Research Commons

Retraining US Workforce in the Age of Agentic Gen AI: Role of Prompt Engineering and Up-Skilling Initiatives

By Satyadhar Joshi (Satyadhar Joshi)

Source International Journal of Advanced Research in Science Communication and Technology
Page: 543-557
DOI: 10.48175/ijarsct-23272

Published Feb 17 2025

Early Access Feb 2025

Indexed 2025-07-10

Document Type Article

Abstract This work reviews U.S. workforce retention, AI upskilling, prompt engineering, workforce development, and automation in the context of recent advancements in agentic generative AI. The rapid integration of artificial intelligence (AI) across industries has raised concerns over potential job displacement within the US workforce. However, targeted upskilling—particularly through training in prompt engineering, a key skill for interacting with large language models—offers promising avenues to empower employees and retain talent. This review paper synthesizes insights from academic research, industry reports, and educational initiatives to examine how prompt engineering training can mitigate the challenges of AI-induced disruption and support workforce resilience. This review article provides a comprehensive overview of the rapidly evolving field of prompt engineering. It examines fundamental techniques for crafting effective prompts, explores the diverse applications of prompt engineering across various sectors, and discusses the challenges and ethical considerations associated with its use. Furthermore, the review identifies potential future research directions and highlights the growing importance of prompt engineering in the age of large language models. This review article provides a comprehensive overview of prompt engineering, with a specific focus on its implications for workforce development and training. It examines prompt engineering techniques, applications across sectors, ethical considerations, and future research directions. A key emphasis is placed on the role of prompt engineering training programs in equipping the workforce with essential skills for the age of large language models.

Addresses [1] BoFA, Jersey City, NJ, USA