

Generative AI: Evolution and its Future

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Abstract

Generative AI (Gen AI) is an emerging AI Technology which broadly describes machine learning systems capable of generating numerous applications in various domains. AI Users can use Gen AI for generating text, image, program code or other types of contents. The main capability of Gen AI is to produce highly realistic and complex contents that can imitate human creativity, making a valuable AI for many application domains. This paper focuses on emergence, its evolution and future of Generative AI.

Keywords: Generative AI, Gen AI, Artificial Intelligence, Machine learning.

1. Introduction

Gen AI emergence tracks from the inception of AI Robot from late 1950s, First Machine learning model was introduced by Frank Rosenblatt named “Perceptron”. Perceptron describes a basic machine learning model that can aid computers in learning a diverse range of data. [1] John McCarthy in the early 1960s introduced the LISP Program language in AI tasks. In the same decade ELIZA chatbot was invented by British scientist Joseph Weizenharem. A talking computer program to simulate the work of psychotherapists and could communicate with humans in a natural language. In 1970 research on computer vision and utilization of some basic recognition patterns was carried out.[2] In 1980 very little research was ongoing due to reduced funding. Again, in 1990 and 2000 AI had substantial growth. The Dragon system created natural speaking, the first voice recognition system. The rise of the internet in 2000 supported again the development of AI. Soft computing, neural networks has become more widely accessible and provided to invent smarter and responsive systems. Deep learning concepts in AI have practically grown since the 2010s by using machine learning to introduce multi-layered neural networks that self-train the data. After this generative AI also started rapidly developing. [3]The advent of GANS allowed AI to produce text on human speech patterns. Advancement in NLP and AI enables AI to replicate human speech in written form. First Buzz created in Gen AI was in December 2022 as Open AI launched a free preview on ChatGPT and a major revolution happened from Jan 2023 onwards.

2. Major Breakthrough in Generative AI in 2023

January 2023, Microsoft and Open AI started working on ChatGPT upgraded versions of the Bing search engine providing more relevant and accurate search results. Machine learning model using Generative Pretraining Transformer helps to train large data sets and generate human-like text output.

February 2023, Google announced the launch of BARD ‘AI Chatbot’ powered by LaMDA (Language Model for Dialogue Applications) which can handle complicated questions and provide useful answers for the users. Bard is an experimental conversational AI service that seeks to merge the breadth of the

world's knowledge with the power, intelligence, and creativity of Google's large language models. Bards draws on information from the web to provide fresh, high-quality responses to users.

March 2023, Major evolution happened in gen AI as, Microsoft announces Microsoft Dynamics 365 Co-pilot providing various business applications powered by AI. Dynamics 365 Co-pilot has an advantage on recent advancements in generative AI to automate these tedious tasks and unlock the full creativity of the workforce. Dynamics 365 Co-pilot helps CRM and ERP to work for business users to accelerate their pace of innovation and improve business outcomes in every line of business. ChatGPT introduces preview Microsoft Azure open AI services which allows developers to integrate ChatGPT directly into a host of different enterprise and end-user applications using a token-based pricing system. Microsoft Azure OpenAI elevates potential for enterprises. Usage of powerful generative models as a support tool for producing financial reports on ERP data, analytical insights on Sales data, and any other kind of analysis.[4] In the same month Open AI launched GPT-4, both as an API and ChatGPT Plus feature. Then added a plugin which can allow the bot to give answers to the users by searching the internet. Japan's First Generative AI launched by NVIDIA and Mitsui to Accelerate Drug Discovery. The project features 16 NVIDIA DGX H100 AI systems—a part of NVIDIA's NGX enterprise AI platform—to simulate high-resolution molecular dynamics and generate AI models for accelerated drug discovery. Salesforce collaborates with OpenAI, making ChatGPT available directly from within Slack. Salesforce introduces Einstein AI, the world's first generative AI for CRM. The new features help customers craft marketing emails, write support articles, and even write computer code. Stability AI has collaborated with Revel.xyz, to launch Anime, a consumer animation tool powered by Stability AI's animation technology.

In April 2023, Microsoft introduced SharePoint and OneDrive with Co-pilot integration. CueZen, a personalization engine for health, will be working with Microsoft Azure Health Data Services to revolutionize the healthcare industry. GitLab and Google Cloud collaborated to power generative AI-assisted DevSecOps features. Google's cloud unit introduces a platform integrating its threat intelligence and cybersecurity operations services with generative AI. OpenAI introduces 'Incognito Mode' on ChatGPT. AWS launched the Amazon Bedrock and Amazon Titan models, the easiest way to build and scale generative AI applications with FMs. AWS launched the general availability of Amazon EC2 Trn1n instances powered by AWS Trainium and Amazon EC2 Inf2 instances powered by AWS Inferentia2, cloud infrastructure for generative AI. Microsoft and Epic are expanding their long-standing strategic collaboration to develop and integrate generative AI into healthcare by combining the scale and power of Azure OpenAI Service1 with Epic's industry-leading electronic health record (EHR) software. Microsoft has introduced the ChatGPT-enabled security solution Security Co-pilot. Stability AI has launched a new open-source language model, StableLM. Developers can freely inspect, use, and adapt the StableLM base models for commercial or research purposes, the First of its StableLM Suite of Language Models. As well as introducing the open-source image generator Stable Diffusion, has launched the beta version of Stable Diffusion XL (SDXL) for API Customers and DreamStudio users. Google Cloud introduces Generative AI support to Vertex AI, the machine learning platform for training and deploying ML models and AI applications. Google Cloud Generative AI App Builder allows developers to quickly ship new experiences, including bots, chat interfaces, custom search engines, digital assistants, and more. In partnership with Cohere, LivePerson, a global leader in Conversational

AI, will allow enterprise brands to easily create and deploy custom Large Language Models (LLMs) that improve customer engagement and business outcomes.

In May 2023, OpenAI introduced its ChatGPT app on iOS, which is free to use and incorporates a speech-to-text feature. Stability AI has released StableStudio, releases of its premiere text-to-image consumer application, DreamStudio. Zoom has also collaborated with an investment in Anthropic, an AI safety and research company, to further bolster its federated approach to AI. WPP has teamed up with Nvidia to develop a digital advertising content engine that uses generative AI. [5] GitLab and Google Cloud teamed up to power generative AI-assisted DevSecOps features. Salesforce launches SlackGPT, embracing generative AI for the enterprise. Google partners with eDreams Odigeo on Generative AI in travel. Character.AI and Google Cloud partner to build the next generation of Conversational AI. Google partners with Adobe to bring art generation to Bard.

In June 2023, Oracle teamed with Cohere to provide Generative AI services for businesses. Meta launches Voicebox, a generative AI model for speech. Invoca introduces next-generation conversation intelligence boosted by Generative AI. Clarivate, a global organization connecting people and organizations to intelligence, has collaborated with AI21 Labs, a generative artificial intelligence (AI) company. Storyteq, the technology arm of Inspired Thinking Group (ITG), has acquired Pixelz.ai to bolster its R&D team and accelerate its generative AI capabilities. Botco.ai has introduced GenAI Chat Cloud with enterprise-grade privacy and security. OpenAI has launched an update to its ChatGPT app on iOS and iPadOS, designed to optimize the use of the entire iPad screen. Microsoft gives OpenAI's GPT models to US government cloud customers. Conversica collaborates a Generative AI Conversational Platform with Salesforce Marketing Cloud.

In July 2023, Finance automation firm Ramp acquired AI-powered Cohere. Datadog's platform to support monitoring and troubleshooting of Generative AI applications. Twilio to introduce customer-aware Generative AI through new OpenAI integration. [5] Associated Press and OpenAI partner to explore generative AI to license news stories. McKinsey has teamed with startup Cohere to help clients adopt generative AI. Google Bard launches in the EU, overcoming data privacy concerns in the region. Elon Musk has launched an AI company xAI, to compete with ChatGPT. Stability AI has introduced a sketch-to-image generative AI tool.

In August 2023, OpenAI used GPT-4 to develop an AI-powered content moderation system. Google introduces AI models from Meta and Anthropic to the cloud platform. VMware and NVIDIA unlock Generative AI for Enterprises.[6] AI21 Labs teamed with Google Cloud to integrate Generative AI capabilities with BigQuery. Twilio launched customer-aware Generative AI through new OpenAI Integration.

In September 2023, Meta Platforms launched the company's first generative AI products for consumers. Stability AI, a company mostly known for AI-generated visuals, launched a text-to-audio generative AI platform called Stable Audio. [7] Vertically focused artificial intelligence developer C3 AI Inc. has introduced a set of 28 domain-specific generative AI offerings aimed at the specific needs of industries, business processes, and enterprise systems. SoftBank seeks OpenAI tie-up as Masayoshi Son plans deal

spree after Arm IPO. OpenAI has developed a Canva plugin for its popular chatbot, ChatGPT, which taps into the broad and rapidly evolving social marketing space. Anthropic offers UK and US customers a paid version of its Claude chatbot, with perks such as priority access during high traffic.

In October 2023, DeepBrain AI, a generative artificial intelligence (AI) video synthesis provider and virtual human technology, teamed up with Amazon Web Services (AWS). Amazon collaborated with Anthropic to develop reliable Generative AI models. BackboneAI Introduces Ground-breaking Generative AI Tools for the Industrial and Automotive Sectors to Help Accelerate Online Sales. Jasper has expanded to become an end-to-end AI co-pilot for marketing teams. People.ai has launched SalesAI, a fully integrated generative AI sales solution that will revolutionize how company leaders approach revenue, team structure and coaching, and go-to-market execution. Regie.ai introduces a new AI model to prevent AI hallucinations in sales content generation. Canva partnered with Runway to create generative AI videos. SymphonyAI introduces breakthrough predictive and generative AI-powered case management for financial crime investigation.

In November 2023, Sequoia and Typeface collaborated to empower HR leaders with Generative AI on the Sequoia people platform. Samsung introduces ChatGPT alternative Samsung Gauss to generate text, code, and images. TechSmith Audiote introduces generative AI features for instant content creation. Google is planning with new generative AI features for YouTube. Elon Musk's new AI venture, xAI, unveiled its first artificial intelligence or AI chatbot technology, Grok.

In December 2023, EVerse.AI launched CowGPT first Generative AI Application built for dairy, veterinary, and animal husbandry space. A Start-up, Hitch Interactive focused on AI, robotics, fintech, and the metaverse, has integrated AI into Web3 technology. Google Cloud teams with Mistral AI on generative language models. Meta introduces a generative AI-based photo background editing feature to Instagram. OpenAI launched a new governance model for AI safety oversight. Neo4j, a graph database and analytics company, has collaborated with AWS to drive accurate, transparent, and explainable GenAI. AWS teamed with Amgen on Generative AI solutions to accelerate advanced therapies.

3. Future of Gen AI

The year 2023, marked a remarkable revolution using generative AI. Generative AI is shaping the future. Gen AI offers for making the world a better living place. Gen AI using machine Learning have exhibited some incredible capability to generate computer programs to create realistic images from data. As we begin with the year 2024, rapid revolution is expected, introducing new applications that promise to transform technology. Gen AI is an incredibly powerful tool that will play an important role in the transformative potential of artificial intelligence. Now GPT 4 trained on over trillions of parameters. Google Palm2 and Deep Minds gopher are training billions of data with various parameters. Now, a huge amount of data sets can be good for Large language model. Generative design allows designers to simply take input requirements and generate prototypes as digital twins and testing themes in parallel in order to come up with more robust, effective product designs. Generative Video is the new future where creation of video contents can be a cake walk by using Gen AI video tools. Rather than traditional video editing which is expensive. Generative speech and audio also will be revolutionized by using Gen AI by using subtly robotic qualities which will help to create sophisticated AI generated speech to make better

simulating tones and make up human speech. Multimodal model is a new trend for upcoming versions of ChatGPT which are capable of understanding and interpreting images or taking voice commands. Meta is also bringing new tools for image, text, audio and to train datasets. Prompt engineers are using Gen AI systems capable of creating text, program code and graphics. There is huge demand in the year 2023 and likely more in 2024. Autonomous agents offer a new approach to build generative AI models. These tools can generate content without the need for human provided prompts. Which provides creative outputs. Augment reality and generative AI have potential to create more powerful experiences. It can create a virtual world that is so realistic it is difficult to differentiate and also allow you to interact with the virtual world in real time. Generative AI can play a vital role in education sectors targeting AI generate content to evolve in response to results, feedback and student behaviour. AI tools can help in producing student learning processes, technical support, research assistance and student engagements.

4. Conclusion

Generative AI using machine learning is capable of creating novel, diverse, and distinct content, and is revolutionizing numerous domains in various industries. Gen AI demonstrates their capabilities in various Video, speech, data, Multi model Augmented reality and in even education sectors and many more. This hub is in its initial stage, and a lot of explorations are expected. computational techniques that are capable of generating seemingly new, meaningful content such as text, images, or audio from training data. Products such as Open AI ChatGPT have the potential to enhance the search experience, reshape information generation and presentation methods, and become new entry points for search engines. New AI tools have the potential to change the way workers perform and learn, but little is known about their impacts on the job. Generative AI can increase productivity, with large heterogeneity in effects across domains.

5. Conflict of Interest

As the authors of the research paper, states that there is no conflict of interest.

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