

The Role of Generative AI in Revolutionizing Healthcare, Education, and Finance: A Mini Review

Vivek Kumar Mishra¹, Gaston O. Adoyo²,
Aayush Bharat Mandavia³, Subhash Kumar Chand⁴

IEEE Senior Member DE, USA¹

Jomo Kenyatta University of Agriculture and Technology Nairobi, Kenya²

IEEE, CA, USA³

IEEE, DE, USA⁴

vivekmishra@ieee.org, mandaviaaayush@gmail.com, skchand@buffalo.edu

Abstract: Today, generative artificial intelligence is enabling industries to transform at an unprecedented pace. In this paper, illustrated case studies of the revolutionary role of GenAI in three sectors are explored: healthcare, finance, and education. GenAI accelerates the domain of healthcare by making its way into drug discovery, medical imaging and diagnostics, and virtual healthcare care assistance. In the financial sector, GenAI applies to crime detection, risk management, and prescriptive financial advisory services. GenAI helps educators in the education sector with personalized learning, automates teaching tasks, and creates an interactive learning environment. In this review, we check out exactly how these various kinds of GenAI devices have been made use of in the form of components such as GANs, VAEs, or transformer-based versions through these sector applications. These case studies are analyzed, pointing out realworld developments and their effect on outcomes. The paper ends by discussing the inevitable pitfalls, ethical concerns, and regulatory barriers to GenAI adoption, such as data privacy, algorithmic discrimination, and cybersecurity issues. In addition, it discusses future research directions and opportunities for responsible innovation, focusing on AI transparency, ethical frameworks, and the critical role of human oversight

Keywords: Generative AI, Healthcare, Education, Finance, AI Ethics