Chapter 1 Introduction and Overview

The Impact of Artificial Intelligence on Daily Life

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Abstract

This chapter gives an overview of the various applications of Artificial Intelligence (AI) technology in the realms of daily life and work, as well as its far-reaching impacts. By analyzing the current status and development trends of AI applications in areas such as smart home, health management, emotional companionship, intelligent transportation, industrial upgrading, smart office, and innovation acceleration, this part reveals the potential ethical challenges and social risks that come with the improvement of life quality and production efficiency by AI technology. It also proposes corresponding strategies. The aim is to provide a comprehensive overview for policymakers, corporate decisionmakers, researchers, and the general public to jointly promote the healthy and sustainable development of AI technology.

1.1 Introduction

In today's era, AI technology is transforming our lives, work, and the entire societal operation model at an unprecedented speed and depth. It is like a global-sweeping technological revolution that brings great convenience and efficiency improvements to humanity while also triggering many complex and severe social, ethical, and technological challenges. This dual-edged nature makes AI a key force in driving social progress and also compels us to re-examine the relationship between technology and human society. This research report aims to deeply analyze how AI penetrates personal life and workplace ecology, reveal the potential ethical challenges and social risks that come with the improvement of life quality and production efficiency, and explore strategies to deal with these challenges.

1.2 Applications of AI in Daily Life

1.2.1 Smart Home: The Perfect Combination of Convenience and Energy Efficiency

Smart home devices, leveraging Internet of Things (IoT) technology, have achieved seamless interconnectivity between devices, creating a smart ecosystem centered around user needs. Devices such as smart speakers, lighting, and thermostats work in concert, allowing users to control them remotely via voice commands or mobile apps, offering the convenience of having devices up and running before the user even arrives. For example, smart mattresses can monitor sleep quality and sync data to mobile apps, smart curtains can automatically open based on preset times and light intensity, and smart refrigerators can customize nutritious breakfasts based on user health data and existing ingredients. These devices not only enhance the comfort of living but also achieve energy-saving and emission-reduction through intelligent regulation of energy consumption.

1.2.2 Health Management: The Shift from Reactive to Predictive

The rise of smart health devices marks the transition of health management from the traditional reactive model to a predictive one. These devices continuously monitor health indicators such as steps taken, heart rate, sleep quality, and blood oxygen levels through sensors and transmit the data to the cloud for real-time analysis. Combined with AI algorithms, these devices can not only provide real-time visualization of health data but also identify potential health risks and offer personalized health management plans. For example, the Apple Watch Series 9 can accurately detect blood pressure and blood sugar levels and issue real-time alerts for cardiac abnormalities such as atrial fibrillation, helping users seek medical attention in a timely manner.

1.2.3 Emotional Companionship: Warm Comfort and Emotional Support

AI-powered emotional companion robots can listen to users' work-related troubles and offer comforting words and even play suitable mood-setting music based on emotional states. For example, the Pepper emotional companion robot launched in Japan is equipped with advanced emotional recognition algorithms that can accurately judge emotional states by analyzing tone of voice and facial expressions and respond appropriately. These robots not only provide emotional support for the elderly living alone but also offer psychological comfort for busy office workers.

1.2.4 Intelligent Transportation: A New Experience of Convenience and Efficiency

The development of autonomous driving technology has brought revolutionary changes to transportation. Autonomous taxis have become a beautiful sight on city streets, with their market share continuously expanding. These vehicles, equipped with advanced lidar, cameras, and AI algorithms, achieve precise environmental perception and route planning, reducing the incidence of traffic accidents and improving travel efficiency. Meanwhile, intelligent transportation systems optimize traffic flow by analyzing real-time data, reducing congestion time.

1.3 Applications of AI in the Workplace

1.3.1 Industrial Upgrading: Dual Improvement of Efficiency and Quality

AI technology has driven the upgrading and transformation of traditional industries. In the manufacturing sector, AI has realized automated production, quality inspection, and equipment maintenance, enhancing production efficiency and product quality. In the agricultural field, AI optimizes planting and breeding processes through data analysis and prediction. In the financial sector, AI has achieved risk assessment, robo-advising, and customer service optimization, improving the efficiency and quality of financial services.

1.3.2 Smart Office: Efficient Collaboration and Decision-Making Support

The application of AI technology in the office field has improved work efficiency and collaboration capabilities. Smart office software can automatically organize meeting records, generate reports, and offer personalized work suggestions based on user habits. AI-driven chatbots can answer customer questions in real-time, providing round-the-clock service and enhancing customer satisfaction.

1.3.3 Innovation Acceleration: Stimulating Creativity and Breaking Through Bottlenecks

AI technology provides strong support for innovation. In the field of scientific research, AI helps researchers analyze vast amounts of data, discover new research directions, and breakthrough points. In the creative industry, AI-generated creative content offers inspiration for designers and artists, accelerating the creative process.

1.4 Challenges Brought by AI

1.4.1 Data Security and Privacy Protection

AI systems typically require large amounts of data to train models, which brings security and privacy risks in the processes of data collection, storage, and usage. Data breaches can lead to the misuse of user personal information, causing serious consequences. Therefore, it is necessary to strengthen data security protection measures to ensure the privacy and security of user data.

1.4.2 Employment Structure Adjustment and Social Equity

The application of AI technology has led to the reduction of some traditional job positions while also creating a large number of new employment opportunities. However, there is a gap between the skill structure of the labor market and market demand, making it difficult for some workers to adapt to the new employment environment. Moreover, the application of AI technology may exacerbate social inequality, with technology-leading countries and companies further consolidating their advantages, while technologically-lagging regions may face the risk of marginalization.

1.4.3 Ethical and Moral Considerations

The development of AI technology has triggered a series of ethical and moral issues. For example, algorithmic bias can lead to unfair decision – making, the moral responsibility of machine decision – making is difficult to clearly define, and the "personality" and rights of AI have also sparked extensive discussions. These issues need to be paid attention to and resolved in the process of technological development.

1.5 Strategies and Suggestions

1.5.1 Policy Guidance and Enhanced Regulation

Governments should introduce relevant policies to guide the healthy development of AI technology. Strengthen regulatory efforts to ensure that the application of AI technology complies with ethical and legal requirements. At the same time, governments should increase support for AI research and development to promote technological innovation and industrial upgrading.

1.5.2 Educational Reform and Talent Development

The education system should adapt to the needs of the AI era and cultivate interdisciplinary talents with innovative capabilities. Strengthen AI technology education and improve the digital literacy of the public to help workers adapt to the new employment environment.

1.5.3 International Cooperation and Standard-Setting

A promising way is to strengthen international cooperation to jointly formulate international standards and norms for AI technology. Promote the global application and governance of AI technology through platforms such as international standardization organizations (e.g., ISO, IEC). At the same time, countries should actively participate in the formulation of international standards to enhance their influence in global technology governance.

1.6 Conclusion

As a key force driving social progress, AI technology is reshaping our lives and working in an all-round way. It brings us unprecedented convenience and efficiency improvements while also triggering many challenges. Faced with these challenges, we need to adopt proactive strategies, strengthen policy guidance, educational reform, and international cooperation, and promote the healthy development of AI technology. Only in this way it will be possible to ensure that AI technology runs on a safe and controllable track and creates higher benefits for human society.

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Chapter 2 Artificial Intelligence and Work

The Impact on Jobs, Skills, and Careers

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Abstract

This research investigates the impact of artificial intelligence (AI) on jobs, skills, and careers. Desktop research utilizes the most recent data published primarily over the last three years, focusing on the current global situation leading up to 2030. The section about careers covers the period up to 2060. The text examines the impact of geoeconomic fragmentation, technological changes, demographic shifts, and AI on the future of work. It explores the challenges facing key industries, such as the European automotive sector, along with the growing demand for AI-related skills. Discover why adaptability, continuous learning, and upskilling are crucial for maintaining employability.

The main findings indicate that AI is a job creator, not a job killer. A significant replacement of human labor due to AI's impact is not anticipated until 2030. However, AI skills are becoming increasingly essential and job-relevant during this period. A person lacking adequate AI skills may lose their job to someone who possesses them. Significant effects of automation are expected from 2030 onwards. Considering the current demographic situation, it is unlikely that this will pose considerable issues for learning-oriented employees. Automation is anticipated to help alleviate the labor shortage caused by demographic changes.

Substantial investments must be made in workforce qualifications to ensure the workforce remain employable. Certificate courses, such as those provided by online learning platforms like Coursera and edX, are essential for upskilling the workforce. Individuals should explore specific career strategies, consider AI's medium- to long-term impact, and acknowledge the transformational shifts occurring in the auto industry. It is expected that a person entering the workforce at around 20 to 25 today will need to recareer, on average, every seven years.

2.1 Introduction

"The phrase "May you live in interesting times" is almost certainly not a real Chinese curse, but rather a Western invention, likely popularized by misattributions and repeated references in speeches and writings. Its origins remain unclear, but it most

likely arose in British or American discourse in the early 20th century and was mistakenly attributed to China for rhetorical effect." (OpenAI 2025a)

Yes, we live in interesting times, and the article wants to contribute to go beyond misleading conclusions commonly linked to the impact of AI on jobs, skills, and careers. The topic is highly emotionalized since everybody is personally impacted. It affects all countries, income groups, highly educated academics, semi-skilled workers, multinational corporations, and one-person businesses. Learning from each other to cope with the challenges outpaces potential confrontations.

Section 2.2 starts with a summary of the current work environment, highlighting geopolitical tensions and a potentially pending regionalization, new technologies emerging, and the transformation of the automotive industry impacting jobs and skills.

Section 2.3 focuses on the period from 2025 to 2030, examining technology trends driving business transformation, investments in AI, AI's impact on jobs, productivity gains from augmentation, and the labor demand for AI researchers and practitioners.

Section 2.4 will explore the concept of employability and then the current demand for AI skills. The skill sets required for an AI and machine learning specialist and a business manager will serve as examples.

In Section 2.5, we explore investments in AI-related learning, examine career changes that will become more frequent and substantial using a mechanical engineer as an example, and discuss five career strategies to compete with AI.

2.2 The environment of work

According to the Future of Jobs Report 2025 by the World Economic Forum (WEF 2025 p.9), five macro trends are impacting the labor market: technological change, the green transition, geoeconomic fragmentation, economic uncertainty, and demographic shifts. This section starts by examining geoeconomic fragmentation and economic uncertainty, then discusses technological changes, outlines the challenges faced by the European automobile industry, and highlights the job and skills issues linked to it, followed by a review of demographic shifts.

2.2.1 Geopolitical tensions – Regionalization pending?

The work environment is rapidly changing. While still recovering from the impact of the global COVID-19 pandemic, the world faces new challenges from wars in Europe (Ukraine) and the Middle East (Gaza). Both events have triggered significant geopolitical changes.

In January 2025, Donald J. Trump began his second term as US president. On April 2nd, 2025, he presented a chart of tariffs (Paz & Clarke 2025) on the import of goods into the United States, affecting nearly every country on the planet. During his pres-

entation, the leading indices of US stock exchanges turned red, a trend that continued across stock exchanges worldwide for the rest of the week.

These examples illustrate the nature of the VUCA world we are currently experiencing globally. Volatility, uncertainty, complexity, and ambiguity challenge corporations, political leaders, and individuals alike. Planning investments or choosing a job is becoming increasingly difficult. Will my "green card" or visa be revoked while studying in another country before I can complete my studies? This is a valid question for every student investing in the future.

Increasing globalization has been a continuous trend for decades. The supply chain for computers is global. Cars are typically produced regionally but sold worldwide. The same applies to washing machines and pharmaceutical products.

Well-qualified professionals holding a European Union or US passport can work in most countries. A computer programmer may find opportunities in the United States, Europe, China, or India. The language used on the job is English, and the programming tools are consistent across locations. Microsoft products and open-source software are utilized everywhere. Will this change soon?

Due to geopolitical tensions, this situation may change soon. Globalization might give way to regionalization, not only for industrial or agricultural products but also for services. WhatsApp is widely used in Europe and North America, while WeChat is predominant in China, but hardly the other way around. TikTok, owned by ByteDance, a Chinese tech company, operates globally. National security, data privacy, and political concerns in the United States have a long history. In 2020, President Trump issued an executive order to compel TikTok to sell its U.S. operations, but this was not approved. On April 4th, 2025, President Trump announced a further 75-day reprieve regarding the Chinese-owned video app's ban as negotiations continued on a sale, prolonging a years-long battle over the immensely popular platform's fate (Harwell & Zakrzewski 2025). A deal could not be reached due to a veto from the Chinese Government, which stated it would not approve any deal without first discussing President Donald Trump's tariffs and trade policy. This response from the Chinese Government came just two days after the new tariffs were announced.

2.2.2 New technologies

New technologies are available. Here is a short list of them:

- Artificial Intelligence (AI) & Machine Learning
- Blockchain
- Advanced Robotics & Automation
- Next-Gen Energy Storage & Green Tech
- Gene Editing (CRISPR & Beyond)
- Synthetic Biology

Each is already transforming industries. In this text, we will explore the impact of artificial intelligence. The others represent just a sample of technologies, indicating that additional technologies are also transforming industries.

2.2.3 The automotive industry transforms – impacting jobs and skills

In 2022, the European Parliament and the Council of the European Union agreed to a landmark regulation, "CO2 emission standards for new cars and vans: 'Fit for 55' package" (Erbach 2023), that would effectively ban the sale of new internal combustion engine vehicles by 2035.

Under the agreement, all new cars and vans sold in the EU after 2035 must be zero-emission vehicles. This includes fully electric vehicles (EVs) and hydrogen-powered vehicles. The goal is to ensure that by 2035, no new cars with internal combustion engines will be registered in the EU.

The stakes are high. Here is some data published by The European Automobile Manufacturers' Association (ACEA 2025):

- 13.2 million Europeans work in the automotive sector
- 10.3 % of all manufacturing jobs in the EU
- €383.7 billion in tax revenue for European governments
- €106.7 billion trade surplus for the European Union
- Over 7.5 % of EU GDP generated by the auto industry
- €72.8 billion in R&D spending annually, 33 % of the EU total

The transformation of the industry is now in full underway. It disrupts the sector and presents significant challenges to the OEMs and tier 1 to tier 3 suppliers involved.

The transformation of the industry significantly impacts the labor market. New technologies create new job requirements. A developer of combustion engines is no longer needed. A person who majored in diesel engine development at a technical university twenty years ago and became a highly experienced senior developer is no longer necessary. Yes, this person possesses transferable skills such as mathematics and project management, but the core competencies are no longer in demand. The potentially 45-year-old senior reengineer, who is at the midpoint of his career, must recareer and compete with engineers who possess a more relevant skill set for developing electric motors and are fifteen to twenty years younger. Additionally, a potential job may require relocation to another region or country.

Here is a more comprehensive analysis comparing the skills of an engineer who develops combustion engines to those of an engineer who develops electric motors.

Here are the core skills needed for both jobs (OpenAI 2025b):

- Mechanical engineering fundamentals (thermodynamics, mechanics, dynamics)
- CAD and simulation tools (e.g., SolidWorks, ANSYS, MATLAB/Simulink)