

# The Age of Generative AI Has Begun

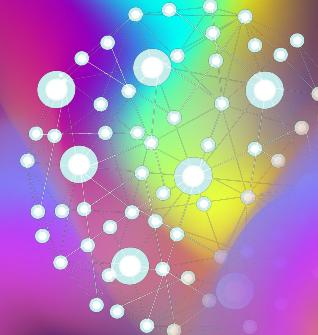
Become a Certified Cloud Applied  
Generative AI Engineer

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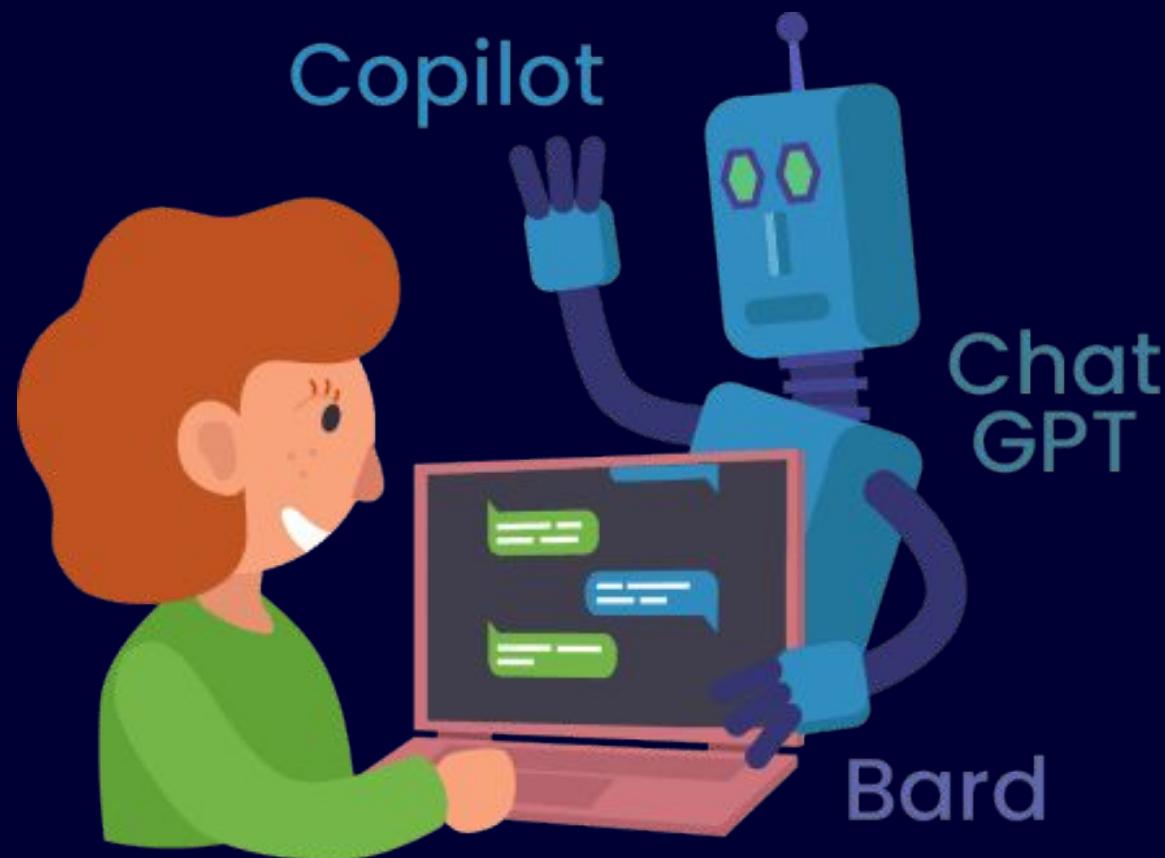
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# Generative AI Has Changed The World In One Year



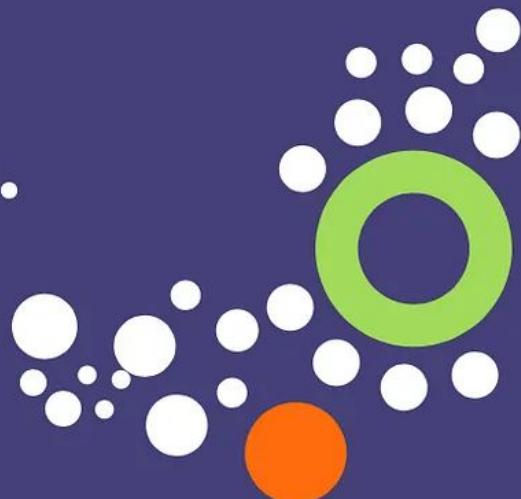
# Could AI Create a One-Person Unicorn?

The AI revolution has already minted dozens of unicorns—startups valued at \$1 billion before going public. Now it will create a whole new type of startup: **The One-Person Unicorn**

There comes a time  
we need to stop reading the  
books of others.

**And write our own.**

- Albert Einstein



# Audacious Leadership

## Leading in a AI World

# **Audacious Leadership: Empowering You to Soar**

**Why Being Bold is Essential for Men and Women  
in Leadership Who want to Change Pakistan**

**An audacious person is someone who is extremely bold, daring, and fearless. They are willing to take risks or do something that may be seen as unconventional or risky.**

**The greatest leaders find power in audacity and use it for good, not for feeding their ego.**

# Being Bold Allows You To

**Command attention:** A confident, audacious leader automatically gains more attention and credibility.

**Break through barriers:** Courageous decisions often lead to the breaking down existing, unfair structures.

**Inspire others:** Audacity has a ripple effect; it encourages others to be audacious in their professional lives as well.

# **Audacious Leadership**

## **Empowering Women to Soar: Women Facing the Double Standard**

The unfortunate reality is that audacious women often face a double-edged sword. If you're too bold, you will risk being labeled aggressive, bossy, or emotional.

If we're too passive, they risk going unnoticed and unappreciated.

This “Goldilocks Dilemma” makes audacity a tricky tightrope to walk for many women. But given that the scales have been tipped against women for so long, a little audacity can help balance them back.

# AI helps the world's biggest tech firms smash \$10 trillion market capitalization ceiling — Nvidia replaces Facebook as the new kid on the block while Microsoft displaces Apple at the helm

News

By Keumars Afifi-Sabet published 2 days ago

Meta has yet to go above \$1 trillion, despite recently pivoting to generative AI



# Sam Altman to raise \$7tn to make super AI chips in 'wildly ambitious tech initiative'

Sam Altman plans to solve issues that hinder OpenAI's growth

By Web Desk | February 10, 2024



OpenAI CEO Sam Altman speaks during a keynote address announcing ChatGPT integration for Bing at Microsoft in Redmond, Washington, on February 7, 2023. — AFP

OpenAI Chief Executive Officer (CEO) Sam Altman is in talks with various officials including the government of United Arab Emirates, to raise billions of dollars, to increase the world's ability to build cutting-edge semiconductors and fuel artificial intelligence AI.

According to a *Wall Street Journal* report, Altman's "wildly ambitious tech initiative" would need to raise nearly \$7 trillion, *Fox News* reported.

# Microsoft CEO Satya Nadella Wants To Train 2 Million People In India With AI Skills

Robert Hart Forbes Staff

I cover breaking news.

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Feb 7, 2024, 06:21am EST

**TOPLINE** Microsoft on Wednesday announced plans to train millions of people in India with skills in artificial intelligence, as countries and companies ramp up investment to future-proof workers and capitalize on the opportunities provided by a technology experts warn will kill off jobs and deepen inequality.



# 'India's Internet economy to reach \$1 trillion by 2030'

Updated - June 06, 2023 at 08:03 PM. | Bengaluru, June 6

The confluence of three crucial forces has positioned the Internet economy for acceleration

BY BL BENGALURU BUREAU



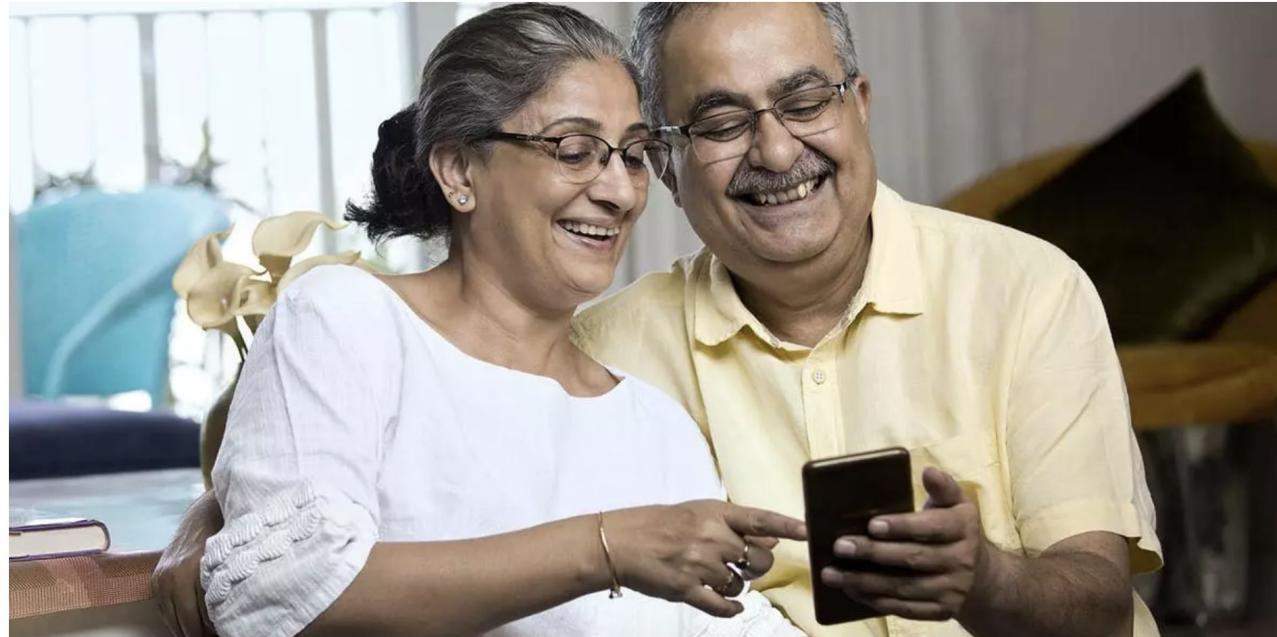
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# GenAI: The Fastest Adopted Technology In History

- In a report, 2023 Generative AI in the Enterprise, published November 21, said **two-thirds** of survey respondents already were using generative AI.
- The rapid uptake of this technology is largely driven by executives recognizing its potential to significantly boost productivity. They are actively encouraging their leadership teams to deploy it and are dedicating considerable corporate resources for its implementation. The momentum for adoption is emanating from both upper management and employees at various levels within the organizations.
- Adoption will climb to **77.8 million users in the first two years**, more than doubling the adoption rate of both tablets and smartphones, according to our forecast.

# **Generative AI could add up to \$4.4 Trillion Annually to Global Economy**

McKinsey's latest research estimates that generative AI could add the equivalent of \$2.6 trillion to \$4.4 trillion annually across the 63 use cases analyzed by McKinsey -- by comparison, the United Kingdom's entire GDP in 2021 was \$3.1 trillion.



McKinsey  
& Company

The logo of McKinsey & Company is displayed within a circular frame. The frame has a textured, light-colored background, possibly resembling stone or concrete. The company name "McKinsey" is written in a large, serif font, and "& Company" is written below it in a slightly smaller, bold, serif font. The entire logo is set against a dark blue background with a subtle rainbow gradient effect at the top right.

One million machine  
learning specialists  
are needed by 2027

Over Half of all Jobs  
Driving the US Economy  
will be Significantly  
Impacted by AI

# AI Will be the Biggest Wealth Creator in History

- AI will be the greatest wealth creator in history because artificial intelligence doesn't care where you were born, whether you have money, whether you have a PhD.
- It's going to destroy barriers that have prevented people from moving up the ladder, and pursuing their dream of economic freedom.
- It's not that if you don't jump on it now, you never can.
- **It's that now is the greatest opportunity for you to capitalize on it.**

# What is Generative AI?

- Generative AI (GenAI) is a type of artificial intelligence (AI) that can produce new content. It uses machine learning, deep learning, and neural networks to create a variety of data, such as: Images, Videos, Audio, Text, 3D models, Music, Speech, Software code, Product designs.
- Generative AI is a subset of AI that involves teaching machines to create something new rather than just analyzing existing data.
- ChatGPT, and Bard are examples of generative AI applications that produce text or images based on user-given prompts or dialogue.

I didn't expect ChatGPT to get so good, says Bill Gates in a chat with OpenAI CEO Sam Altman



# Artificial Intelligence (AI) Revolution

There are certain chapters of history that come to be regarded as phase transitions for humanity, moments in which cultural evolution and the course of our individual, day-to-day lives shift in entirely new directions – for better or for worse.

We tend to call these historical shifts “revolutions”; think of the Agricultural Revolution, the Industrial Revolution, the Digital Revolution.

We are currently, living through what many have begun to call the Artificial Intelligence (AI) Revolution.

# What the Age of AI Means for the World (Bill Gates)

- The development of AI is as fundamental as the creation of the microprocessor, the personal computer, the Internet, and the mobile phone.
- It will change the way people work, learn, travel, get health care, and communicate with each other.
- Entire industries will reorient around it.
- Businesses will distinguish themselves by how well they use it.
- Globally, the worst inequity is in health: 5 million children under the age of 5 die every year. That's down from 10 million two decades ago, but it's still a shockingly high number.
- Nearly all of these children were born in poor countries and die of preventable causes like diarrhea or malaria.
- It's hard to imagine a better use of AIs than saving the lives of children.

# What the Age of AI Means for the World (Bill Gates)

- Advances in AI will enable the creation of a **personal agent**. You'll be able to use natural language to have this agent help you with scheduling, communications, and e-commerce, and it will work across all your devices.
- **Company-wide agents** will empower employees in new ways. An agent that understands a particular company will be available for its employees to consult directly and should be part of every meeting so it can answer questions.
- **Global health** and **education** are two areas where there's great need and not enough workers to meet those needs. These are areas where AI can help reduce inequity if it is properly targeted.

## Risks and Problems with AI

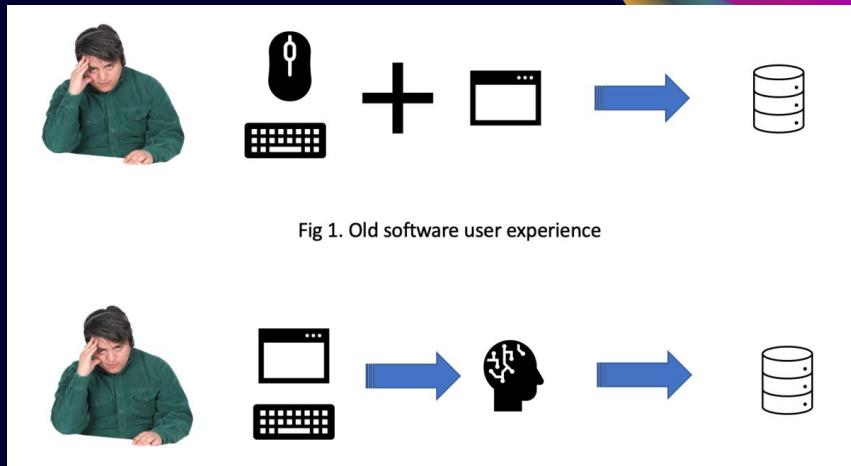
- Any new technology that's so disruptive is bound to make **people uneasy**, and that's certainly true with artificial intelligence.
- It raises hard questions about the **workforce, the legal system, privacy, bias**, and more.
- AIs also make factual mistakes and experience **hallucinations**.

# Generative AI has Transformed the Very Grammar of Our Culture

- Generative AI' has become a household phrase, spawning even buzzier abbreviations such as 'gen AI' and 'GAI.'
- The Cambridge Dictionary 2023 Word of the Year was 'hallucinate,' a nod to the tendency for LLMs to occasionally assert false information.
- OpenAI, primarily through ChatGPT and their GPT series of LLMS, have really transformed the world

# The Future of the Mouse: Will It Become Obsolete in the Age of AI?

Eventually your main way of controlling a computer will no longer be pointing and clicking or tapping on menus and dialogue boxes. Instead, you'll be able to write or speak a request in plain English. (And not just English—AIs will understand languages from around the world.)



# Rethink Everything

‘We’re suddenly in a moment  
where it’s time to rethink  
everything’

# GPTs Demo

<https://chat.openai.com/gpts>

# What are Large Language Models (LLMs)?

LLMs, are a powerful type of artificial intelligence that excels in natural language processing tasks. They are essentially giant neural networks trained on massive amounts of text data, allowing them to learn the intricacies of human language and perform impressive feats like:

- **Generating human-quality text:** This includes creative writing formats like poems, code, scripts, emails, letters, etc., often indistinguishable from human-written content.
- **Understanding language:** LLMs can analyze text structure, grammar, and semantics, allowing them to comprehend the meaning and context of information.
- **Answering your questions in an informative way:** By accessing and processing vast amounts of data, LLMs can provide comprehensive and insightful answers to your inquiries.
- **Performing various NLP tasks:** From translation and summarization to sentiment analysis and text classification, LLMs are versatile tools for manipulating and understanding language.

# Cost Involved in Developing your own LLM?

The cost of developing your own LLM can vary greatly depending on several factors, ranging from hundreds of thousands to tens of millions of dollars. Let's break down the main factors that influence cost:

## 1. Training approach

- Pre-training from scratch:
- Fine-tuning a pre-trained model

## 2. Model size and complexity

## 3. Hardware and infrastructure

## 4. Human resources

# Business Case For Fine-Tuning and using APIs

From a business perspective, fine-tuning a pre-trained LLM with your data and building your application using APIs is generally much more sensible than training from scratch for several reasons:

- **Training from scratch is incredibly expensive**, requiring massive amounts of data, powerful hardware, and expert personnel. Fine-tuning leverages the pre-trained model's existing knowledge, significantly reducing training time and cost.
- **APIs offer pay-as-you-go models**, allowing you to scale your usage and costs based on your specific needs. This avoids the upfront investment and ongoing maintenance costs associated with maintaining your own infrastructure.

# Three Approaches of Using LLMs

These are three different ways of using large language models (LLMs) to create artificial intelligence (AI) applications:

1. Using a web interface
2. Building a software based application using APIs
  - Chat Completion APIs
  - Assistant APIs
3. Developing GPTs using fine-tuning and GPT Actions

# History of UI



Punched Card



Terminal



Graphical Interface



Mobile



Conversational UI

# Generative AI Applications: GUI vs. CUI

Both Graphic User Interface (GUI) and Conversational User Interface (CUI) are essential methods for interacting with generative AI applications, but they offer different user experiences and have unique characteristics:

A **GUI** is a visual way of interacting with a computer using items like windows, icons, and buttons. The user interacts with the software through graphical elements.

In the context of generative AI, a GUI might present visual tools for creating, modifying, or interacting with AI-generated content. For instance, an AI-powered design tool could use sliders, color pickers, and text boxes to input user preferences, which the AI then uses to generate images or designs.

**CUIs** focus on natural language interaction, allowing users to communicate with systems through voice or text.

# What is an API?

An API (Application Programming Interface) is a set of rules and specifications that define how **two pieces of software can communicate and exchange data with each other**. It's like a messenger or translator that enables different systems or applications to interact seamlessly, even if they were created by different developers or written in different programming languages.

Think of an API as a restaurant menu. The menu provides a well-defined list of dishes (functions) that the kitchen can prepare, along with their ingredients (inputs) and prices (outputs). Customers (developers) can order from the menu without needing to know the inner workings of the kitchen (the underlying code).

# API-AI Nexus

The API-AI nexus refers to the powerful intersection and growing interdependence between APIs (Application Programming Interfaces) and AI (Artificial Intelligence).

## **AI-Powered APIs:**

APIs are increasingly incorporating AI capabilities, offering intelligent features.

## **APIs as Gateways to AI:**

APIs act as the primary access points for developers and businesses to harness the power of AI models and services.

# API-AI-Cloud Nexus

AI, API, and Cloud Nexus is a term that refers to the combination of artificial intelligence (AI), application programming interfaces (APIs), and cloud computing to create generative AI applications.

Cloud computing is the delivery of computing services, such as servers, storage, databases, networking, software, analytics, or AI, over the internet. Cloud computing allows users to access and use these services on demand, without having to buy or maintain their own hardware or software.

AI, API, and Cloud Nexus is a paradigm that enables rapid and creative development of generative AI applications, as well as efficient and cost-effective management of data and resources.

# Generative Engineering

- GenEng revolution being led by developers who build deep proficiency in how to best leverage and integrate generative AI technologies into applications.
- GenEng practitioners will need to have many of the same skills of traditional application development, including scalable architecting, integrating enterprise systems, and understanding requirements from the business user.
- These skills will be augmented with the nuances of building generative AI applications, such as involving the business domain experts in validating aspects of prompt engineering and choosing the right LLM based on price/performance and outcomes.

# What is Cloud Applied Generative AI Engineering?

Cloud Applied Generative AI Engineering is a term that refers to the **use of cloud computing and generative AI to create and deploy AI applications**. It means that you can leverage the power and scalability of cloud platforms, such as AWS, Microsoft Azure, or Google Cloud, to access and use generative AI models and tools, such as ChatGPT or Gemini, through APIs.

- APIs are interfaces that allow you to communicate and exchange data with AI models or services, without having to know the technical details of how they work or how to run them. You can also use APIs to customize and fine-tune generative AI models for your specific needs and data.

Cloud Applied Generative AI Engineering enables you to develop generative AI applications faster and easier, as well as manage them more efficiently and cost-effectively. It also allows you to explore and experiment with different generative AI models and capabilities, and to create innovative and engaging user experiences.

# Clear Separation of Roles

## Data Scientists

Those that create and train models

## Developers/Engineers

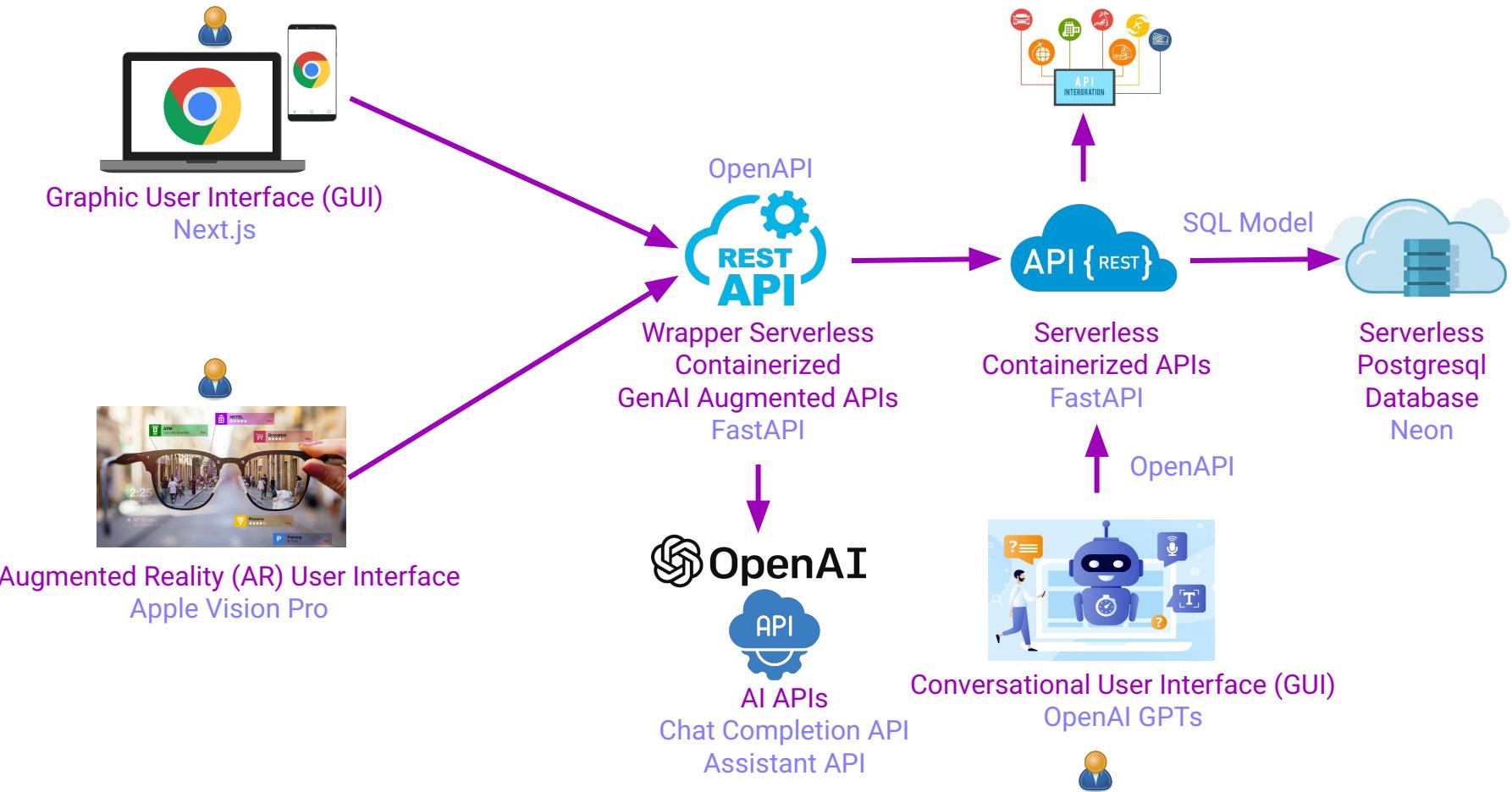
Those who use those models

**The Future of the GenAI will be determined on how it will be driven to adoption - and it will be driven by how developers adopt it**

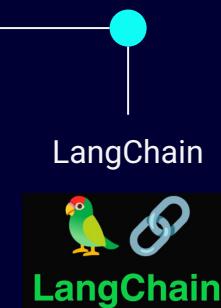
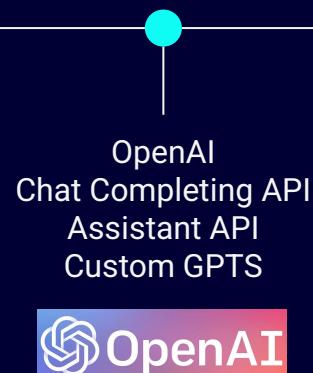
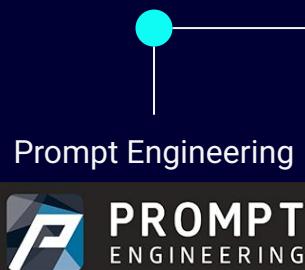


TypeScript Frontend / Python Backend

# Modern Multi Tier Architecture



# GenAI Engineering Learning Path



# GenAI Engineering GUI Learning Path

TypeScript



Next.js & React



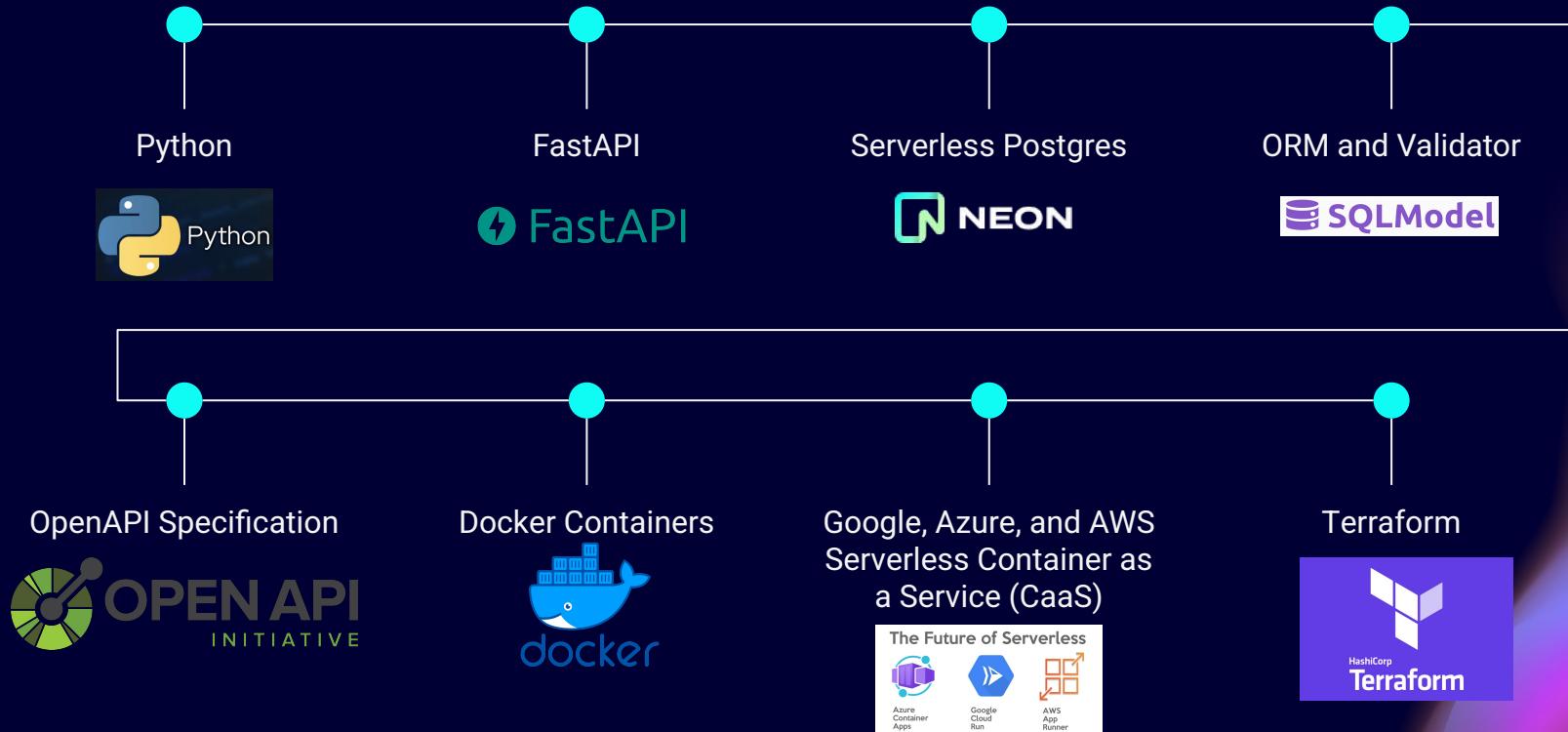
Tailwind CSS



Headless CMS



# GenAI Engineering Cloud API Learning Path





EARN  
WHILE YOU  
LEARN

# Detailed Syllabus



<https://bit.ly/genai-eng>

# One Year Program

Quarter 1: TypeScript and Python Programming

Quarter 2: Front-end Development using Next.js

Quarter 3: Custom GPT and API Deployment

Quarter 4: Advanced AI and Web 3.0 App Development

# Program Summary

- The first quarter covers TypeScript and Python programming.
- The second quarter focuses on front-end development using Next.js.
- The third quarter introduces API development, database, containers, cloud deployment, and DevOps.
- The fourth quarter covers custom GPT development.
- The program allows students to specialise in one of several areas, such as Web3, Blockchain, and GenAI Integration or Healthcare and Medical GenAI.
- The program is a hybrid program with both online and on-site classes.
- The program has a focus on practical application and development in Generative AI, rather than pure model development.
- The program also offers students the opportunity to earn money during the program through freelancing or other work.
- The program is designed to prepare students for the rapidly changing landscape of AI and to help them start earning in the field as early as the second quarter.

# Advanced Specializations

1. Web3, Blockchain, and GenAI Integration Specialization
2. Metaverse, 3D, and GenAI Integration Specialization
3. Healthcare and Medical GenAI Specialization
4. GenAI for Accounting, Finance, and Banking Specialization
5. GenAI for Engineers Specialization
6. GenAI for Sales and Marketing Specialization
7. GenAI for Automation and Internet of Things (IoT) Specialisation
8. GenAI for Cyber Security

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# Thanks

<https://docs.google.com/presentation/d/1JnXumKLv2ukZJ8elvmb40uMBiwqwkptmkgV4Z1Hx1p0/edit?usp=sharing>

