Generative AI (Gen-AI)

Generative AI, also known as Generative Artificial Intelligence, is an innovative subset of artificial intelligence that focuses on creating new and original content. Unlike traditional AI approaches that rely on existing data, generative AI models generate novel outputs that resemble human-created content.

By utilizing advanced algorithms and deep learning techniques, generative AI models can analyze vast amounts of data and capture underlying patterns and structures. This understanding enables them to generate new samples that exhibit similar characteristics and distributions as the input data.

Deep Learning Resurgence in 2010s with introduction to Generative Adversarial Networks

(GANs) and development of transformer models, such as the Bidirectional Encoder Representations from Transformers (BERT) have given a significant fillip to generative models. From rule-based systems to deep learning models, Gen-AI has come a long way with copious amounts of data, enhanced computational power and advancements in neural networks.

Examples of applications with generative models are given as under:

Generative AI for Text Generation and paraphrasing: Rytr.me, Quillbot.com, ChatGPT

Generative AIML with Audio data: AssemblyAI Playground (Speech-to-Text or STT), Murf.ai (Text-to-Speech or TTS)

Generative AIML for Image Data: DALL-E, Stable Diffusion

Generative AIML for other types of unstructured Data: D-ID (Text-2-limited-video), Tome (text-2-ppt)
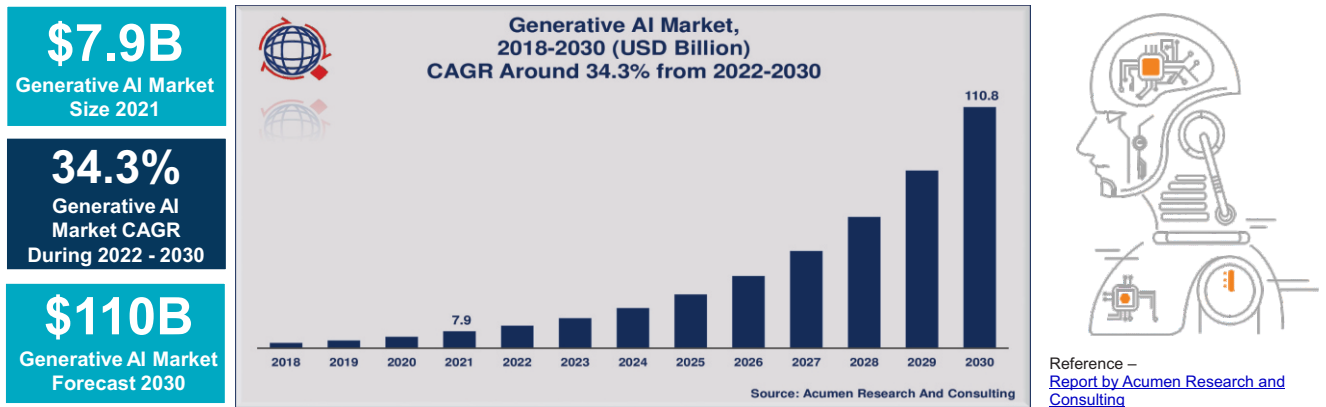
Integrative Generative AIML: RunwayML, Narakeet

State of Generative AI

The global generative AI market witnessed a significant growth trajectory, with a market size of USD 7.9 billion in 2021. It is projected to reach USD 110.8 billion by 2030, exhibiting a robust CAGR of 34.3% from 2022 to 2030. North America dominated the generative AI market, holding a market share of over 40% in 2021. The Asia-Pacific region is expected to experience substantial growth, with an estimated CAGR of approximately 36%

from 2022 to 2030. Notably, China attracted considerable private funding, amounting to USD 17.21 billion in 2021. In terms of components, the software sub-segment dominated the market, accounting for over 65% of the total market share in 2021. The media and entertainment sector proved to be a lucrative end-user, generating a revenue of US$ 3.3 billion in 2021.

Panel I: Generative AI Market Size

$7.9B
Generative AI Market Size 2021

34.3%
Generative AI Market CAGR During 2022 - 2030

$110B
Generative AI Market Forecast 2030

Generative AI Market, 2018-2030 (USD Billion)
CAGR Around 34.3% from 2022-2030

110.8

7.9

2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

Source: Acumen Research And Consulting

Reference –
Report by Acumen Research and Consulting

How Companies are utilizing AI Applications

Companies are building language models into their products and customizing them to their unique context and offerings. These language models need to become more trustworthy (output quality, data privacy, security) for full-fledged adoption.

The new stack for these applications centers on language model APIs, retrieval and orchestration, but open-source usage is increasing too. Today the stack for Large Language Model (LLM) APIs can feel separate from the custom model training stack, but these are blending together over time. Language model applications will become increasingly multi-modal. Some examples of LLMs are GPT-4, ChatGPT, GPT-3 by OpenAI, Bloom by BigScience, LaMDA by Google, MT-NLG by NVIDIA/Microsoft and LLaMA by MetaAI.

Industry/Sector Use Cases

McKinsey's Global Survey on AI (1,684 participants in organizations adopting AI in at least 1 business function; reference period 11-21 April 2023) titled "The state of AI in 2023: Generative AI's breakout year" found that organizations are increasingly adopting Gen-AI. Sales and marketing, product and service development, and service operations, came out to be the most reported business functions where Gen-AI tools are being deployed.

Some sector/industry specific use cases of GenAI are documented below:

Banking - Risk Assessment and Credit Scoring, Investment Strategies and Portfolio Management, Document Generation and Compliance, Chatbot-Based Financial Advice

Retail and CPG - Product Design and Innovation, Personalized Marketing and Recommendations, Visual Merchandising and Store Layout Optimization, Chatbot Enabled Advice through Customer Sentiment Analysis

Telecom - Voice and Speech Analytics, Service Personalization, Customer Service and Support, Regulatory Compliance

Manufacturing - Product Design and Optimization, Root Cause Analysis, Automated Report Generation, Warranty and Claims Analysis

GenAI – Deployment after a thoughtful consideration

Feasibility analysis of implementing GenAI in organisations should consider integration and scalability issues with a cost-benefit analysis of potential benefits against incurred cost (say enhanced customer acquisition outweighing computational infrastructure), availability and quality of data with computational resources and lastly, the expertise and skill set in deploying efficacious generative model engendered business solutions. Considering the above factors, organizations can look to implement the below mentioned variations of Generative AI models (in increasing order of complexity and cost implications) –
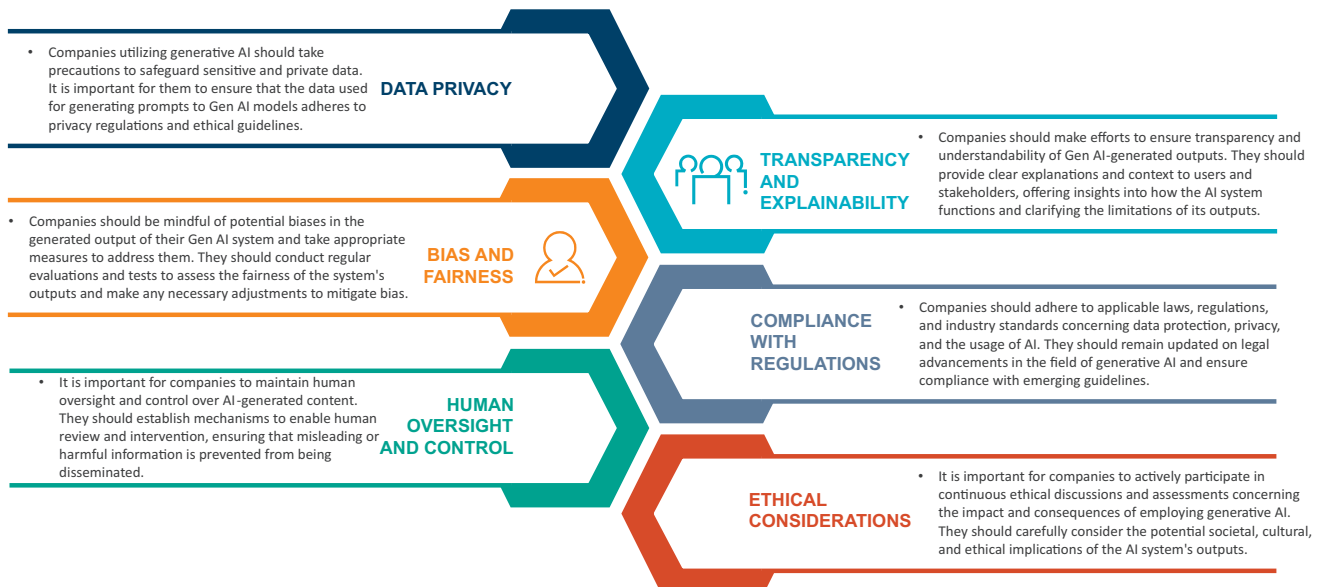
01	Pretrained Generative AI Models
02	Fine Tuned Generative AI Models using Pretrained models as the foundation
03	Foundation Model using Custom Training Corpus

Governance issues in Gen-AI with respect to, inter-alia, regulatory compliance, bias, ethics, data privacy and explanability are other considerations for full-blown adoption of these tools.

Panel VI: Governance Issues - Gen AI

DATA PRIVACY
- Companies utilizing generative AI should take precautions to safeguard sensitive and private data. It is important for them to ensure that the data used for generating prompts to Gen AI models adheres to privacy regulations and ethical guidelines.

TRANSPARENCY AND EXPLAINABILITY
- Companies should make efforts to ensure transparency and understandability of Gen AI-generated outputs. They should provide clear explanations and context to users and stakeholders, offering insights into how the AI system functions and clarifying the limitations of its outputs.

BIAS AND FAIRNESS
- Companies should be mindful of potential biases in the generated output of their Gen AI system and take appropriate measures to address them. They should conduct regular evaluations and tests to assess the fairness of the system's outputs and make any necessary adjustments to mitigate bias.

COMPLIANCE WITH REGULATIONS
- Companies should adhere to applicable laws, regulations, and industry standards concerning data protection, privacy, and the usage of AI. They should remain updated on legal advancements in the field of generative AI and ensure compliance with emerging guidelines.

HUMAN OVERSIGHT AND CONTROL
- It is important for companies to maintain human oversight and control over AI-generated content. They should establish mechanisms to enable human review and intervention, ensuring that misleading or harmful information is prevented from being disseminated.

ETHICAL CONSIDERATIONS
- It is important for companies to actively participate in continuous ethical discussions and assessments concerning the impact and consequences of employing generative AI. They should carefully consider the potential societal, cultural, and ethical implications of the AI system's outputs.

Enumerated below are the steps for successful implementation of Gen AI are as under:

- Identify **Business Needs/Specificities** and Use Cases
- Collect and **Preprocess Data**
- Integrate the Model into **Business Processes** and **Data**
- Zero in on the Right Kind of **Generative AI**
- **Fine-Tune** the Model
- **Monitor** and **Adjust** the Model Over Time

Our point of view – actions for management consulting firms in particular and businesses in general

The note above summarizes briefly the ethos of GenAI in transforming the business landscape. This transformation however is fraught with risks and requires a careful deliberation into the cost-benefit framework of implementing GenAI . In particular, focusing on business consulting services, GenAI

has the potential to offer deep data driven analysis and insights to improve decision making, generating AI-created simulations for scenario planning, publishing automated reports and BI dashboards, drafting reports and streamlining communications using NLP, and client risk assessment. Nonetheless, the human touch of empathy, creative thinking, emotional quotient, trust and ethical awareness are focus areas that the organizations should be mindful of in implementing GenAI solutions.

Protiviti, a global consulting firm, boasts of an adept data science team that has delivered multifaceted projects across different sectors and business and government clients, leveraging state-of-the-art machine learning models.

Panel VIII: Why Protiviti

Leveraging Our Experience on Data Science

- **Deep experience of working on data science projecs across industry -** Financial Services, Media, Telecom, Ecommerce, Retail and Manufacturing

- We have successfully delivered **Machine Learning Model Development** and **Validation projects**

- **Delivered over 150+ analytics projects** across both **India** and **Middle East** using various advanced analytics and data visualization tools

- Protiviti has a **140+ data analytics experts** with PhDs Data Scientists and certified professionals in Data Analytics

- Protiviti has **deep competency in statistical modelling, forecasting** and **optimization techniques**

About Protiviti

Protiviti (www.protiviti.com) is a global consulting firm that delivers deep expertise, objective insights, a tailored approach and unparalleled collaboration to help leaders confidently face the future. Protiviti and its independent and locally owned Member Firms provide clients with consulting and managed solutions in finance, technology, operations, data, analytics, digital, governance, risk and internal audit through its network of more than 85 offices in over 25 countries.

Named to the 2023 Fortune 100 Best Companies to Work For® list, Protiviti has served more than 80 percent of Fortune 100 and nearly 80 percent of Fortune 500 companies. The firm also works with smaller, growing companies, including those looking to go public, as well as with government agencies. Protiviti is a wholly owned subsidiary of Robert Half (NYSE: RHI). Founded in 1948, Robert Half is a member of the S&P 500 index.

Our India Offices:

Bengaluru
Umiya Business Bay - 1, 9th Floor
Cessna Business Park, Outer Ring Road
Kadubeesanahalli, Varthur Hobli
Bengaluru – 560 049
Karnataka, India
Phone: +91.80.6780.9300

Chennai
10th Floor, Module No. 1007
D Block, North Side, Tidel Park
No. 4, Rajiv Gandhi, Salai,
Taramani, Chennai - 600 113
Tamil Nadu, India
Phone: +91.44.6131.5151

Gurugram
15th Floor, Tower A,
DLF Building No. 5, DLF Phase III
DLF Cyber City, Gurugram – 122 002
Haryana, India
Phone: +91.124.661.8600

Hyderabad
Q City, 4th Floor, Block B, Survey
No. 109, 110 & 111/2 Nanakramguda
Village Serilingampally Mandal, R.R.
District, Hyderabad – 500 032
Telangana, India
Phone: +91.40.6658.8700

Kolkata
PS Srijan Corporate Park, Unit
No. 1001, 10th Floor, Tower - 1,
Plot No. 2, Block - EP & GP
Sector-V, Bidhannagar,
Salt Lake Electronics Complex,
Kolkata –700 091
West Bengal, India
Phone: +91.33.6657.1501

Mumbai
1st Floor, Godrej Coliseum
A & B Wing
Somaiya Hospital Road
Sion (East) Mumbai – 400 022
Maharashtra, India
Phone: +91.22.6626.3333

Noida
Windsor Grand, 16th Floor
1C, Sector - 126 Noida
Gautam Buddha Nagar- 201313
Uttar Pradesh, India
Phone: +91.120.697.2700

protiviti®