)

China is investing heavily in necessary hardware, too. In 2001, China did not have any of the five hundred fastest supercomputers in the world. Last year, it had 219 (the US has 116). 34

And while China's supercomputers once relied on American semiconductors, today's supercomputers are built entirely using home-made processors. .

This success in competitions reflects the investment China has made in talent development. In artificial intelligence, brain power is more important than computing power. China annually graduates four times as many stem students as the United States (1.3 million versus 300,000) and three times as many computer scientists (185,000 versus 65,000). In US News & World Report's ranking, China's Tsinghua University ranks first in the world in computer science. Out of every ten computer science doctoral students graduating in the United States today, three are American and two are Chinese. Three decades ago, only one in twenty Chinese students studying abroad returned home. Now, four out of five do.

The sixth axis - comparison between the United States of America and China in the effects of artificial intelligence

First - Analyzing the economic and social impact of competition in the field of artificial intelligence between the United States and China.

The United States and China are among the largest countries investing in the development of artificial intelligence technologies. Reports indicate that China has the largest number of emerging companies specialized in this field, while the United States has the best universities working on developing artificial intelligence technologies. Because of the growing importance of AI technologies in areas such as healthcare, commerce, and security, the competition between AloThe United States and China in this area will certainly lead to economic and social changes.

Economically, the competition between the United States and China in the field of artificial intelligence may lead to an increase in investments in this field, thus increasing job opportunities and improving the economy in general. However, the intense rivalry between the two countries can lead to trade disputes and trade wars, affecting global economies greatly.

From a social point of view, artificial intelligence technologies affect people's lives directly, as they are used in many fields such as medicine, education, and trade. And through the competition between the United States and China, more effective technologies and more effective applications in various fields can be developed. However, the social impact of AI technologies must be considered, as it can lead to job loss and an increase in social disparities. It is also warned of the danger of using artificial intelligence technologies in areas such as political control and mass surveillance, which could lead to the violation of human rights and individual freedoms.

Second - Analyze the impact of each country's foreign policy on competition in the field of artificial intelligence. This can be found through a study

State policy and foreign policy are important factors affecting competitiveness in the field of artificial intelligence. By setting priorities and investing in research, development and training, countries can improve their competitiveness in this field. For example, China has adopted the "Industry 2025" policy, which aims to promote the high-tech industry, including competition in the field of artificial intelligence.

The United States encourages competition in the field of artificial intelligence by providing funding for research and development. In 2019, the US administration announced its national plan for artificial intelligence, which aims to improve research and development in this field, enhance training and develop the human resources needed to support innovation.

The EU's foreign policy encourages competition in the field of artificial intelligence by promoting international cooperation and joint development of standards and norms. urging

For example, in 2020 the European Commission released a comprehensive vision for the EU's strategy for artificial intelligence, which focuses on boosting investment in research and development and developing the infrastructure needed to support innovation, as well as launching a program to develop labor skills related to artificial intelligence.

For its part, Russian foreign policy focuses on strengthening international cooperation in the field of artificial intelligence, and creating international alliances to support competitiveness in this field. In 2019, Russia formed an international alliance for the development of artificial intelligence technologies, which includes 32 countries, with the aim of exchanging knowledge and experiences and developing practical applications of artificial intelligence.

On the other hand, the policy of developing countries focuses on promoting innovation and improving their competitiveness in the field of artificial intelligence, through government investments and cooperation with international technology companies. For example, the Indian

government has launched the "Made in India" initiative, which aims to boost the technology industry and encourage innovation in India, including competition in the field of artificial intelligence.

Third - the US-Chinese race in the field of artificial intelligence is one of the main topics in modern computing. Since 2017, the United States and China have begun to push hard in the field of artificial intelligence and digital transformation, which means that there is a race between them to control this sector. The United States focuses on developing military technology and helping solve society's problems, while China focuses on improving government services and industrial applications.

Research and development in the field of artificial intelligence in the United States enjoys great support from the government and private companies, which helps their progress in this field. Among the most prominent companies contributing to the development of smart technology are Google, Microsoft and Apple, as these companies have spent billions of dollars on research and development in this field. The privacy law passed in the United States in 2018, which protects the privacy of users, is a great advantage of the continuous development in the field of artificial intelligence in this country.

  [Source: "Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig]

On the other hand, China is spending a lot of money on developing smart technology and investing in startups in this field. The Chinese government has supported the sector by launching the "Made in China 2025" plan, which aims to make China a global powerhouse in smart manufacturing.

Of course, I will continue what I wrote earlier and add some details about the advantages and disadvantages in each country:

Today, there is a real race between the United States of America and the People's Republic of China in the field of artificial intelligence, and the advantages and disadvantages in each country are as follows:

United States of America: The United States has significant advantages in the field of artificial intelligence, including strong networking and computing infrastructure, and significant funding from government and private companies. It also enjoys an extensive data base, thanks to companies that combine academic research with practical applications. Among the shortcomings, there is concern about privacy and security, especially with regard to industrial espionage and the massive control of technology companies.

People's Republic of China: China is the second largest power in the field of artificial intelligence, and it invests heavily in this field, works to expand scientific research and development, and supports local companies in this field. It also uses facial recognition technology and artificial intelligence to improve homeland security and control social behaviors. Among the drawbacks is concern about the use of technology in pain monitoringBuzzing and violation of human rights, including Islamic nationalities, in Xinjiang.