

University of Florida

Displacing the Day-to-Day

AI's Impact on Entry-Level Employment

Kyle Lund, 29501039
8-1-2025

Position Statement

As artificial intelligence continues its rapid advance, the labor market stands on the edge of the next industrial revolution. This paper asserts that the emergence and adoption of AI will fundamentally restructure employment by displacing routine or entry-level positions, while simultaneously fueling demand for high-skill roles requiring advanced expertise, adaptability, and creativity. Rather than solely being a threat to job security, AI's rise signals both challenge and opportunity: it will render certain positions obsolete, particularly those characterized by repetitive tasks, and spark the creation of entirely new categories of work demanding analytical thinking, problem-solving, and technological proficiency.

This disruption, however, is not evenly distributed. The shift provides the opportunity for upward mobility among those willing to adapt, while potentially leaving behind those who will not. The historical record, from agricultural mechanization to modern office automation, shows that while new technology may reduce employment within specific occupations, it can also expand overall opportunity when workers and institutions adjust to change. Thus, the impact of AI on the labor market will ultimately depend on society's willingness to adopt cognitive, creative, and technical roles of the future.

Introduction

The integration of artificial intelligence (AI) and advanced automation stands poised to reshape the global labor market in ways not seen since the steam engine or the electric motor transformed economies centuries ago. Accelerated progress in machine learning,

robotics, and data-driven reasoning has moved AI from theoretical promise to practical force. While much attention has been placed on AI's ability to automate routine work, the true impact of this technological wave is far more complex: it is simultaneously eliminating certain categories of jobs, particularly those characterized by repetitive, rule-based tasks, while launching entirely new professional opportunities that demand higher-order cognitive, technical, and creative skills. As with earlier technological revolutions, this transition will bring profound economic, social, and educational challenges. This paper explores how AI is redefining the boundaries between human and machine labor and examines the critical task of bridging the resulting skill gap created by these changes.

AI and Job Categorization

AI, as defined by the Organisation for Economic Co-operation and Development (OECD), refers to "machine-based systems that, for explicit or implicit objectives, infer from the input they receive how to generate outputs such as predictions, recommendations, content, or decisions, which can influence physical or virtual environments" (OECD, 2023). Essentially, AI encompasses a range of technologies that simulate human cognitive processes, such as learning, reasoning, and decision-making, to perform tasks which traditionally required human intelligence. Closely related to AI is automation, the broader use of technology to perform tasks with minimal or no human input. While AI-driven processes are forms of automation, not all automation involves AI; for instance, mechanized assembly lines automate physical tasks without the autonomous decision-making characteristic of AI. Within the overall field of AI, machine learning stands out as a

key subfield focused on creating systems capable of improving through experience by recognizing patterns and making decisions without explicit programming. Robotics applies AI to physical machines, enabling them to perform complex, often repetitive, actions such as those found in manufacturing or logistics. The expansion of AI and automation also reflects the increasing role of **capitalization** in production, where capital-intensive technologies supplant labor-intensive methods, reshaping how and where work is conducted across industries.

Understanding AI's impact on the workforce requires distinguishing between routine or entry-level jobs and high-skill occupations. Routine jobs consist of repetitive and predictable tasks that are often easily codified into clear rules or procedures. Examples include assembly line workers, cashiers, and data entry clerks, positions especially susceptible to automation because their tasks can be performed by algorithms or robots. In contrast, high-skill jobs require advanced knowledge, creativity, problem-solving abilities, long-term planning, and adaptability, traits even the most advanced AI models find difficult to replicate. Such roles include AI engineers, data scientists, healthcare professionals, and managerial positions responsible for complex decision-making. Additionally, AI continues to foster new and emerging roles that combine technical expertise with domain-specific knowledge and interpersonal skills, such as AI ethics officers, prompt engineers who develop inputs for generative AI, and robotics maintenance specialists.

These technologies are already transforming the workplace. Chatbots and virtual assistants are increasingly used to automate customer interactions in sectors like banking

and retail, handling inquiries and routine service tasks. Robotic Process Automation (RPA) streamlines back-office operations such as invoicing and compliance, replacing many repetitive administrative functions (Microsoft, n.d.). This is essentially a more advanced version of **business process outsourcing**. Predictive analytics enables businesses to forecast trends in sales, optimize supply chains, and improve healthcare diagnostics by training on large datasets. Generative AI, which creates content including text, images, and videos, supports creative industries and automates tasks like report writing and content generation. Additionally, robotics plays a significant role in automating physical tasks in manufacturing, logistics, and even elder care, performing these duties with greater efficiency and precision.

Historically, the distinction between routine and high-skill tasks mirrors shifts seen in prior technological revolutions driven by technologies like steam power and electricity. These technologies redefined job roles by automating manual and routine labor while simultaneously spawning new occupations requiring skilled labor in factories and services (Salvo et al., 2022). Likewise, AI continues this pattern by automating repetitive tasks and augmenting the demand for cognitively demanding and creative jobs, signaling a continuation of the long run of labor market transformations prompted by evolving technologies.

Job Destruction

The rapid advancement of AI and automation is already causing significant displacement of routine and entry-level jobs across several key sectors, reshaping the labor market in profound ways. Jobs in manufacturing, retail, transportation, and clerical work stand out as the most at risk (Prestianni, 2025). These occupations typically involve repetitive, manual, or rule-based tasks that AI systems and robots can perform more efficiently and at lower cost. For instance, manufacturing faces ongoing automation through robotics and AI-powered machinery, while retail is experiencing shifts with self-checkout systems, inventory robots, and AI-enabled customer service chatbots replacing many frontline positions (Grand View Research, n.d.). Similarly, in transportation, autonomous vehicles, smaller drones, and automated logistics systems threaten driving and delivery jobs, and clerical roles face replacement by RPA and AI algorithms handling data entry, invoicing, and compliance tasks.

Mechanisms of displacement primarily involve automating repetitive and routine tasks that require minimal cognitive input. Algorithms can now perform data processing and decision-making in contexts previously reliant on human clerks, while AI systems can analyze patterns and execute roles such as customer interaction or basic diagnostics with increasing accuracy (Tsymbal, 2025). This targeted automation of well-defined and rule-based tasks leads to job loss or transformation in roles heavily weighted toward routine activities.

Empirical data highlights the scale of this disruption. According to the World Economic Forum's Future of Jobs Report 2025, 40% of employers worldwide plan to reduce their workforce over the next five years due to AI automation, with many already acting (World Economic Forum, 2025). In 2025 alone, layoffs at major tech companies resulted in nearly 78,000 job cuts attributed directly to AI technologies, averaging 491 jobs lost every day (Saini, 2025). Sector-specific impacts include projections of up to 65% of retail jobs are at risk of being automated by 2025, primarily due to technological advances and economic pressures (Davey, 2023). Manufacturing could see up to 30% of jobs automated by the mid-2030s, disproportionately affecting male workers in physical roles (Manyika et al., 2017). In the United States, about 13.7% of workers already report losing jobs to robots or AI-driven automation, with entry-level roles particularly vulnerable (Prestianni, 2025). These figures are echoed globally, with studies by McKinsey and PwC projecting widespread displacement concentrated in routine-heavy jobs (Manyika et al., 2017; Wood, 2025).

Historical precedents affirm that this pattern of displacement is neither entirely unprecedented nor sudden. The mechanization of agriculture over the 19th and 20th centuries dramatically reduced farm employment but simultaneously enabled a labor shift to factories and later service industries. More recently, manufacturing automation since the 1970s has led to significant job losses in blue-collar roles, creating social and economic challenges particularly in industrial regions. Clerical automation has similarly diminished administrative staffing needs while reshaping job content, with human roles evolving toward oversight and exception management. These past technological waves illustrate that displacement tends to be gradual but persistent, disproportionately affecting

routine tasks first, something consistent with observed trends in AI-driven displacement today.

Understanding which groups and sectors face the greatest disruption supports the thesis that AI will substantially reshape employment by destroying certain categories of jobs, while other parts of the economy and new roles grow. This foundation sets the stage for exploring how new high-skill jobs emerge in parallel, necessitating broad adaptation in workforce skills and policies.

Job Creation

While AI and automation often dominate headlines for job destruction, they are also responsible for the creation of new, high-skill jobs across a broad spectrum of industries, with AI's advancement sparking a demand for a range of specialized professions that did not exist a few years ago (Magnet, 2025).

A significant variety of high-skill jobs are now integral to the AI revolution. These include AI engineers, machine learning specialists, NLP (Natural Language Processing) experts, data scientists, MLOps (Machine Learning Operations) professionals, and specialists in AI safety and governance. For instance, “prompt engineer” has become a highly sought-after title, with salaries ranging from \$100,000 to \$300,000 or more (Edwards, 2025). These roles are responsible for fine-tuning the instructions that guide powerful generative AI models in producing targeted, reliable results. Similarly, MLOps engineers often earn between

\$120,000 to \$200,000, design, deploy, and maintain the complex workflows that power today's AI applications.

It must be said that while many new jobs are being created, the skills required for these new roles are substantially more complex and broader in scope than those replaced.

Employers consistently seek advanced education (such as bachelor's or master's degrees in computer science, data analytics, or related fields), digital literacy, experience with multiple programming languages (typically Python or C++), data science proficiency, and other soft skills such as problem-solving, creativity, and interdisciplinary communication (Koh, 2025). Surveys and market analyses show that only about 2.5% of AI job postings target candidates with less than two years' experience, highlighting the preference for seasoned talent and the need for reskilling pathways for mid-career professionals (Magnet, 2025).

New industries have also emerged as direct responses to AI adoption. AI safety and governance is now a critical area, requiring policy experts and compliance officers to keep rapidly evolving systems within regulatory bounds (Prelum, 2025). Robotics maintenance is another specialized field, as physical automation requires not only engineers who can design robots but also technicians and operational managers to keep them running safely and efficiently. The generative AI boom has fueled demand for content designers and workflow specialists able to blend UX (user experience) knowledge with a technical grasp of AI systems.

Data from LinkedIn, Glassdoor, and labor market trackers illuminate the scale of net job creation in AI-driven sectors (Refonte Learning, 2024). For example, demand for AI-related

positions has surged at double-digit rates annually since 2020, with average U.S. AI engineer salaries rising to around \$206,000 by 2025, up more than \$50,000 just from the previous year. Data scientists, machine learning engineers, and AI product designers routinely earn six-figure salaries, reflecting both fierce competition and high-value creation in these fields. According to the U.S. Bureau of Labor Statistics, jobs for “computer and information research scientists are expected to grow by 26% between 2023 and 2033, far outpacing the 4% growth rate of all occupations (U.S. Bureau of Labor Statistics, 2025).

These developments have historical precedents. During the Industrial Revolution, the rise of factories displaced unskilled manual workers but created opportunities for supervisors, engineers, and machine operators. Office automation in the late twentieth century reduced clerical staffing needs yet led to the exponential growth of IT and software development roles. Even the ATM revolution altered bank teller roles, shifting human labor from cash handling to customer service and problem-solving. In each case, new technologies augmented rather than wholly replaced the workforce, giving rise to new occupations, industries, and skills in response to evolving economic needs.

The AI revolution, while disruptive, generates net job creation and greater economic value by introducing entirely new professional categories and expanding the demand for high-level digital, creative, and analytical skills. Rather than a zero-sum game, it shifts the labor market’s center of gravity upward, providing opportunities for workers to successfully transition from obsolete roles to higher-skill careers.

Challenges

Although AI-driven innovation generates significant new opportunities, the skill gap between the displaced roles to the new one can present a challenge for displaced workers. This gap arises from the mismatch between the skills of displaced jobs in routine or entry-level roles and the advanced abilities required for emerging positions. Various estimates suggest that around 40% of workers will require substantial reskilling to thrive in an AI-driven economy (Early, 2024). The core issues include lack of foundational AI or digital literacy, limited familiarity with modern AI tools, and insufficient hands-on experience using these technologies in real-world settings. Employees frequently cite discomfort and resistance toward AI in the workplace, further complicating transitions and widening the readiness gap.

Barriers to reskilling and retraining are substantial. These days, the required knowledge can be found for free on sites like YouTube, but it is difficult to identify quality sources from those simply seeking to capitalize on the AI boom. Companies currently allot only about 1.5% of their budgets to AI upskilling, which is insufficient given the scale of transformation underway (Goel & Kovács-Ondrejkovic, 2023). Additionally, tailored, role-specific training programs are rare, and generic courses often fail to meet the practical needs of workers attempting to adapt to AI-augmented processes.

Demographic and geographic disparities further exacerbate these challenges. OECD and other reports indicate that urban workers are much more likely than rural ones to be exposed to and benefit from AI-related skills development, with up to 32% of urban

employees already using AI in their roles versus just 21% in rural areas (OECD, 2024).

Highly educated, white-collar metro areas now see greater direct effects from AI than lower-paid regions, reversing previous trends in automation risk: while earlier waves of mechanization disproportionately displaced blue-collar workers in non-metropolitan regions, generative AI is projected to most affect professional and office-oriented roles in cities. However, rural and less-connected areas suffer more severely from educational, digital access, and economic opportunities, aggravating longstanding income and productivity divides.

Despite these challenges, there are promising examples of reskilling initiatives. Companies like IKEA have reshaped their workforce by moving employees displaced by automation into more creative or customer-facing roles, investing heavily in targeted reskilling that resulted in substantial business and employee growth (Stevenson, 2024). Similarly, partnerships between businesses and educational institutions have yielded strong retention and upskilling outcomes for older and at-risk workers (Gombalova, 2024).

Ultimately, the effort required to reskill, retrain, and adapt to the demands of AI-driven work poses one of the most significant social and economic challenges of the present era, reinforcing the imperative for programs designed to ensure a positive outcome.

Conclusion

The advance of AI marks both a continuation of historical patterns in labor market evolution and the emergence of wholly new opportunities and risks for workers worldwide.

AI-driven automation is accelerating the obsolescence of many routine and entry-level jobs, with evidence already visible across sectors like manufacturing, retail, transportation, and clerical work. Yet, just as the mechanization of past eras gave rise to new industries and professions, today's transformation is spurring unprecedented demand for roles requiring advanced technical, analytical, and interpersonal abilities. The promise of net job creation and enhanced productivity is real, but so are the barriers. Navigating the age of AI will thus require collective commitment from policymakers, educators, employers, and workers alike to embrace innovation while building robust systems that help people transition to the future of work. Only with such concerted effort can AI's disruptive potential be turned into lasting advancement.

Word Count: 2647

References

- Davey, J. (2023, June 8). 65% of retail jobs could be automated by 2025. *Freethink*. Retrieved July 31, 2025, from <https://www.freethink.com/robots-ai/retail-artificial-intelligence-robots>
- Early, C. (2024, November 28). Sustainability profession scrambles to fill “extreme gap” in digital skills to harness power of AI. *Reuters*. <https://www.reuters.com/sustainability/society-equity/sustainability-profession-scrambles-fill-extreme-gap-digital-skills-harness-2024-11-28/>

Edwards, D. (2025, July 5). The creation of new AI careers. Robotics & Automation News.
Retrieved August 1, 2025, from <https://roboticsandautomationnews.com/2025/07/05/the-creation-of-new-ai-careers-4-high-paying-roles-that-didnt-even-exist-five-years-ago/92922/>

Goel, S., & Kovács-Ondrejkovic, O. (2023). Your Strategy Is Only as Good as Your Skills. In Boston Consulting Group. Retrieved August 1, 2025, from <https://www.bcg.com/publications/2023/your-strategy-is-only-as-good-as-your-skills>
Gombalova, N. (2024, September 10). Reskilling older workers for an AI future. Foothold America. Retrieved August 1, 2025, from <https://www.footholdamerica.com/blog/reskilling-older-workers-for-an-ai-future-embracing-change-in-the-us-workforce/>

Grand View Research. (n.d.). U.S. Self-checkout Systems Market | Industry Report, 2030.
Retrieved July 31, 2025, from <https://www.grandviewresearch.com/industry-analysis/us-self-checkout-systems-market-report>

Koh, S. (2025, April 24). Report: What are the best paying and most in-demand AI skills in the job market? Bookipi. Retrieved August 1, 2025, from <https://bookipi.com/blog/press-release/top-ai-skills/>

Magnet, S. (2025, April 4). AI Engineer Job Outlook 2025. 365 Data Science. Retrieved August 1, 2025, from <https://365datascience.com/career-advice/career-guides/ai-engineer-job-outlook-2025/>

Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, L., Batra, P., Ko, R., & Sanghvi, S. (2017, November 28). Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and

wages. *McKinsey & Company*. <https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages>

Microsoft. (n.d.). Benefits of RPA—Robotic Process Automation | Microsoft Power Automate. Retrieved July 31, 2025, from <https://www.microsoft.com/en-us/power-platform/products/power-automate/topics/robotic-process-automation/benefits-of-rpa-robotic-process-automation>

OECD. (2023). Explanatory memorandum on the updated OECD definition of an AI system. In OECD Artificial Intelligence Papers. <https://doi.org/10.1787/623da898-en>

OECD. (2024). Job Creation and Local Economic Development 2024. In Job Creation and Local Economic Development. <https://doi.org/10.1787/83325127-en>

Prelum. (2025, July 18). Emerging jobs in artificial intelligence. Prelum. Retrieved August 1, 2025, from <https://precollegeprograms.org/stem-resources/emerging-jobs-in-artificial-intelligence>

Prestianni, T. (2025, May 30). 59 AI Job Statistics: Future of U.S. jobs. National University. <https://www.nu.edu/blog/ai-job-statistics/>

Refonte Learning. (2024, November 25). AI Salary Trends 2025: Unlocking High-Paying Careers in Artificial intelligence and Related Roles. Retrieved August 1, 2025, from <https://www.linkedin.com/pulse/ai-salary-trends-2025-unlocking-high-paying-careers-artificial-scjoe>

Salvo, C., Weisdorf, J., & Ridolfi, L. (2022, July 17). The impact of mechanisation on wages and employment: Evidence from the diffusion of steam power. Centre for Economic Policy Research. Retrieved July 31, 2025, from <https://cepr.org/voxeu/columns/impact-mechanisation-wages-and-employment-evidence-diffusion-steam-power>

Saini, K. (2025, June 8). AI job Displacement 2025: Which jobs are at risk? Final Round AI. Retrieved July 31, 2025, from <https://www.finalroundai.com/blog/ai-replacing-jobs-2025>

Stevenson, R. (2024, September 17). How one retailer made \$1.4 billion by reskilling 8,500 employees displaced by AI. Steal These Thoughts! Retrieved August 1, 2025, from <https://stealthesethoughts.beehiiv.com/p/how-ikea-made-1-4-billions-from-reskilling-8000-employees>

Tsymbal, T. (2025, July 30). AI in Customer Service Statistics [June 2025]. Master of Code Global. <https://masterofcode.com/blog/ai-in-customer-service-statistics>

U.S. Bureau of Labor Statistics. (2025). Occupational Outlook Handbook: Computer and Information Technology. In U.S. Bureau of Labor Statistics. Retrieved August 1, 2025, from <https://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm>

Wood, M. (2025, June 3). AI Jobs Barometer. PwC. Retrieved July 31, 2025, from <https://www.pwc.com/gx/en/issues/artificial-intelligence/ai-jobs-barometer.html>

World Economic Forum. (2025, April 30). How AI is reshaping the career ladder, and other trends in jobs and skills on Labour Day. Retrieved July 31, 2025, from <https://www.weforum.org/stories/2025/04/ai-jobs-international-workers-day/>

