

# The New Wave of Artificial Intelligence : Changing the Landscape of Employment

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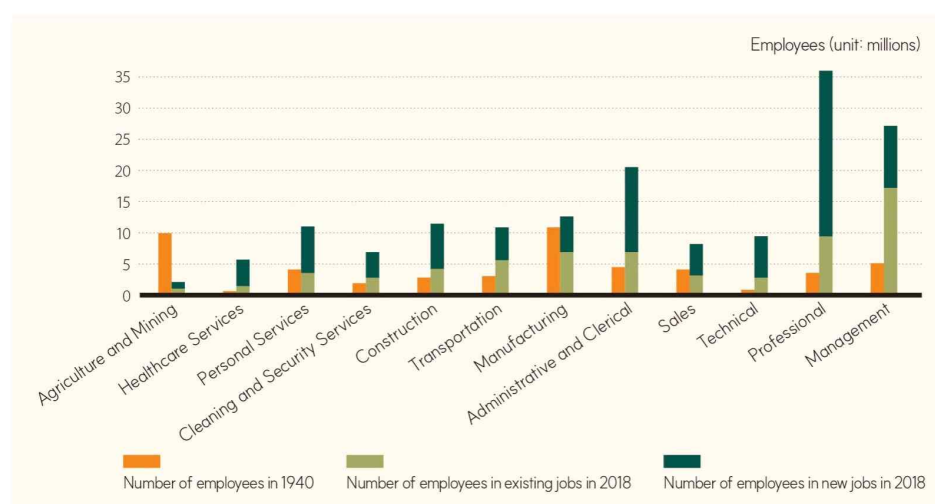
## Introduction

We are currently at the center of rapid changes driven by artificial intelligence (AI). AI technology is poised to reshape industrial structures, labor processes, job creation, reduction, and employment types. Although it is still challenging to measure the exact nature or scale of these changes, it is essential to document the shifts caused by AI.

## Transformation of Jobs: Disappearing ‘Tasks’

The impact of technological advancement on employment is a long-standing research topic, and AI technology follows this trend. The idea that technology "replaces jobs" can be misleading. What technology actually replaces are the tasks within jobs rather than the jobs themselves. The key question is whether the effect of technology substituting labor in existing tasks outweighs the increase in labor demand for other tasks due to cost savings through automation. Auto's research shows that 60% of jobs in the U.S. in 2018 were created after 1940, indicating that even though technology eliminates certain jobs, new ones emerge, so the overall scale of employment may not necessarily decline. In past experience, technological advancement did not reduce total employment but often exacerbated inequality. High-skilled workers benefited, while those in standardized tasks within manufacturing, typically with mid-level wages, were negatively affected.

Industry-Specific Employment Scale in the U.S. (1940 vs. 2018)



Source: Auto et al. (2023)

Figure Description: Employment increased in all sectors except agriculture and mining. Only 40% of jobs that exist today existed in the 1940s, with the remainder being new types of jobs.

### ***Will Employment Change in the AI Era Be Different from the Past?***

Is the impact of AI development different from that of previous technological advancements? In other words, will AI reduce jobs this time by replacing tasks traditionally performed by humans? Will those affected by AI differ from those impacted by past technological changes? It remains uncertain whether the tasks AI can replace are broader than those automated by past technologies or whether AI tends to replace tasks performed by highly skilled, high-wage workers. This is still a hypothesis and needs to be empirically verified.

The impact of AI development on employment depends on what AI can achieve. AI can be divided into Analytical AI, which identifies patterns in data to support decision-making, and Generative AI, which creates or transforms content like text, images, and sounds based on existing data. The reason why AI's influence on workers' tasks is so broad is that we can communicate with it in natural language. AI can read, listen, understand, speak, and write. This has significant implications: First, anyone who can speak or write can use this technology to enhance their skills and productivity. Second, asking AI questions or making requests is akin to harnessing collective intelligence since AI learns from past human records converted into digital data. These implications could reduce the skill gap based on job experience and even blur the line between amateur and professional.

### ***Is AI Adoption a Threat or Opportunity for Jobs?***

Certain tasks are more suited to AI, while others remain challenging. Which jobs might be replaced by AI? Is my job safe? These questions reflect the societal focus in the AI era. Academically, this is organized under the concept of "AI Exposure." Jobs exposed to AI are those with tasks likely to be replaced by AI. The degree of AI exposure across different occupations has been measured in various ways, with highly exposed jobs more likely to see a decrease in employment. Simplified measures of AI exposure reveal unique traits distinct from traditional automation technologies like robots, showing higher exposure in non-physical, cognitive tasks and lower exposure in manual tasks. This suggests that some middle-management and professional roles may be at risk.

However, beyond exposure, the employment effect depends on actual AI adoption rates. While exposure measures AI's technical potential, whether AI truly reduces employment considering economic and social constraints remains an open question.

Generative AI, which gained momentum in 2024, has prompted a reevaluation of what it means for companies to "adopt" AI. Even if AI is not deliberately adopted, it may still permeate workplaces and labor processes, with AI integrated into corporate cloud systems and office software. Therefore, asking if an individual company has adopted AI may lose significance. However, comparing companies that actively adopt AI with those that do not can still reveal employment effects. Many studies report that companies actively adopting AI tend to increase employment rather than decrease it, suggesting that the primary purpose of AI adoption by companies may still focus more on new product creation than on reducing labor costs.

### ***How Should We Respond to Changes in Skill Demand?***

There is a saying that your job won't be replaced by AI, but rather by someone using AI. Since AI complements human skills, this should be leveraged actively. School education and job training must become more flexible. Life should not be segmented into separate stages of learning and working. The social system that allows anyone, regardless of age or employment status, to embrace new knowledge and skills is essential in the AI era.

### ***Author Information***

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