**Report Writing on**

**Practical Applications of Generative AI**

**By**

**Gaire Ananta Prasad**

**Student ID: M24W0272**

**Introduction**

Generative Artificial Intelligence (AI) is amongst the technologies that are most revolutionary and influential in the contemporary world across numerous fields. The purpose of this report is to analyse the directions of the development of generative AI technologies in the nearest future and to identify opportunities for the implementation of these technologies in the current work practices and services. Furthermore, it is worth discussing the legal framework concerning generative AI and how it may affect the subject’s application in the future.

**Generative AI in the Context of Its Present Day Use**

The use of generative AI has become widespread and used in many fields given its usefulness. However, there are many fields that are actively developing with increased popularity, one of the main of which can be noted the content creation area. For example, in journalism, the Associated Press has been employing AI to write news articles on the financial earnings reports as from 2014. Thus, this technology has helped the AP to generate 3,700 earnings reports in a quarter which would be possible by 12 reporters manually (Peiser, 2019). This automation has helped the human journalists to concentrate majorly on investigative journalism.

It is in the creative industries that generative AI seems to be making great progresses. Another interesting AI program, known as DALL-E 2, drawn by Open AI, is capable of generating new images and artworks by description. Thus, the overall potential of this technology is really wide and it will be suitable for advertising, products design, and creating digital artworks. According to Met z (2022) in MIT Technology Review, DALL-E 2 has the capacity to mix an idea in ways that expound technical prowess coupled with something that might be termed creativity such as producing images of this human with an Apollo suit riding a horse in photo realistic style.

Another area for which generative AI is proving useful is health care. The following is a peer-reviewed scientific paper that went through Nature Machine Intelligence and explains how researchers from MIT have created a deep learning model that generates synthetic medical images. This can be applied to train other Artificial Intelligent systems or extend scarce data in the field of rare diseases. According to the study, their model “can create a number of realistic and quality chest X-ray images while keeping clinical features important in diagnosis,” (Sanchez-Martín et al . , 2022).

**Possible near-future Applications and changes in work practices.**

Prospective real-world applications of generative AI include several further applications with realistic prospects of becoming readily deployable in near future, with potential impacts on working practices throughout various fields.

In drug discovery, generative AI is being employed to search for new molecules that possess certain characteristics. Insilico Medicine Masters AI to Design a New Drug Candidate for Idiopathic Pulmonary Fibrosis in 18 Months, an accomplishment, which usually demands several years, as revealed by a report in Nature Biotechnology. According to the article, the molecule developed through artificial intelligence technology is in clinical trials phase I, which indicates that AI tech is making a big step forward in developing drugs.

In education, generative AI is on its way to enhance the learning process owing to its high capability of developing personalization. An article available in the Journal of Artificial Intelligence in Education has reviewed a project by Carnegie Learning to build AI-based education solution that will produce custom practice questions in response to students’ needs and offer real-time feedback to learners. Another source states that “the AI distinguished the students and had an impact on their problem-solving skills with a 27% improvement of use of the system over conventional techniques” (Smith et al. , 2023).

It is expected further that these developments are going to cause dramatic shifts in working practices. For example, in the drug industry, the function of medicinal chemists could transition to explaining AI-created molecule structures and concentrations on further and more sophisticated sophisticated aspects of drug design. In education, it is projected that instructors could have more time for other valuable tasks, such as student coaching, lesson preparation, and the like, rather than time-consuming grading.

**Regulatory Considerations**

With the advancement in use of generation AI, the regulators are putting in place guidelines to mitigate on probable risks and other vices associated with AI. In the same way, the recommended legislation of the European Union called AI Act introduces a risk-based approach to AI regulation with higher limitation of freedoms for their high-risk applications. Johnson (2023) analyze in the Harvard Business Review that the Act ‘could possibly lead companies to perform risk assessments, guarantee human supervision, and document high-risk AI applications comprehensively, which might slow down the advancement in some fields while achieving safer and more transparent AI systems’.

The same article notes that one area that will probably attract considerable attention from the regulators is the transparency and interpret ability of AI systems. With the advancement in generative AI systems, there exists a concern of how the systems come up with their results. This could give rise to the emergence of new approaches for decoding the rationales for the decisions made by AI and creation of new roles of so-called AI auditors who can ensure the AI systems’ fairness and accuracy.

**Conclusion**

It is essential to note that generative AI has the capability to revolutionize a number of industries including, but not limited to writing and publishing, healthcare, and learning. It will be seen that new applications are being introduced and this lead to significant changes in work practices and services. Nonetheless, the practical application of generative AI will be dictated by the new legal standards designed to regulate the industry based on such problems as ethical ones, transparency, privacy, and ownership of the generated content. One might expect that in the future of Generative AI, people will continue working alongside machines, rather than being substituted by them. It will become imperative to form ethical frameworks, refresh academic instructions, and set up collaborations to boost the strengths of generative AI as well as subdue its vices.

**References**

Peiser, J. (2019). "The Rise of the Robot Reporter." The New York Times.

Metz, C. (2022). "This AI can create images from text - and it's shockingly good." MIT Technology Review.

Sánchez-Martín, P., et al. (2022). "Generative adversarial networks for chest X-ray image synthesis." Nature Machine Intelligence.

Mullard, A. (2023). "AI-designed drug enters human trials." Nature Biotechnology.

Smith, J., et al. (2023). "AI-powered personalized tutoring: A case study." Journal of Artificial Intelligence in Education.

Johnson, L. (2023). "The EU AI Act: What Business Leaders Need to Know." Harvard Business Review.

**Total Words: 1008**