





Prompt Engineer

The background of the image is a dramatic, cloudy sky. The clouds are dark and heavy, with bright, jagged lightning bolts striking through them from the right side. The overall atmosphere is one of a powerful storm or a divine vision.

And the
AI Copilots
in Javascript



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Agenda

AI Copilots

What is LangChain?
What is an AI Agent?



Prompt Engineering

Why?



Hands-on

Will look at some code

Use AI Responsibly

Generative AI



Artificial Intelligence



Artificial Intelligence

Seeks to create intelligent machines that can replicate/exceed human intelligence

Machine Learning



Machine Learning

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

Deep Learning



Deep Learning

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

Generative AI

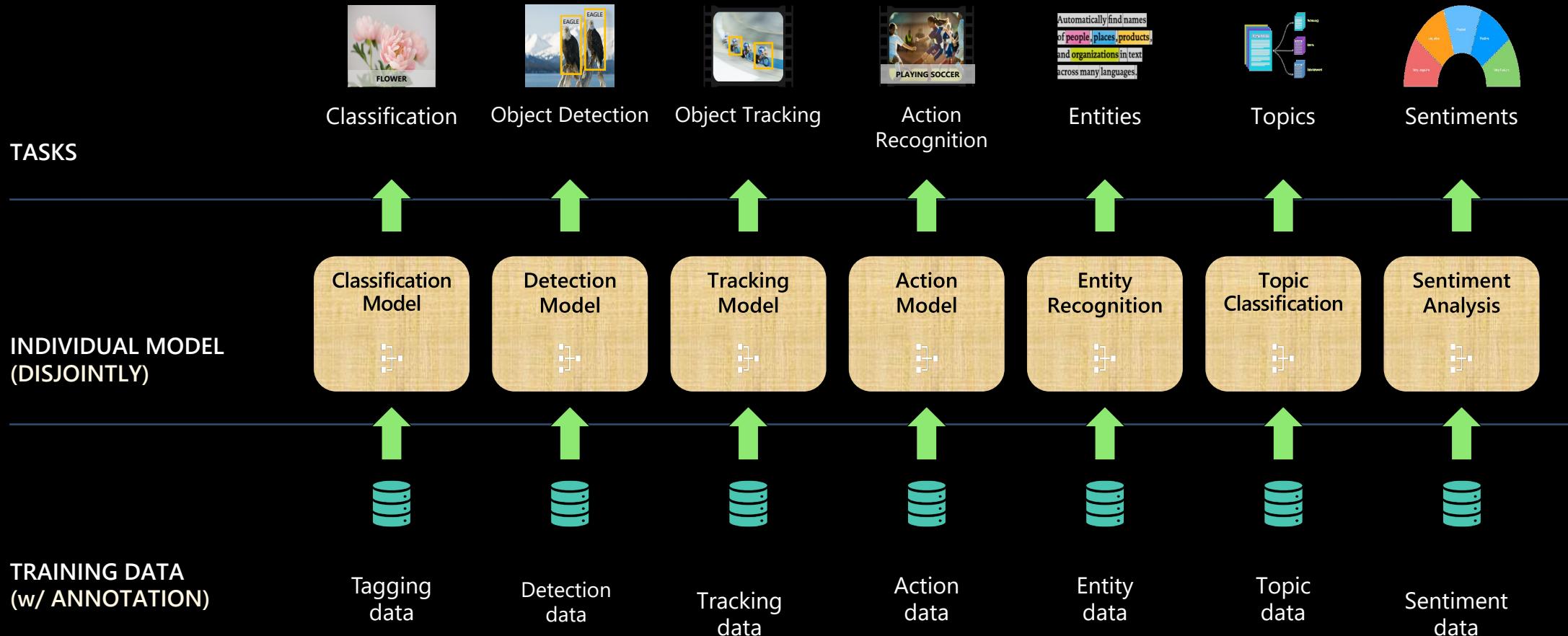


Generative AI

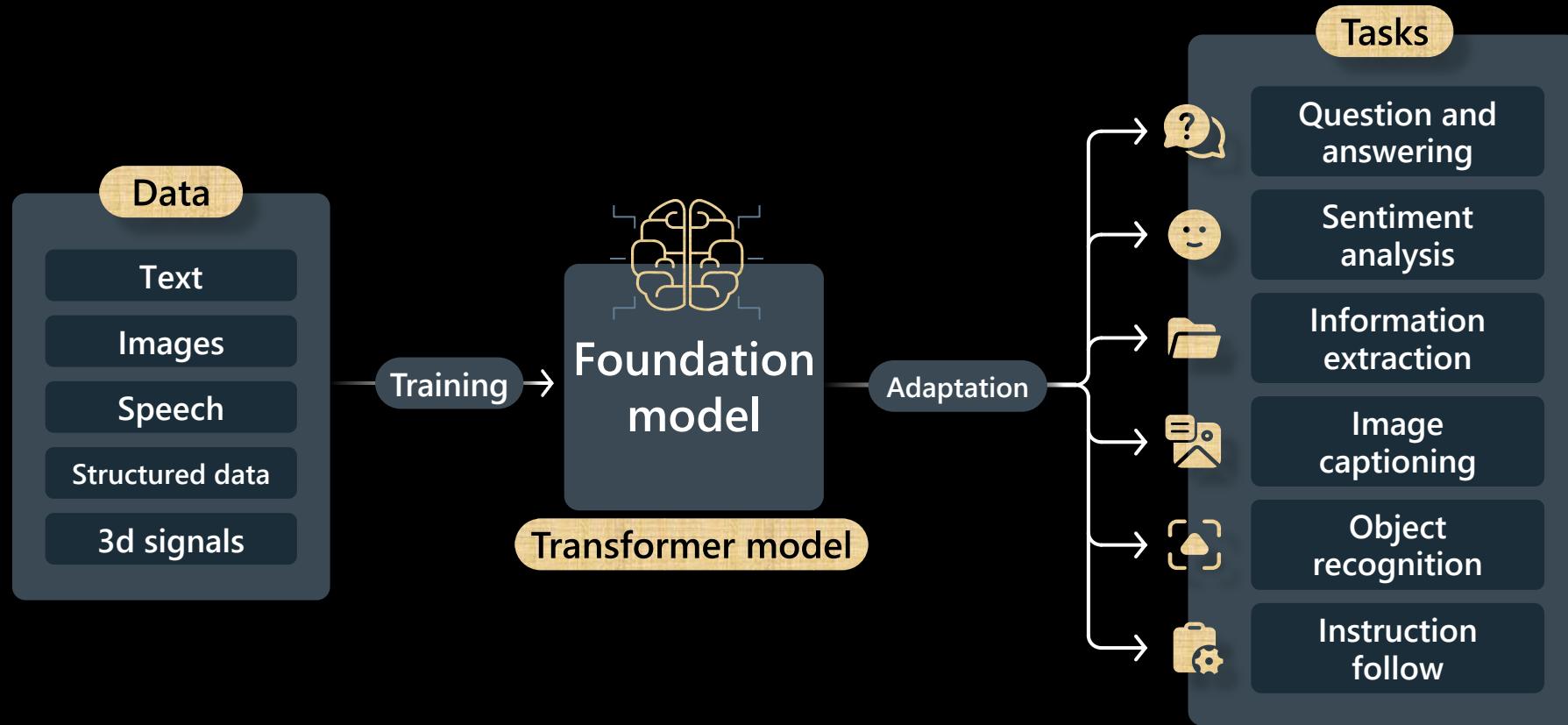
Create new written, visual, and auditory content given prompts or existing data.

Traditional model development

High cost and slow deployment—each service is trained disjointly



Foundation Models

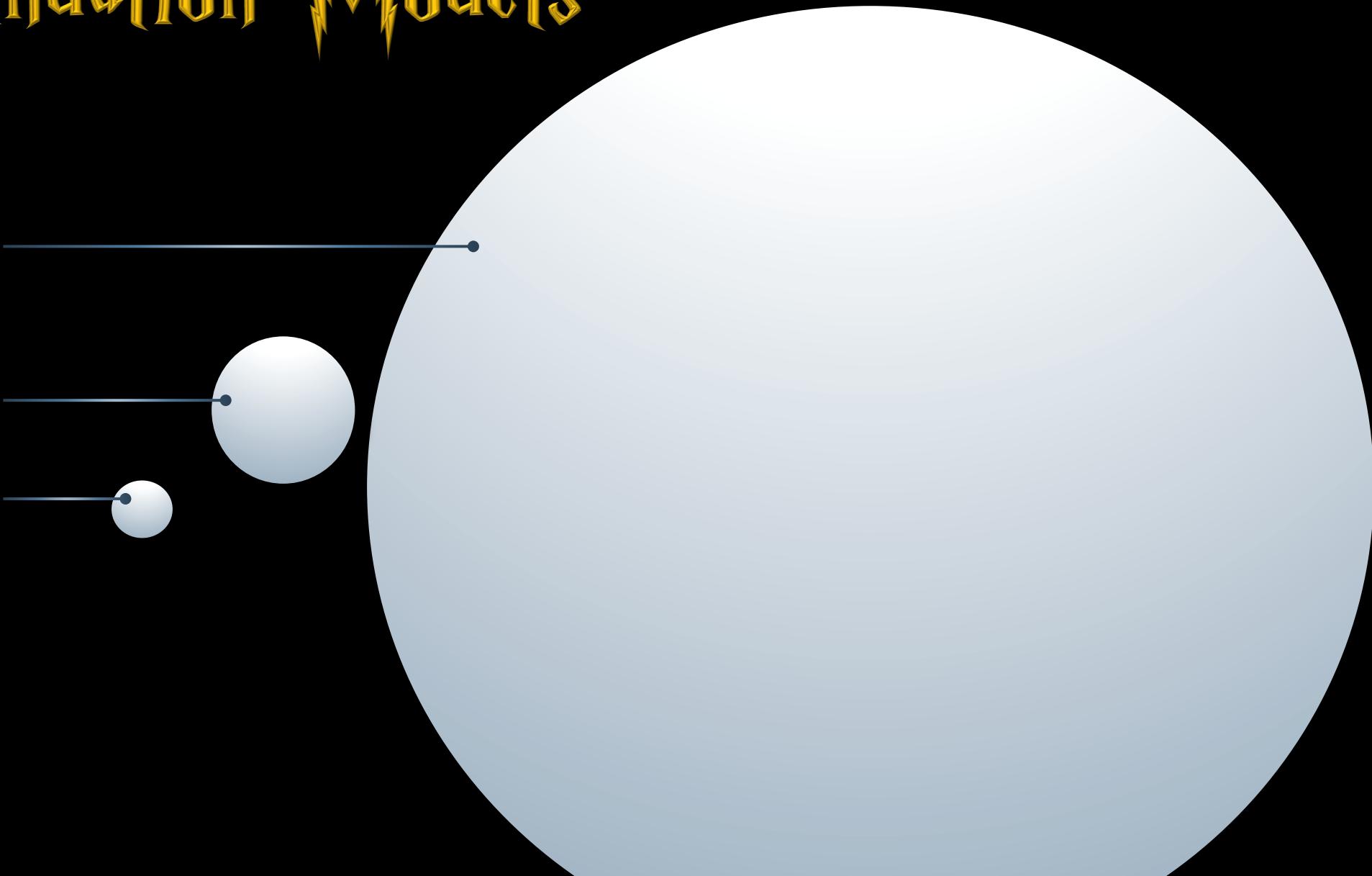


Foundation Models

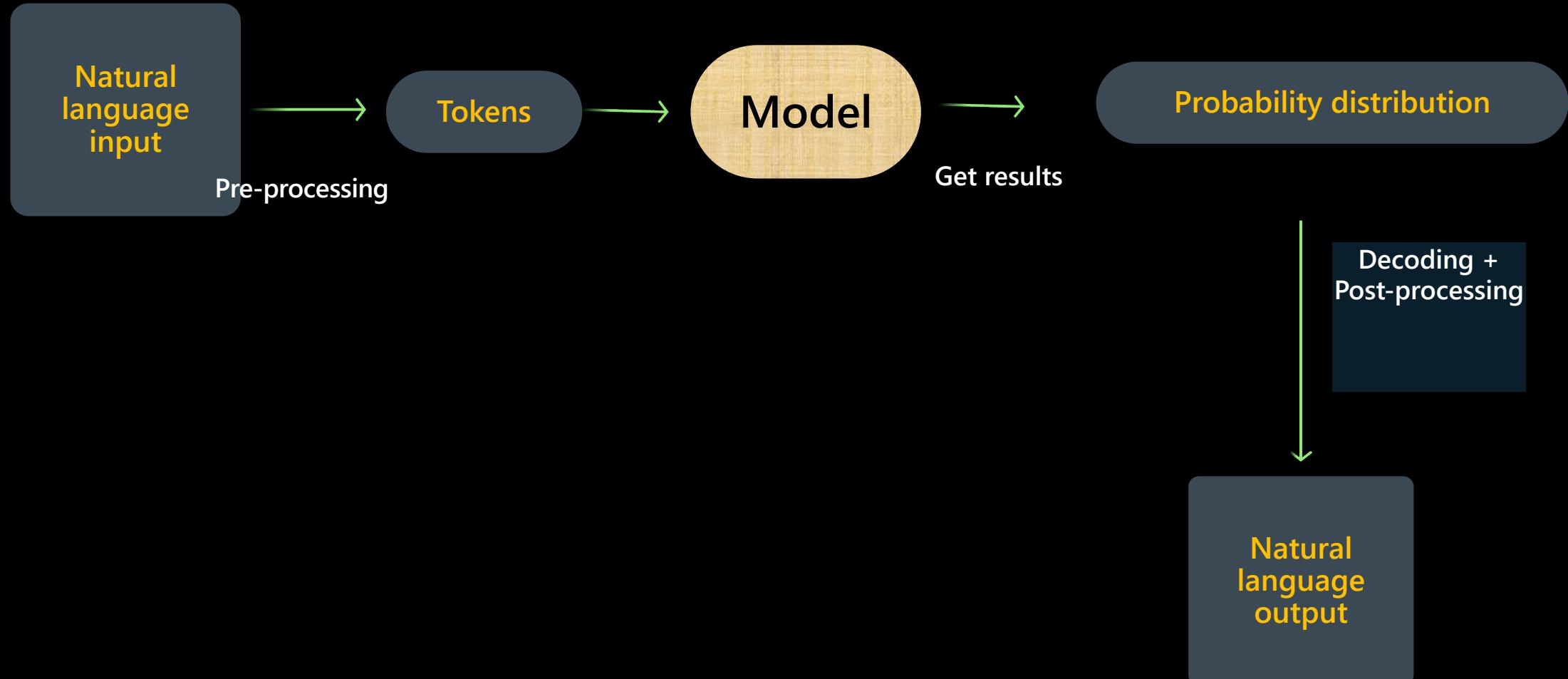
1.76T
GPT-4 (300x)

175B
GPT-3

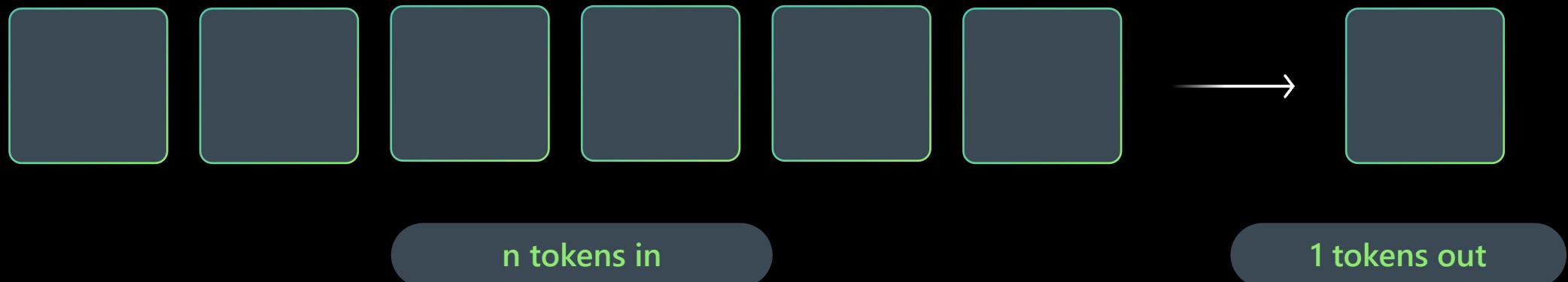
17B
Turing-NLG



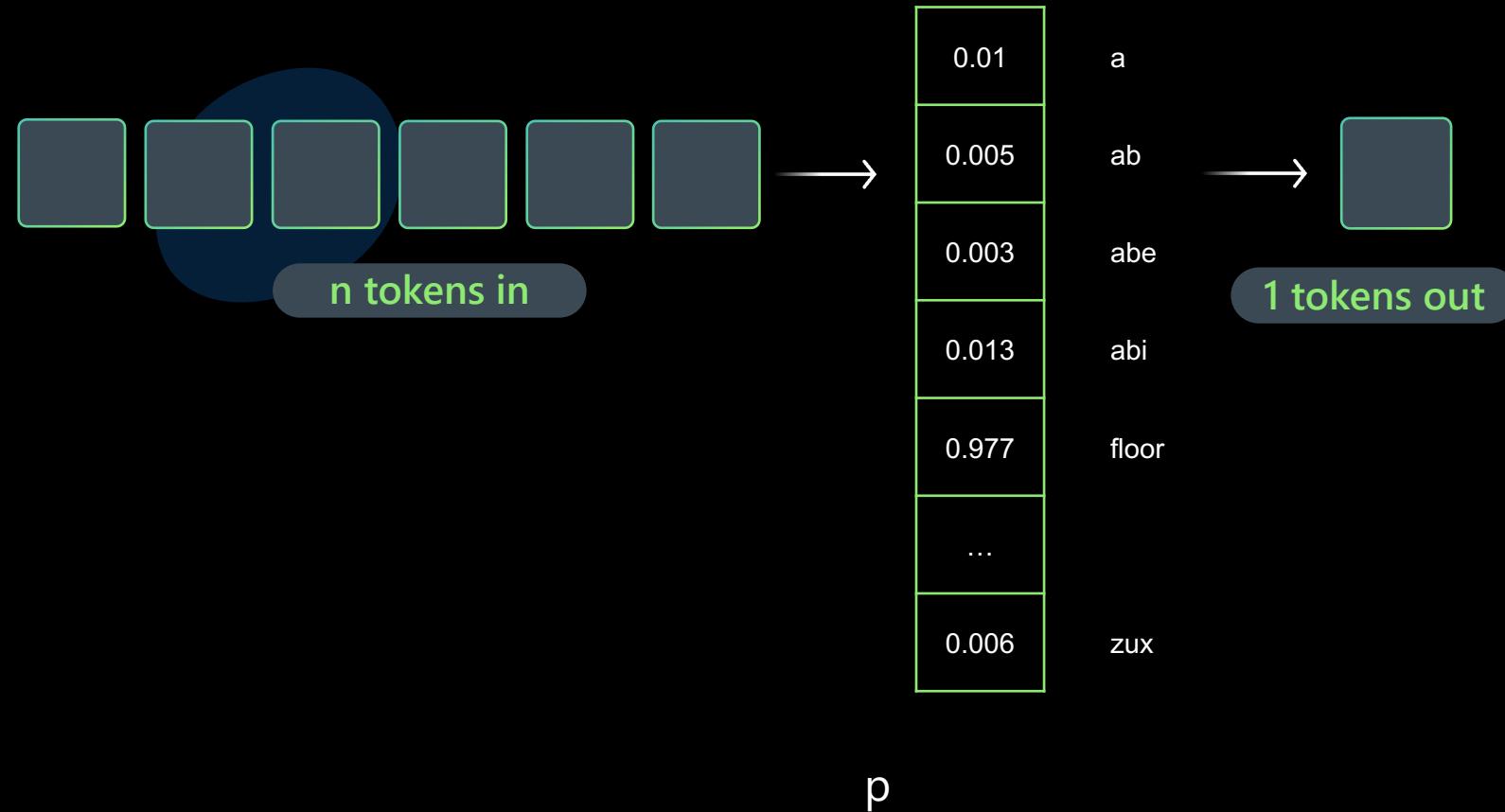
Large Language Models



Large Language Models



Large Language Models



Large Language Models



<https://platform.openai.com/tokenizer>

Tokens	Characters
25	113

“Happiness can be found even in the darkest of times, when one only remembers to turn on the light.” – Dumbledore

Text Token IDs

Prompt Engineering

– adding **additional context** to the **prompt** to provide
"grounding"
to the AI model to **produce the desired response**

Technique to improve AI response quality in Generative AI models

Involves refining the question you ask AI.

*Does not have to be in used in chatbot

Prompt Engineering

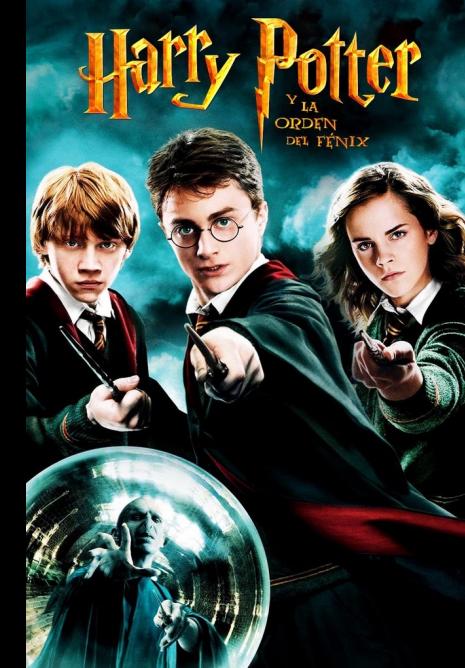
Types of Prompt

- Zero-Shot – no examples
- Prompting with examples (One-Shot, Few-Shots, Multi-Shots)
- Chain-of-Thought - "Let's think step by step."

Prompt Engineering

Six strategies for getting better results

- Write clear instructions
- Provide reference text
- Split complex tasks into simpler subtasks
- Give the model time to "think" - "chain of thought"
- Use external tolos
- Test changes systematically



AI Agents

What is OpenAI GPT API?

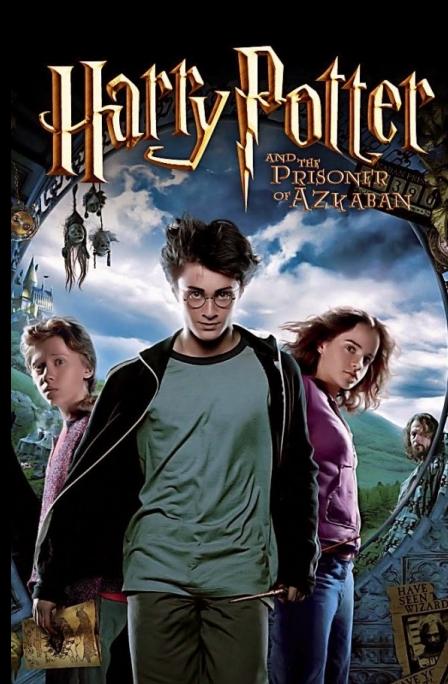
- (Generative Pre-trained Transformer)
- trained to understand natural language and code
- Also available in Azure

What is LangChain?

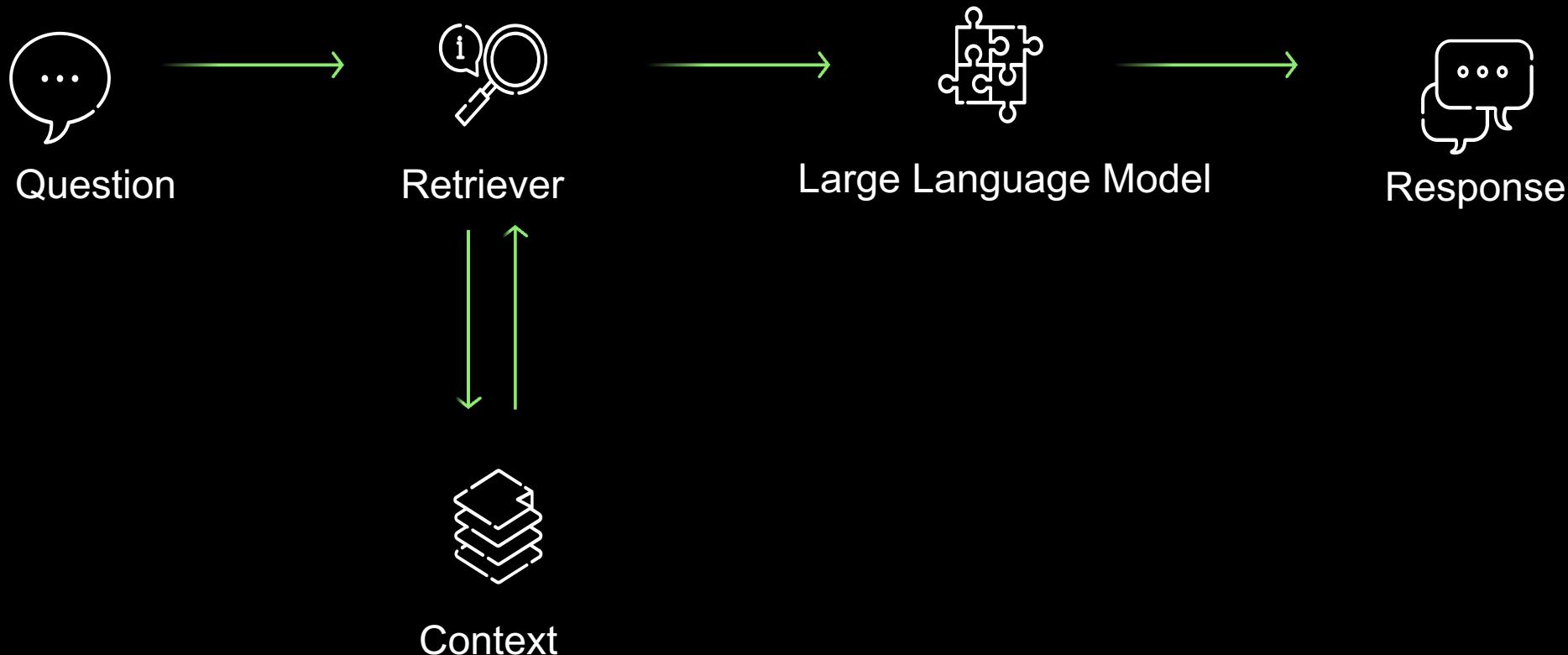
- open-source framework
- simplify creation and development of applications powered by large language models (LLMs)

What are AI Agents?

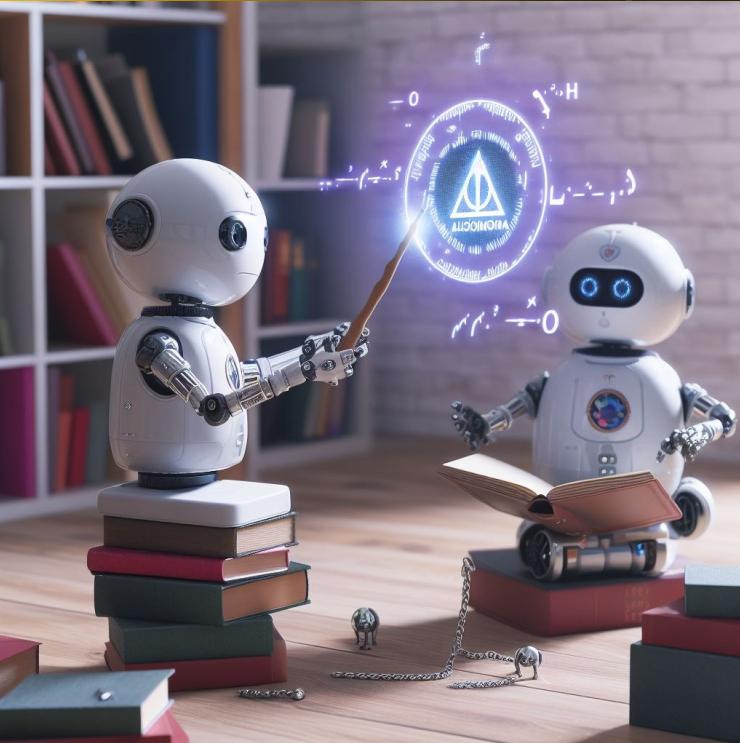
- use a language model to choose a sequence of actions to take



Retrieval Augmented Generation



Demo



<https://github.com/rondagdag/ai-agents-js>

Demo

<https://github.com/rondagdag/ai-agents-js>

Click my binder link to test it out! [launch binder](#)

Wait....

Click Terminal

```
> echo OPENAI_API_KEY=sk-proj-.....8MA867gmy2 > .env  
> npm install  
> node 01_first_chain.js
```



Use AI Responsibly

Do not humanize AI!
How to mitigate hallucinations



| Do not humanize AI!

Generative AI

is not:

- **Intelligent**
- **Deterministic**
- **Grounded**

Generative AI

can not:

- **Understand language or maths**
- **Understand manners or emotions**
- **Know facts that are not in its training dataset**

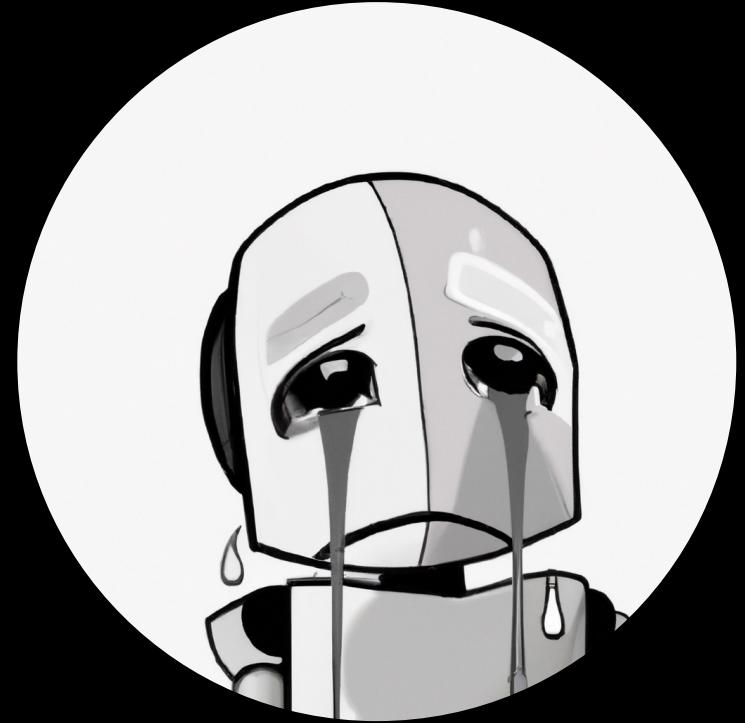
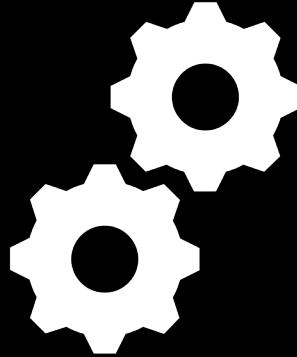
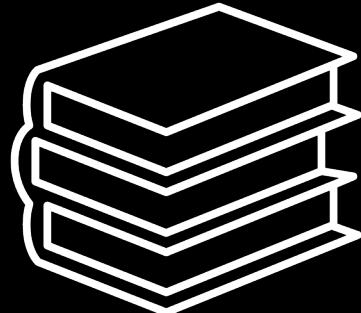


Image created by DALL E2

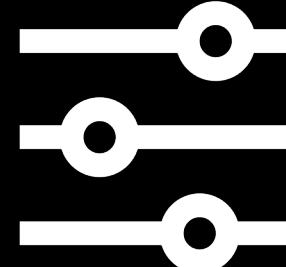
| How to mitigate hallucinations



- Effective prompt engineering



- Provide validated data sources
- Ask for citations



- Tweak parameters (temperature/max length)
- Content filtering



Summary

What is Prompt Engineering?
Asking certain way

What is GPT, LangChain and AI Agents?

Prompts, Chains, Parsers, Retrieval, Vector DB,
Memory, ChatBot

Agents: ReAct (ZeroShot, Conversational) ,
OpenAI Functions, Plan and Execute



Resources

<https://promptengineering.ai>

<https://js.langchain.com/>

<https://www.copilotkit.ai/>

<https://dev.to/copilotkit/how-to-build-ai-powered-powerpoint-app-nextjs-openai-copilotkit-ji2>



Resources

Azure OpenAI Service

Build your own copilot and generative AI applications



Connect your own data, call functions, and improve workflow with language and image models

Try Azure for free

Apply for access

<https://azure.microsoft.com/products/ai-services/openai-service/>

Thanks





Microsoft®
Most Valuable
Professional



Award Categories

AI, Windows Development,
Internet of Things, Mixed Reality

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