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A Review: Generative AI, Risk and Future of Job Market

Sayed Mazhar Ali[1], Mushtaque Ahmed Rahu[2], Sarang Karim[3], Ghulam Murtaza Jatoi[4], Asim Sattar[5]

[1]Department of Electrical Engineering, MUET SZAB Khairpur Mirs; email:mazharlakyari@gmail.com (S.M.A)
[2]Department of Electronic Engineering, QUEST, Nawabshah 67450, Pakistan, email: rahumushtaque@gmail.com (M.A.R)
[3]Department of Telecommunication Engineering, QUEST, Nawabshah 67450, Pakistan, email: sarangkarim@hotmail.com (S.K)
[4]Department of Electronic Engineering, QUEST, Nawabshah 67450, Pakistan, (G.M.J)
[5]Department of Mechanical Engineering, MUET SZAB Khairpur Mirs; (A.S)

*****Correspondence: mazharlakyari@gmail.com

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Abstract

Generative artificial intelligence, also known as generative AI or Gen AI, is a form of AI capable of producing new material such as discussions, tales, photographs, videos, and music. It may apply its understanding of languages, programming, art, science, and other disciplines to solve new issues. This survey highlights the foundation of GAI, its applications, and its associated risks. Although generative AI doesn't require coding expertise or input, it most frequently produces content in response to natural language queries nowadays. However, there are many enterprise use cases, such as advancements in material science and medicine and chip design. The paper also discusses the impact of GAI on the job market, and its future.

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1. Introduction

Generative AI may learn from existing artifacts and produce new, realistic artifacts (at scale) that replicate the features of the training data while avoiding repetition [1]. It has the potential to develop a wide spectrum of creative content, such as images, videos, music, voice, writing, software code, and product concepts. Generative AI utilizes a number of ever-changing methodologies [2]. The first are AI foundation models, which may be used for a range of tasks with additional refinement after being trained on a substantial amount of unlabeled data. Although these trained models are basically prediction algorithms, their development requires sophisticated mathematics and a significant amount of computing power [3]. Although generative AI doesn't require knowledge of or access to code, it usually creates content in response to natural language queries nowadays. However, the corporate use cases are varied and include advances in material science research, chip design, and pharmaceuticals. Since 2020, generative AI has been on the Hype Cycle for Artificial Intelligence (it was also one of our Top Strategic Technology Trends for 2022), progressing from the Innovation Trigger phase to the Peak of Inflated Expectations. However, generative AI only made popular news in late 2022, with the introduction of ChatGPT, a chatbot capable of extraordinarily human-like conversations [4]. ChatGPT, which was introduced by OpenAI, went viral overnight and captured public interest. OpenAI's DALL·E 2 tool uses generative AI to create visuals from text. With an impact similar to that of the steam engine, electricity, and the internet, generative AI is evolving into a general-purpose technology. The excitement will subside as implementation reality comes in, but generative AI's impact will grow as people and organizations find

creative and novel ways to use the technology in their everyday lives and work. Foundation models that can automate, improve, and carry out business and IT processes on their own include generative pre-trained transformers, which are the basis for ChatGPT [5].

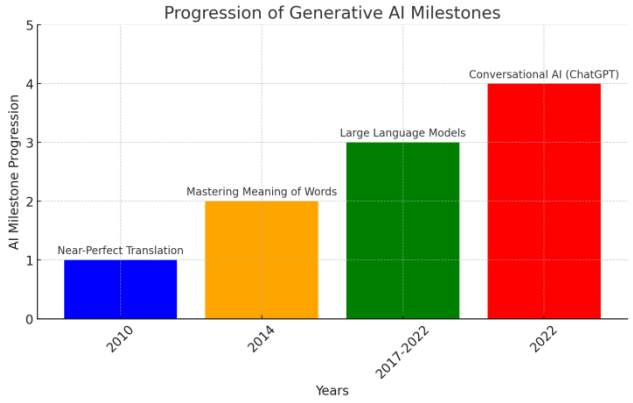

Figure 1: Progress of GAI with time

Though specifics vary based on the use case, generative AI's benefits include improved customer experience, faster product production, and higher staff productivity [6]. When using a service that has substantial limitations, end users should be realistic about the value they want to obtain. The time that generative AI may save workers may be limited since it generates artifacts that need human validation and may be biased or inaccurate [7]. To ensure that every project increases operational efficiency, creates net new revenue, or offers better experiences, Gartner advises linking use cases to KPIs.

According to a recent survey of more than 2,500 CEOs, 38% of them stated that their main objectives for generative AI projects are customer experience and retention. This was followed by a 7% business continuity, a 17% cost reduction, and a 26% revenue rise.

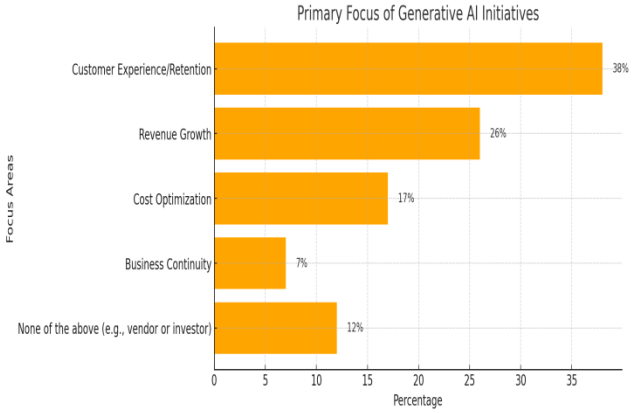

Figure 2: Primary Focus of GAI

Nonetheless, the challenges section examines inherent difficulties such mode collapse, evaluation measures, ethical considerations, data quality, and generalization problems [8]. A review of recent developments and possible paths is conducted, covering techniques like interpretability integration, few-shot and zeroshot learning, cross-domain and cross-modal generation, and Progressive GANs.

This review paper highlights the risks related to Generative AI, its applications in different sectors, and its effects on job market.

2. Risks Related to GAI

The hazards of generative AI are considerable and quickly developing. The technique has already been used by a variety of threat actors to create "deep fakes" or duplicates of objects and artifacts to facilitate ever-more complex schemes [9]. ChatGPT and similar techniques are trained using enormous volumes of publicly available data. Since the General Data Protection Regulation (GDPR) and other copyright laws are not meant to be compatible with them, it is crucial to keep an eye on how your business uses the platforms. [10]. Oversight concerns to monitor are:

2.1 Lack of transparency

Even the companies who developed ChatGPT and generative AI don't always know how they work, and their models are unexpected.

2.2 Accuracy

Responses from generative AI systems may be erroneous or fraudulent. Make sure all outputs are accurate, appropriate, and beneficial before depending on or sharing information in public.

2.3 Bias

To identify biased outputs and address them in compliance with company policy and any relevant legal requirements, you must have policies or processes in place.

2.4 Intellectual property and copyright

For confidential corporate information, there are currently no validated data governance or protection guarantees. Users should expect that any information or queries they submit into ChatGPT and its competitors will be made public, and we advise companies to take precautions to prevent inadvertently disclosing intellectual property.

2.5 Cybersecurity and Fraud

Businesses must put mitigation measures in place and be ready for hostile actors to leverage generative AI systems for fraud and cyberattacks, such as those that social

engineer workers using deepfakes. To find out how much AI-related breaches are covered by your current policy, speak with your cyber-insurance provider.

2.6 Sustainability

The power consumption of generative AI is high. To assist you achieve your environmental goals, pick suppliers who use high-quality renewable energy and reduce power use.

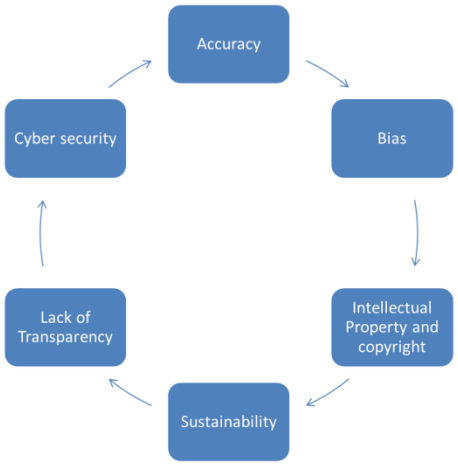

Figure 3: Risks related to GAI

3. Applications of GAI

Generative artificial intelligence is used in a variety of industries, including manufacturing, advertising and marketing, financial services, media and entertainment, software development, and health care. Let's look into how professionals in various areas use generative AI.

3.1 Healthcare

Every facet of the pharmaceutical and healthcare sectors is impacted by generative artificial intelligence, from finding and creating new, life-saving medications to customizing treatment plans for individual patients to offering forecasts for the onset of diseases [11].

3.2 Marketing

Advertising and marketing experts may use generative AI to create marketing-related text and visuals or find new ways to interact with customers, among other things [12].

3.3 Manufacturing

Generative AI may be used by professionals in manufacturing to find ways to increase output, anticipate maintenance requirements before they become problems, help engineers create better designs more quickly, and create a more reliable supply chain [13].

3.4 Software Development

A software development team may write and optimize code more rapidly and with less programming language expertise by using generative AI [14].

3.5 Media and entertainment

Media and entertainment might adopt generative AI in a variety of ways, given that the business largely generates original material, as does the technology. Generative AI may assist in the creation and editing of visual material, the creation of short highlight movies of athletic events, and the facilitation of collaboration with content management systems.

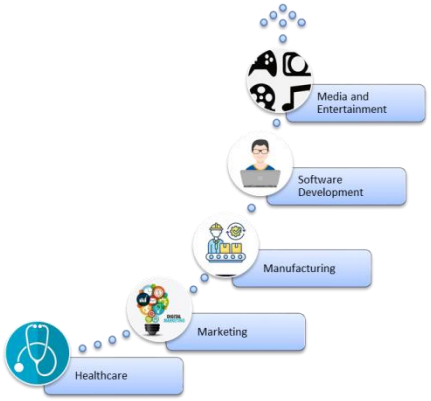

Figure 4: Applications of GAI

4. Impact on Job Market

Many people in business create some form of content. Generative AI will profoundly impact their professions, whether they are generating writing, photos, hardware designs, music, video, or something else. As a result, workers will need to become content editors, which demand a distinct set of abilities than content production [15].

Meanwhile, the way the workforce interacts with apps will evolve as they become more conversational, proactive, and interactive, necessitating a revamped user experience. Generative AI models may soon be able to propose items you didn't ask for in addition to responding to plain language queries. For instance, the model may suggest several visuals that you may use in response to your request for a data-driven bar chart. Theoretically, this will increase worker productivity, but it also challenges conventional wisdom on the need for individuals to lead strategy development [16]. Industry, geography, size, and enterprise offerings will all have a significant impact on the net change in the workforce.

4. Conclusion

Some people who are excited by generative AI and prepared to accept the shift think that it has the ability to

create more new types of jobs than it replaces, despite the fact that it seems like it will eliminate millions of jobs and leave many homeless. Nevertheless, it seems that resistance is ineffective, and people have to come to terms with the fact that artificial intelligence is permeating every aspect of their lives. Since it offers effective and economic solutions, it should be used by all job positions. By automating tedious tasks and decision-making processes, it frees up employees to concentrate on more imaginative goals. Generative AI has enormous potential for advancing businesses, streamlining manufacturing, and yielding valuable insights. The use of generative AI is expanding quickly across a number of industries, including as manufacturing, cybersecurity, and logistics. Small businesses have advanced remarkably in creating mobile speech recognition software. It is essential to embrace lifelong learning, develop soft skills, be agile, and specialize in a particular subject if you want to prosper in the era of artificial intelligence. By developing these skills and adapting to the evolving job landscape, workers may thrive in the AI era and take advantage of the opportunities it offers.

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