

AI Application Development using Azure and OpenAI

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Gentle reminder

You need to attend the call, please feel free to leave the room and take it.



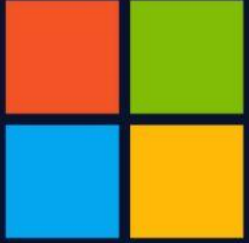


IT Crowd Fest

Huge Thanks!!



Innovation Tech Community



Microsoft AI Day 2024 -Organizers



Lalit Rawat
Microsoft MVP



Samik Roy
Microsoft MVP



Prathap Reddy
Microsoft MVP

October 5th

Microsoft Prestige Ferns Galaxy

Sponsored by



Artificial Intelligence

Machine Learning

Deep Learning

Generative AI

1956

Artificial Intelligence

The field of computer science that seeks to create intelligent machines that can replicate or exceed human intelligence

1997

Machine Learning

Subset of AI that enables machines to learn from existing data and improve upon that data to make decisions or predictions

2017

Deep Learning

A machine learning technique in which layers of neural networks are used to process data and make decisions

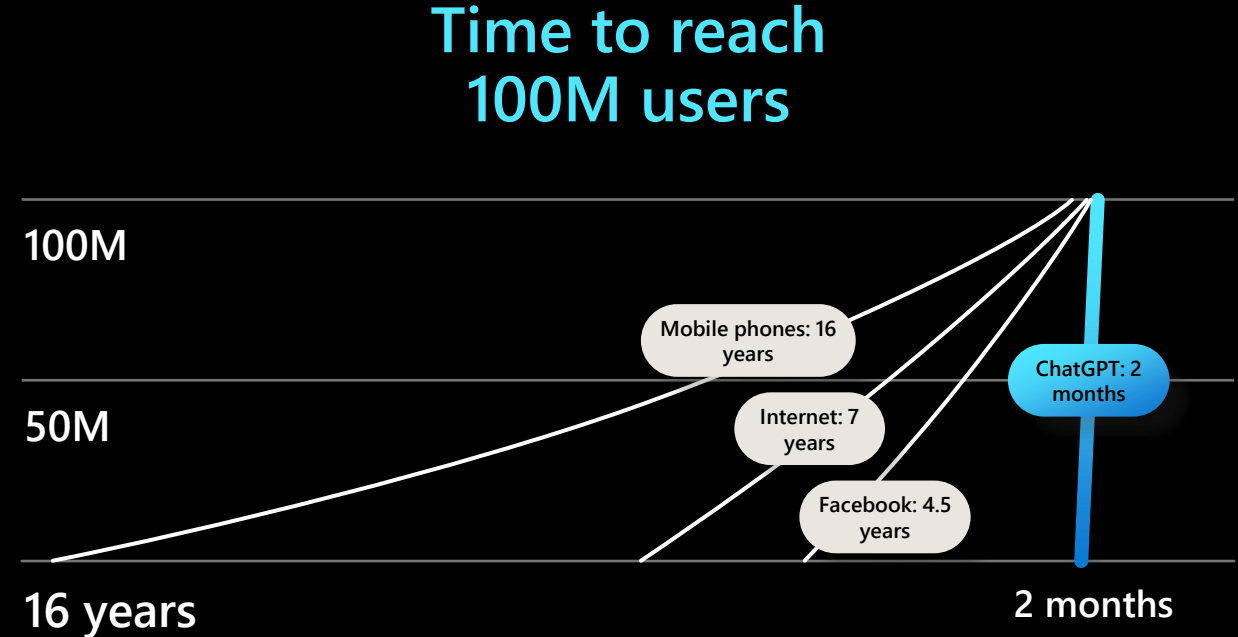
2021

Generative AI

Create new written, visual, and auditory content given prompts or existing data.

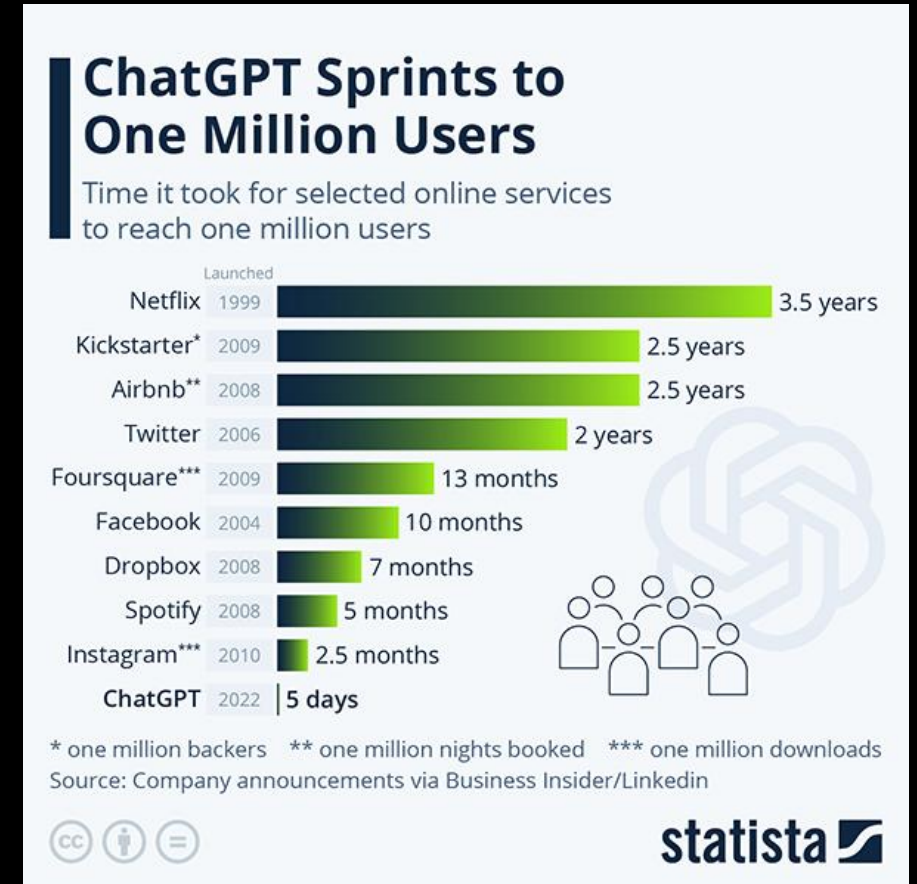
Why so much hype around ChatGPT?

- ChatGPT
 - 100m users in 2.5 months
 - Most “human-like” interaction
- What’s new about it?
 - Can generate and do “things”
 - Answer knowledge questions directly
 - Answer coding questions
 - Can correct itself, if you ask it
- Prompt examples [here](#)



What's the verdict?

- ChatGPT is the fastest-growing app of all time - Swiss bank UBS
- ChatGPT reached 100 million users just two months after launching - The Guardian
- An average of about 13 million unique visitors had used ChatGPT per day in January 2023 - Similarweb



A **large language model** is a type of artificial intelligence that can process and produce natural language texts.

It **learns** from a massive amount of text data, such as books, articles, and web pages, and **discovers the patterns and rules of language** from them.

It can do various tasks, such as answering questions, summarizing texts, writing essays, and more.

Prompt:

In 100 words or less, please tell me what a large language model is

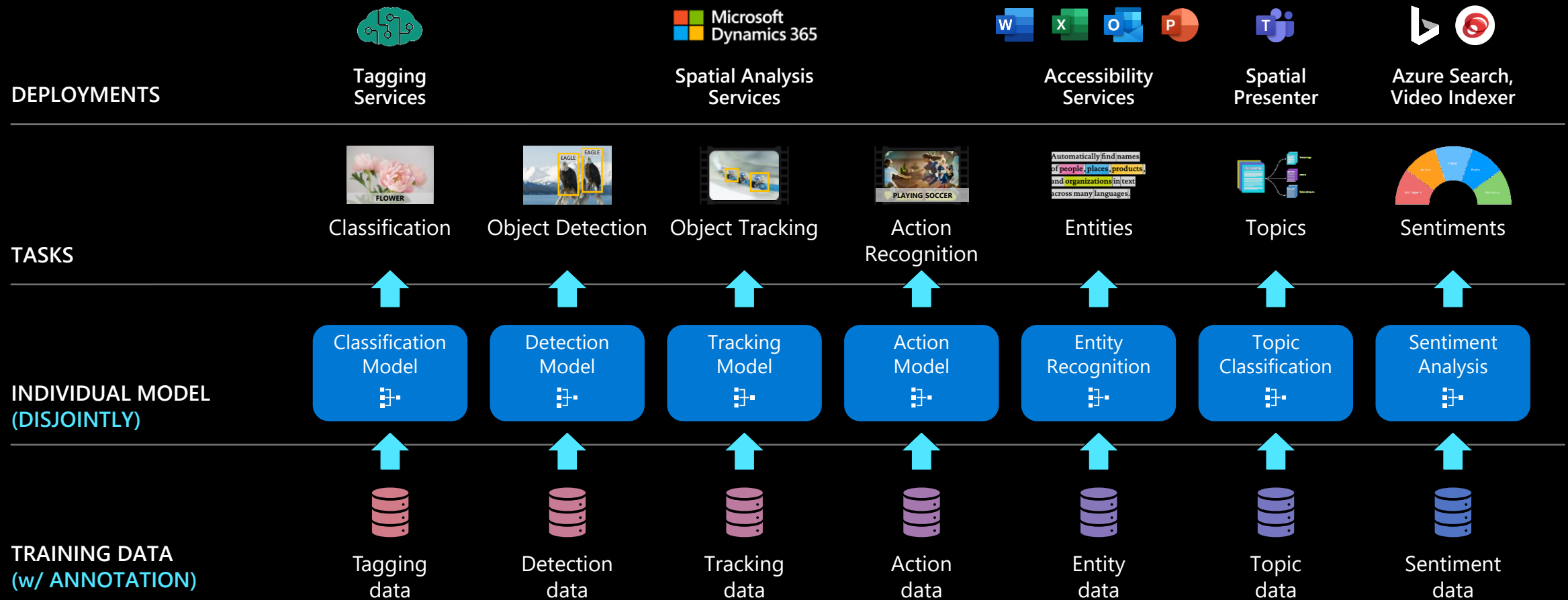
Prompt:

A futuristic abstract rendering of a large language model



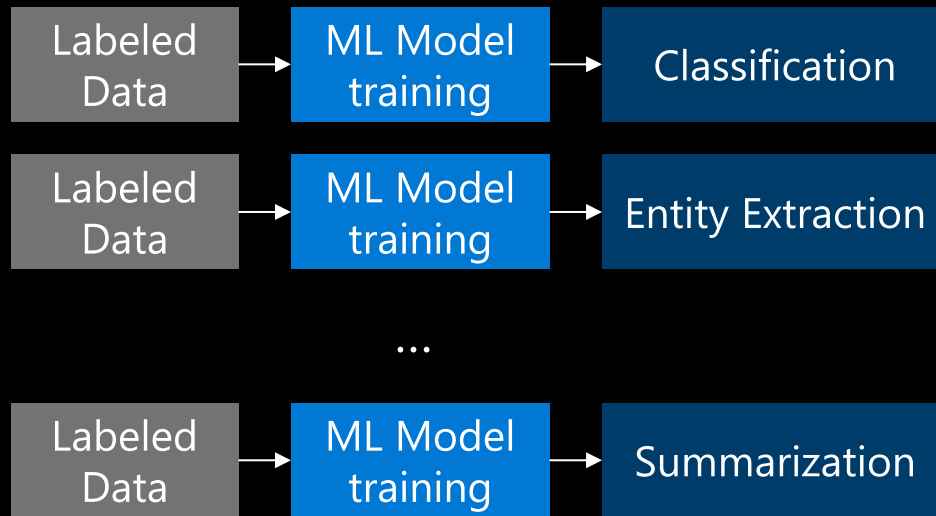
Traditional model development

High cost and slow deployment—each service is trained disjointly



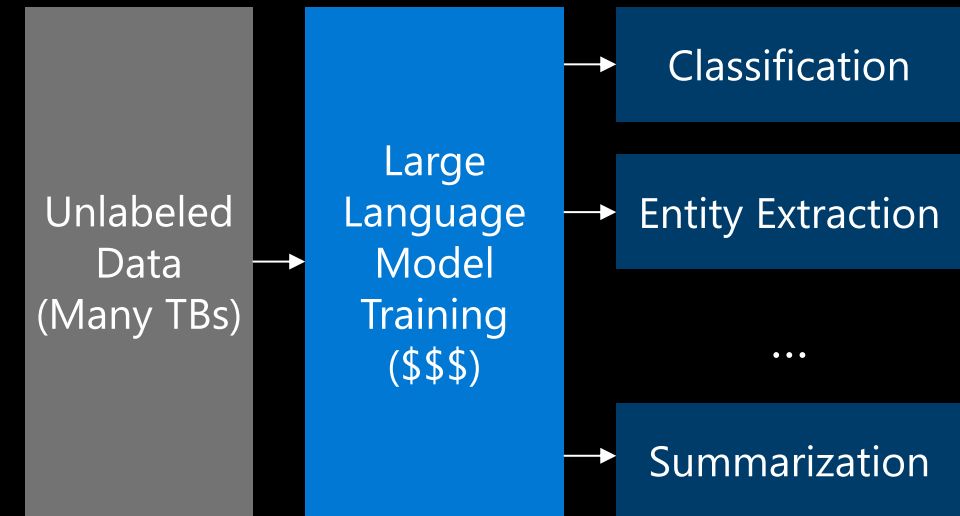
Large Language Models

Typical ML for NLP



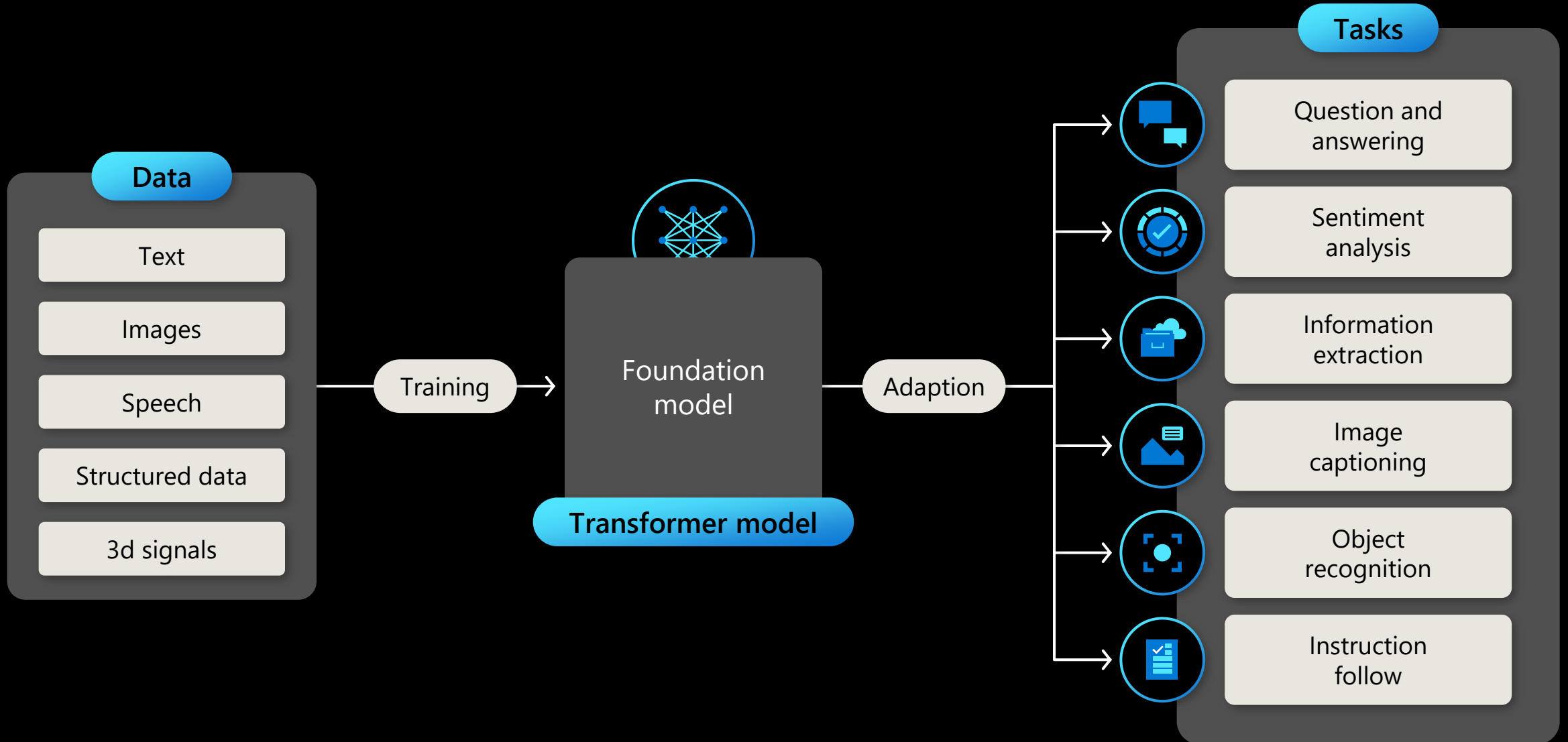
*One model per capability
Labeled data to train
Highly optimized for use case*

Large Language Models

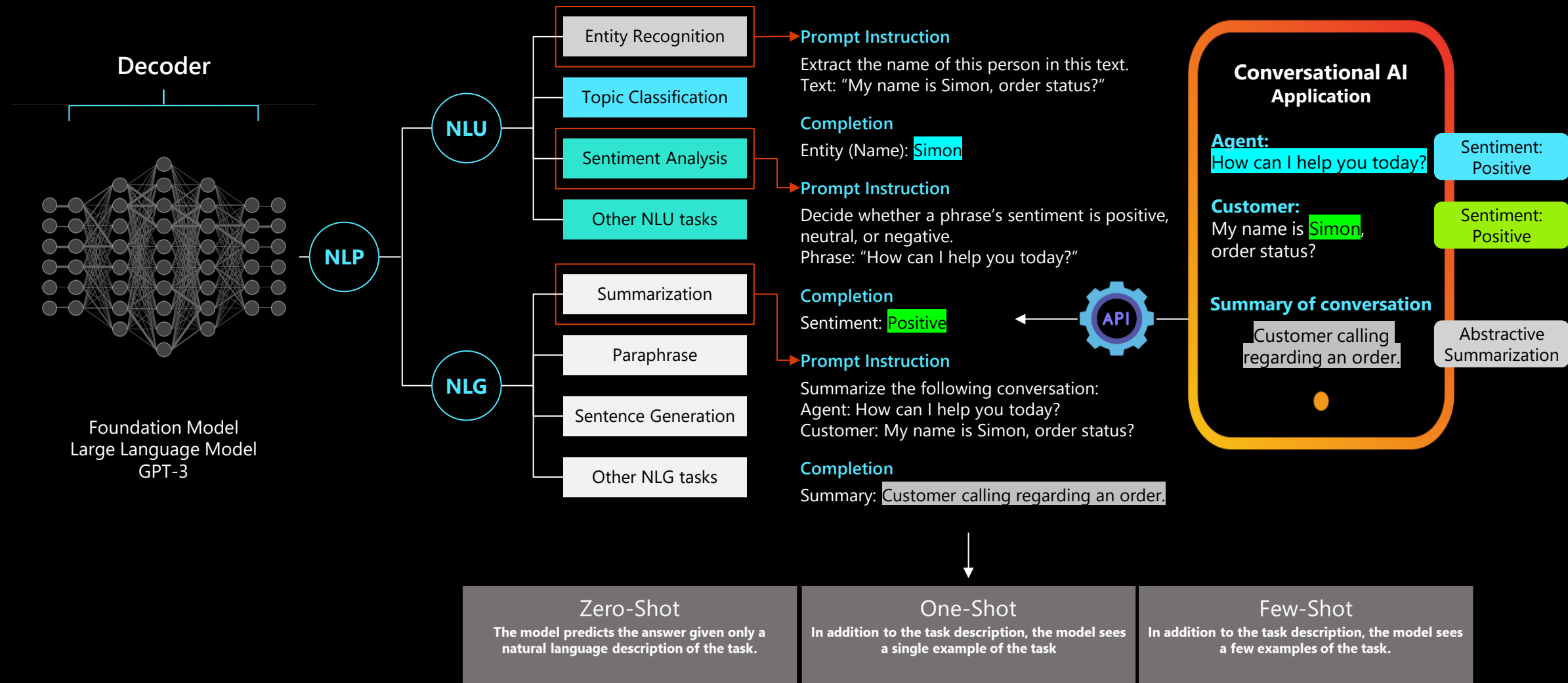


*Single model for all use cases
Describe in natural language what it should do*

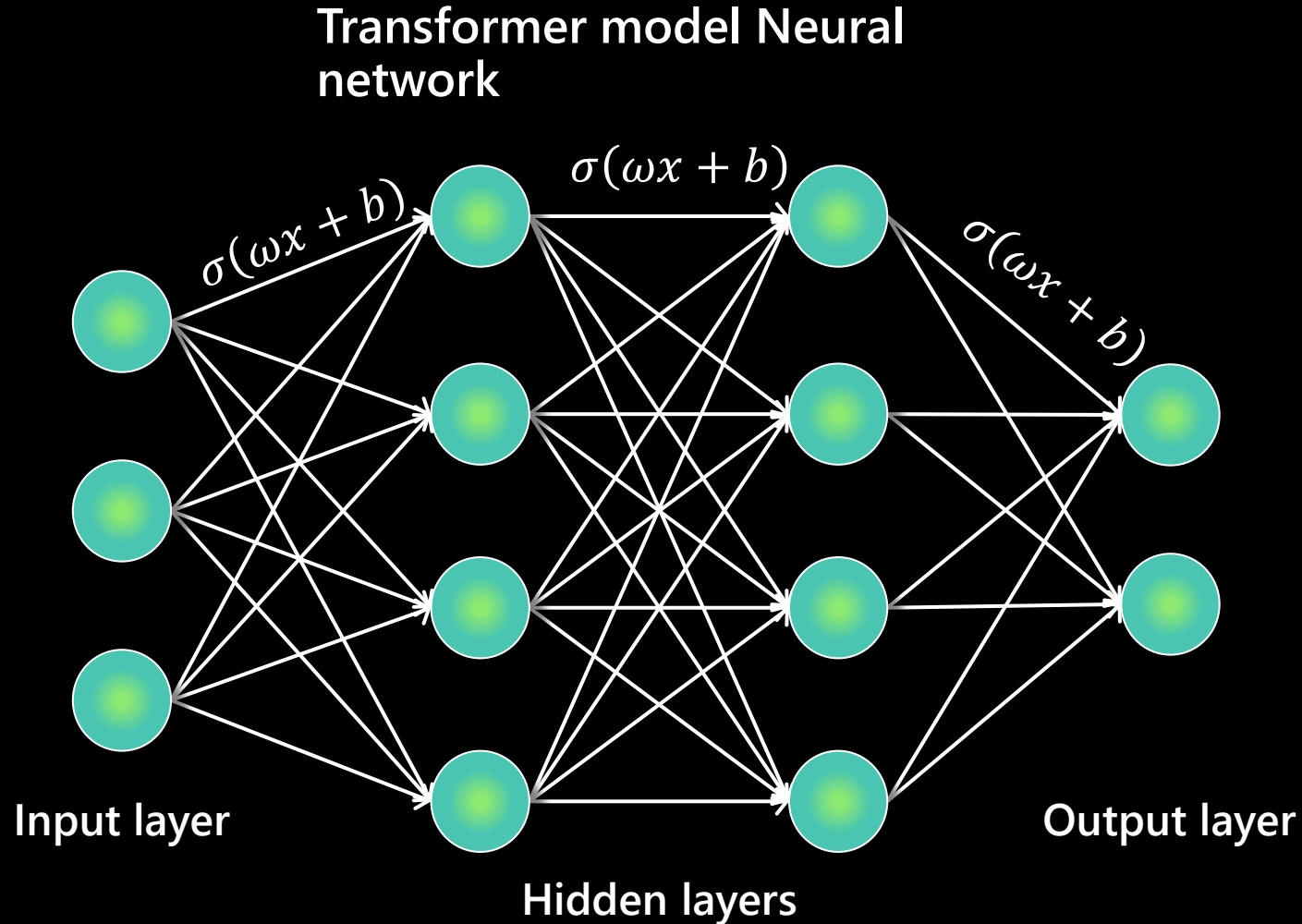
What are foundation models?



Model use out of the box - prompting



How large are they?



BERT Large - 2018

345M

GPT2 - 2019

1.5B

GPT3 - 2020

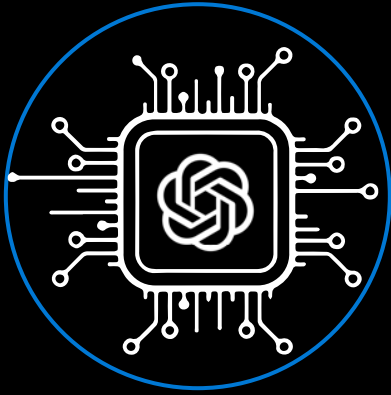
175B

Turing Megatron NLG
2021

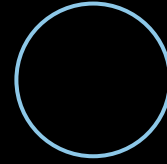
530B

GPT4 – 2023

1.4T (estimated)

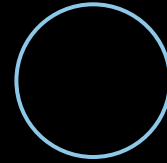


Generative AI doesn't:



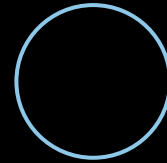
Understand language

It's just a predictive engine. It doesn't understand math, either.



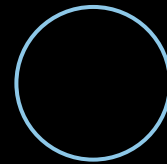
Understand facts

There are no separate modes for "information retrieval" and "creative writing".



Understand manners, emotion or ethics

Also: avoid anthropomorphizing AIs.

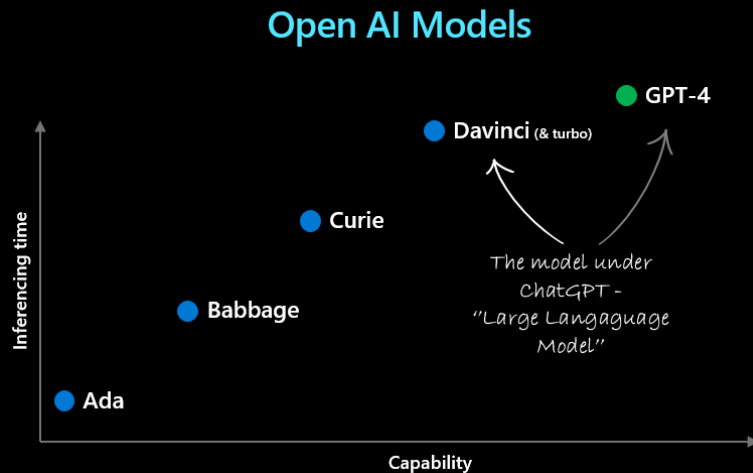


Understand anything

The output is just a combination of the training data and the prompt.



- OpenAI is an AI research and deployment company
- Focus: Groundbreaking research, Latest models & Fast innovation
- *Mission is to ensure that artificial general intelligence benefits all of humanity.*



- In 2019, Microsoft invested over \$1 billion in OpenAI
- Develop advanced AI based super computing technologies on Microsoft Azure.
- Azure is OpenAI's exclusive cloud provider
- Azure will power all OpenAI workloads across research, products and API services.

OpenAI



Generative AI

GPT-3

Prompt:

Write a tagline for an ice cream shop.

Response:

We serve up smiles with every scoop!

Codex

Prompt:

```
Table customers, columns =  
[CustomerId, FirstName,  
LastName, Company, Address,  
City, State, Country,  
PostalCode]
```

Create a SQL query for all customers in Texas named Jane
query =

Response:

```
SELECT *  
FROM customers  
WHERE State = 'TX' AND  
FirstName = 'Jane'
```

DALL·E

Prompt: A white Siamese cat

Response:



ChatGPT

What is the fastest animal on land?

the cheetah (*Acinonyx jubatus*), which can reach speeds of up to 60 miles (97 kilometers) per hour.

What makes them so fast?

Cheetahs are built for speed and have several adaptations that make them the fastest land animal: lean body, long legs, flexible spine, large nostrils and claws that don't retract.





*Ensure that artificial
general intelligence (AGI)
benefits humanity.*

Groundbreaking research
Latest models
Fast innovation



*Empower every person and
organization on the planet
to achieve more*

Enterprise features
Production SLAs
Data privacy

Azure AI

Applications



Partner Solutions

Application Platform

AI Builder



Power BI



Power Apps



Power Automate



Power Virtual Agents



Business Users

Scenario-Based Services

Applied AI Services



Bot Service



Cognitive Search



Form Recognizer



Video Indexer



Metrics Advisor



Immersive Reader

Customizable AI Models

Cognitive Services



Vision



Speech



Language



Decision

Azure OpenAI Service



Developers & Data Scientists

ML Platform



Azure Machine Learning



Mustafa Suleyman
CEO of Microsoft AI

What is (Generative) AI?

“They communicate in our languages.

They see what we see.

They consume unimaginably large amounts of information.

They have memory.

They have personality.

They have creativity.

They can even reason to some extent and formulate rudimentary plans.

They can act autonomously if we allow them.

And they do all this at levels of sophistication

that is far beyond anything that we've ever known from a mere tool.

And so saying AI is mainly about the math or the code

is like saying we humans are mainly about carbon and water.

It's true, but it completely misses the point”

Dev Machine

- Choices
 - Local
 - Dev Container
 - Virtual Machine
 - GitHub Codespace
- Docker Desktop
- Python runtime and libraries

Azure components

- Azure OpenAI
- For Application
 - Azure Container Registry
 - Azure Container Apps

Development – Part 1

- Keys and other things
- Jupyter Notebook

Development – Part 2

- Langchain
- Prompt Template

Development – Part 3

- Intro to Streamlit

Development – Part 4

- Build the website using streamlit

Development – Part 5

- Containerize the streamlit app in Docker
- Run locally and test it

Development – Part 6

- Azure Container Apps

Development – Part 7

- Make changes
- Must use DevOps such as GitHub Action

GitHub Repo

<https://github.com/wrijugh/genai-application>

wrijugh/genai-application



Shameless Plug

YouTube Channel

TechTalksWriju

