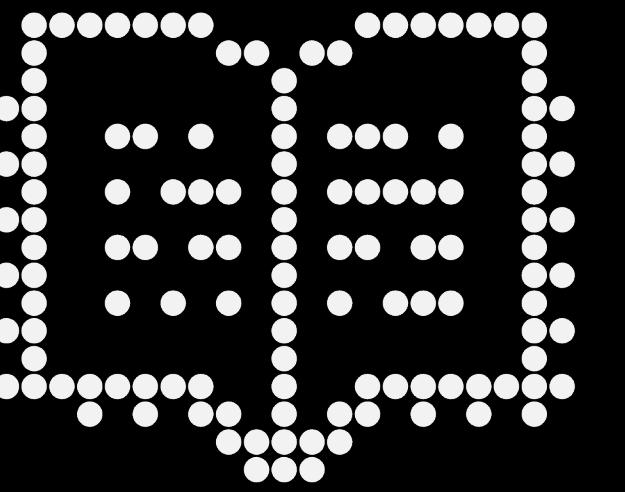


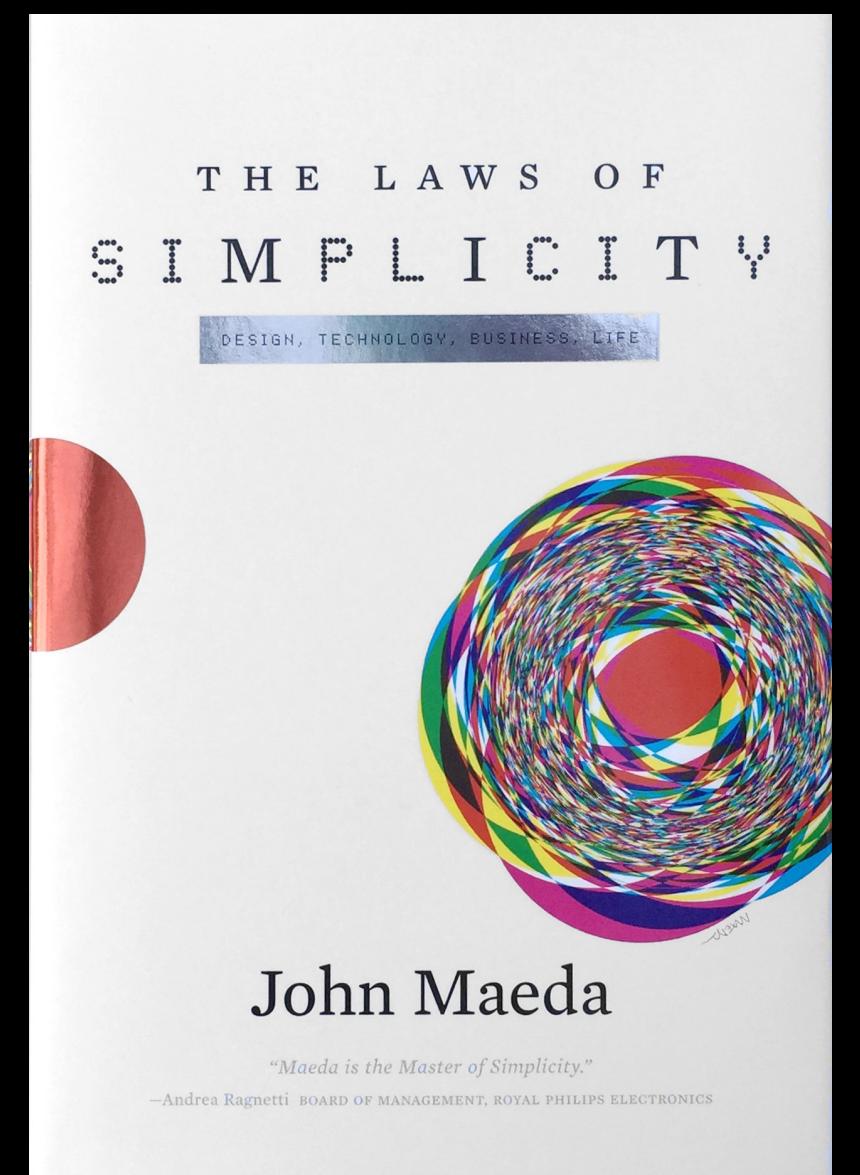
Artificial  
Intelligence for  
Business

Consumer  
Behavior +  
ChatGPT

<https://github.com/iportilla/consumer>



Knowledge makes  
everything simpler



<http://lawsofsimplicity.com/>

- Intros
- ChatGPT 101
- Business Examples
- Exercise



**Iván**



**Marilú**



**Kaylee**



Educator, author and keynote speaker, Recognized for his innovative work in data science, robotics and artificial intelligence

<https://www.linkedin.com/in/ivanportilla/>



Project manager at Leeds School of Business with expertise in educational technology and visual arts. Supports faculty and develops educational materials for online courses. A native Spanish speaker, volunteers at the Denver Art Museum, and enjoys learning from video content and podcasts

<https://www.linkedin.com/in/marilu-pardo-rodriguez/>



Innovative Project Manager with a growth mindset who advocates for career education. Over 10 years of professional experience in various industries, worked as a Customer Success Trainer at Microsoft, conducting end-user training on various products

<https://www.linkedin.com/in/kaylee-leitzel/>

- Intros
- ChatGPT 101
- Business Examples
- Exercise

# Artificial Intelligence

## Machine Learning

### Deep Learning

#### Generative AI



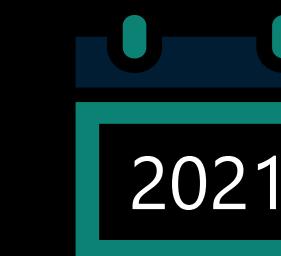
**Artificial Intelligence**  
Intelligence demonstrated by machines



**Machine Learning**  
Learn from data



**Deep Learning**  
Model after the human brain (Neural Networks)

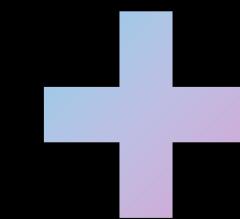


**Generative AI**  
Create new written, visual, and auditory content

# MSFT partnership with OpenAI



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



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

**GPT-3**

Generate and Understand Text

**Codex**

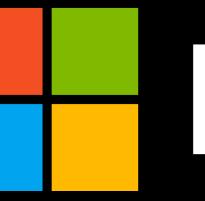
Generate and Understand Code

**DALL·E**

Generate images from text prompts



OpenAI



Microsoft

## 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'
```

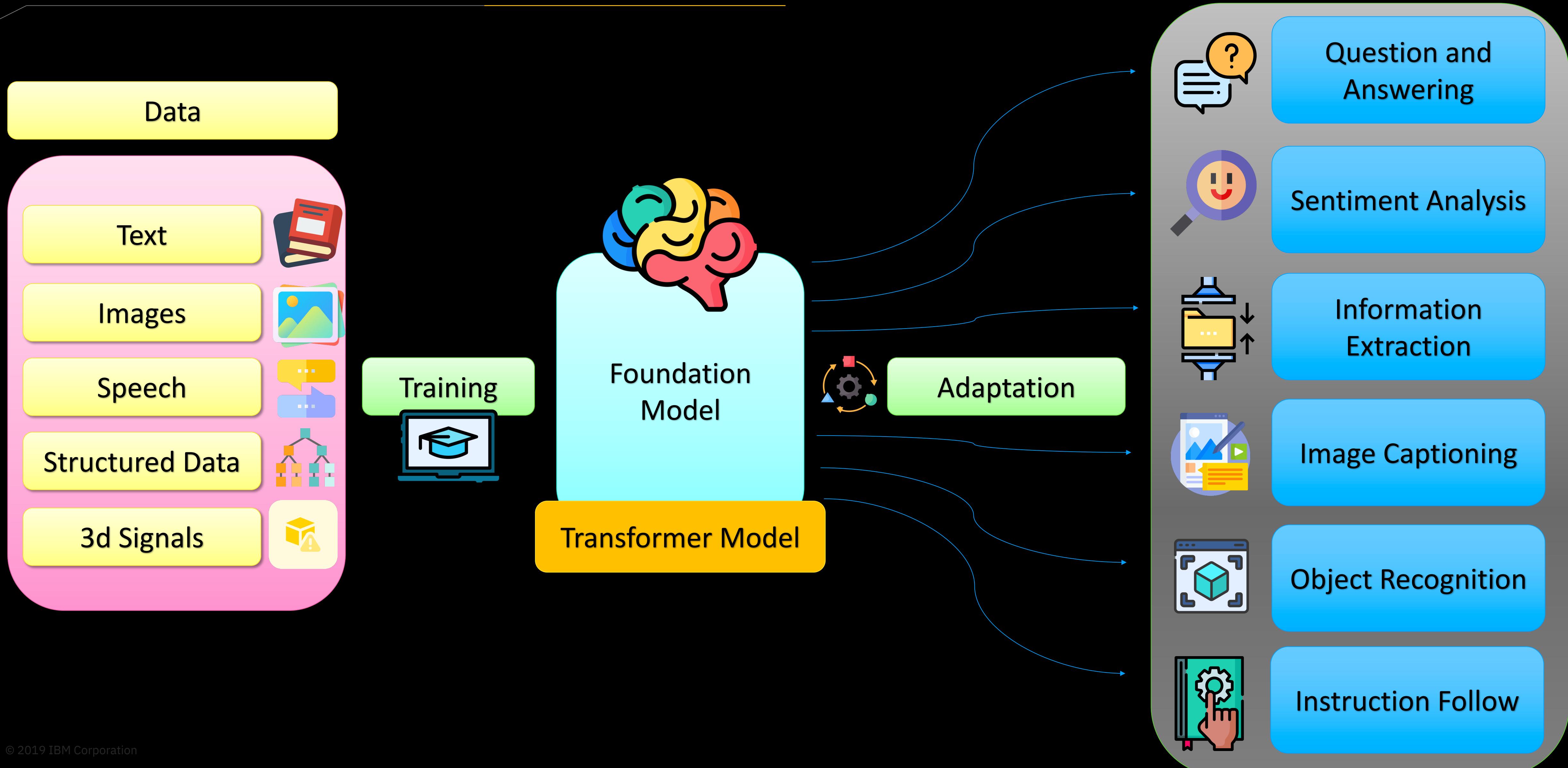
DALL·E

Prompt: A white Siamese cat

Response:



# Foundation Models





530B

Megatron-Turing  
NLG | 2021

175B

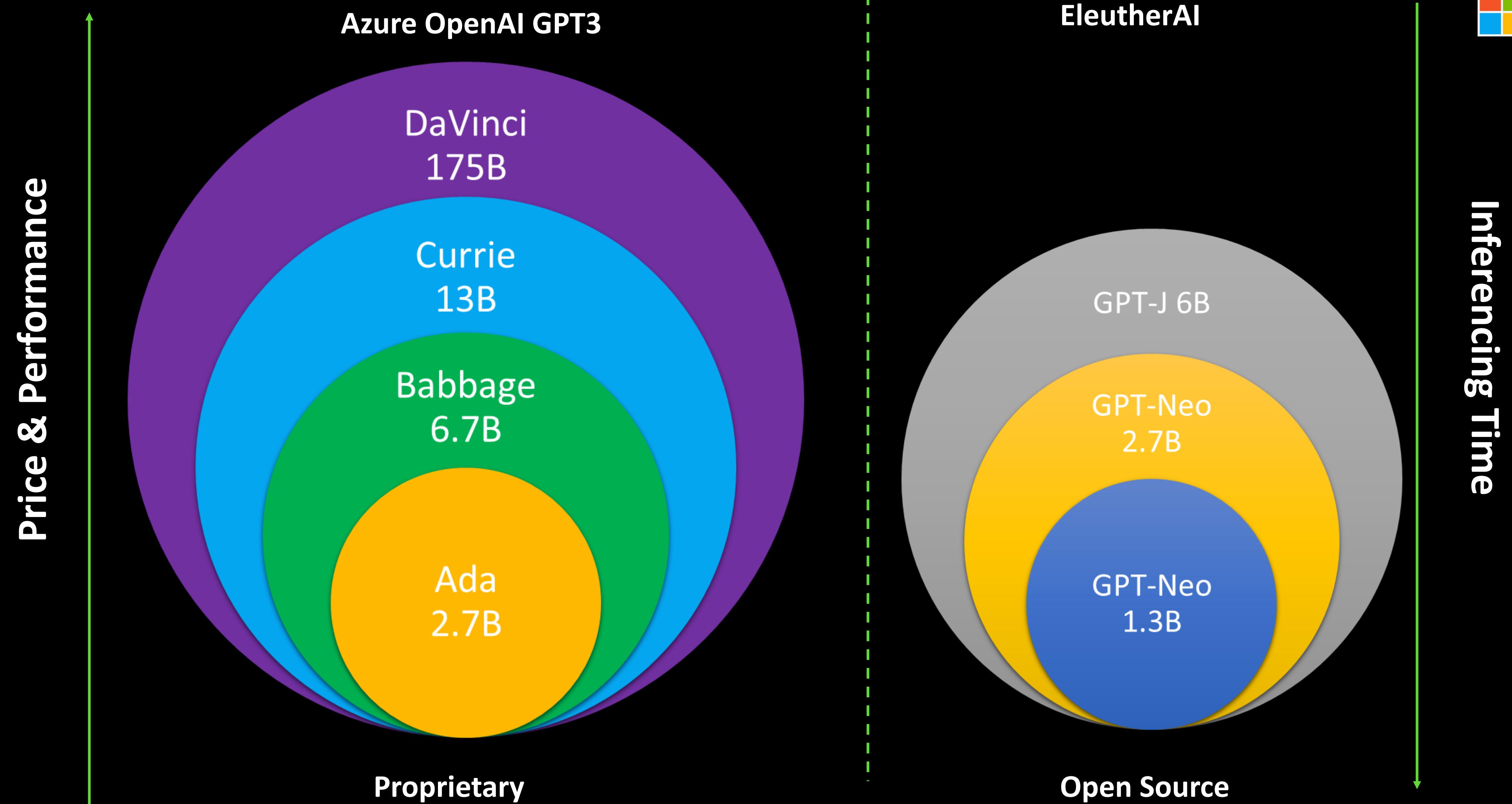
GPT-3 | 2020

17B

Turing-NLG | 2020

340M

BERT-Large | 2018



- Intros
- ChatGPT 101
- Business Examples
- Exercise

# Text Classification

## Named Entity Recognition (Zero-Shot)

Extract the name and mailing address from this email:

Dear Kaylee,

It was great to talk to you at the seminar. I thought Peter's talk  
was quite good.

Thank you for the book. Here's my address 995 Regent Dr,  
Boulder, CO 80309

Best,

Marilú

Name: Marilú

Mailing Address: 995 Regent Dr, Boulder, CO 80309

# Text Classification

## Custom Named Entities (Few-Shot)

**Extract job titles from the following sentences.**

**Sentence:** Jane Doe has been working for IBM for 20 years as a Linux Engineer.

**Job title:** Linux Engineer

###

**Sentence:** Jane Doe has been working for IBM for 20 years and she loved it.

**Job title:** none

###

**Sentence:** Demis Hassabis | Director | Google

**Job title:** Director

###

**Sentence:** Juan is the CTO of Platform.sh, he was previously the CTO of Commerce Guys, a leading ecommerce provider.

**Job title:** CTO

# Text Classification

## Multi-Label Text Classification (Few-Shot)

The following is a list of movies and the **categories** they fall into:

**Topgun:** As students at the United States Navy's elite fighter weapons school compete to be best in the class, one daring young pilot learns a few things from a civilian instructor that are not taught in the classroom.

**Category:** **Drama, Action**

**Hustle:** A basketball scout discovers a phenomenal street ball player while in Spain and sees the prospect as his opportunity to get back into the NBA.

**Category:** **Comedy, Drama, Sport**

**The Northman:** From visionary director Robert Eggers comes **The Northman**, an action-filled epic that follows a young Viking prince on his quest to avenge his father's murder.

**Category:** **Action, Adventure, Drama**

# Reason Over Unstructured Text

## Question and Answering

On Monday, Microsoft launched an OpenAI service as part of its Azure cloud platform, offering businesses and start-ups the ability to incorporate models like ChatGPT into their own systems. The company has already been building AI tools into many of its consumer products, such as a DALL-E 2 feature in its Bing search engine that can create images based on a text prompt, and the information reported recently that it's working to bring more of them to Microsoft Office as well.

What will Microsoft incorporate in its own systems?

Microsoft plans to incorporate AI tools into its own systems, such as a DALL-E 2 feature in its Bing search engine that can create images based on a text prompt, and the information reported recently that it's working to bring more of them to Microsoft Office as well

# Summarization

## Extractive vs Abstractive

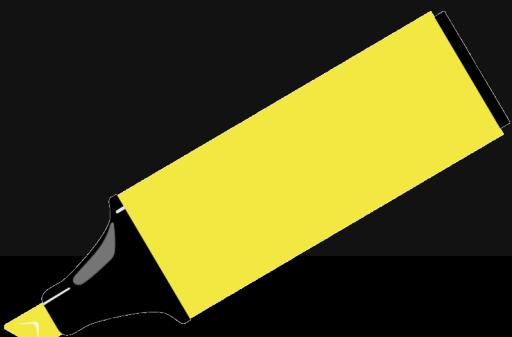
### Extractive

Select parts of the original text to form a summary

- Easier
- Restrictive (no paraphrasing)

Peter and Elizabeth took a taxi to attend the night party in the city. While in the party, Elizabeth collapsed and was rushed to the hospital.

Peter and Elizabeth attend party city. Elizabeth rushed hospital



### Abstractive (Semantic)

Generates new text using natural language generation techniques

- More difficult
- More flexible (more human)

Peter and Elizabeth took a taxi to attend the night party in the city. While in the party, Elizabeth collapsed and was rushed to the hospital.

Elizabeth was hospitalized after attending a party with Peter.



# Abstractive Summarization

## Contact Center Summarization

**Summarize this for a call center agent:**

**Agent:** Thank you for calling ADM. Who am I speaking to?

**Customer:** Hello, my name is Jeremiah Contreras. I own a small business and have some questions regarding payroll processing.

**Agent:** Good morning, Jeremiah, before we get started may I ask you a few questions so that I better answer your questions today?

**Customer:** Thank you that is quite helpful. Are there specific regulations that I need to follow?

**Agent:** Certain aspects of payroll processing are regulated by the Internal Revenue Service (IRS) and the Department of Labor (DOL)

The agent is speaking to a customer named Jeremiah Contreras. Jeremiah is asking for tips on manual payroll processing. The agent also informs Jeremiah that certain aspects of payroll processing are regulated by the Internal Revenue Service (IRS) and the Department of Labor (DOL).

# Prompt Insert

Only DaVinci-002+

## Before

These are agenda topics for a customer presentation.

1. Introduction to GPT3

[insert]

10. Conclusion

## After

These are agenda topics for a customer presentation.

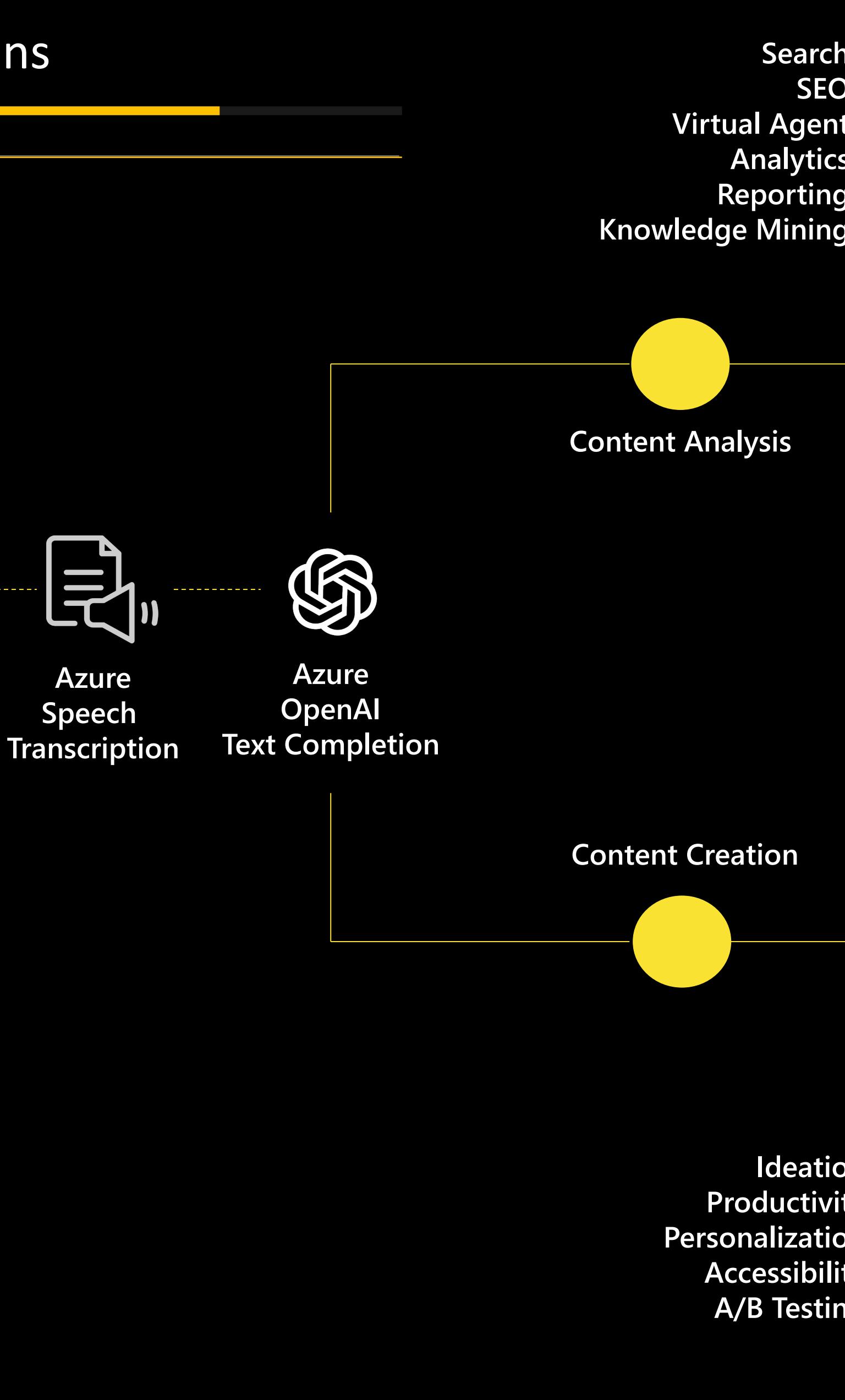
1. Introduction to GPT3
2. Overview of GPT3 Features
3. Benefits of GPT3
4. GPT3 Use Cases
5. GPT3 Pricing
6. GPT3 Security
7. GPT3 Support
8. GPT3 Integration
9. Q&A Session
10. Conclusion

# Media Example

## News Analyses & Article Creations



News Broadcast (Global Warming)



### Topic Classification

Global warming, Deforestation, Carbon footprint

### Entity Extraction

Organizations: IPCC, UNFCCC, Green Peace  
Geography: Canada, USA

### Key Word Extraction

Human activities, fossil fuels, earth atmosphere

### Question and Answer

What is the Intergovernmental Panel on Climate Change (IPCC)?

The IPCC is an international organization that studies climate change and the effectiveness ...

### Video summarization

The article discusses about global warming and its effects on the Earth's atmosphere, wildlife, and human communities. It states that the primary cause of global warming is ....

### News article generation (or blogs, social media)

Global warming is the gradual increase in the overall temperature of the Earth's atmosphere, primarily caused ...

### Script Generation

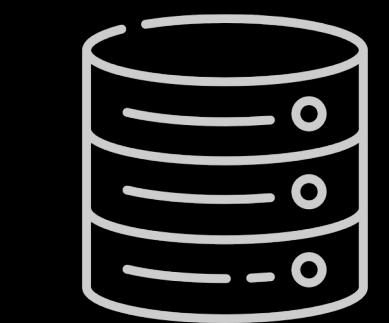
Act 1: The show opens with a shot of a beautiful coastal town  
Act 2: As the town struggles to cope with the crisis ...

### Personalized Content generation (or Advertising)

Simon, as someone passionate about global warming, you are aware of the urgent threat it poses to our planet ...

# Sports & Entertainment Example

Natural language to SQL to surface stats data (Fan Engagement)



Sports Stats  
Database



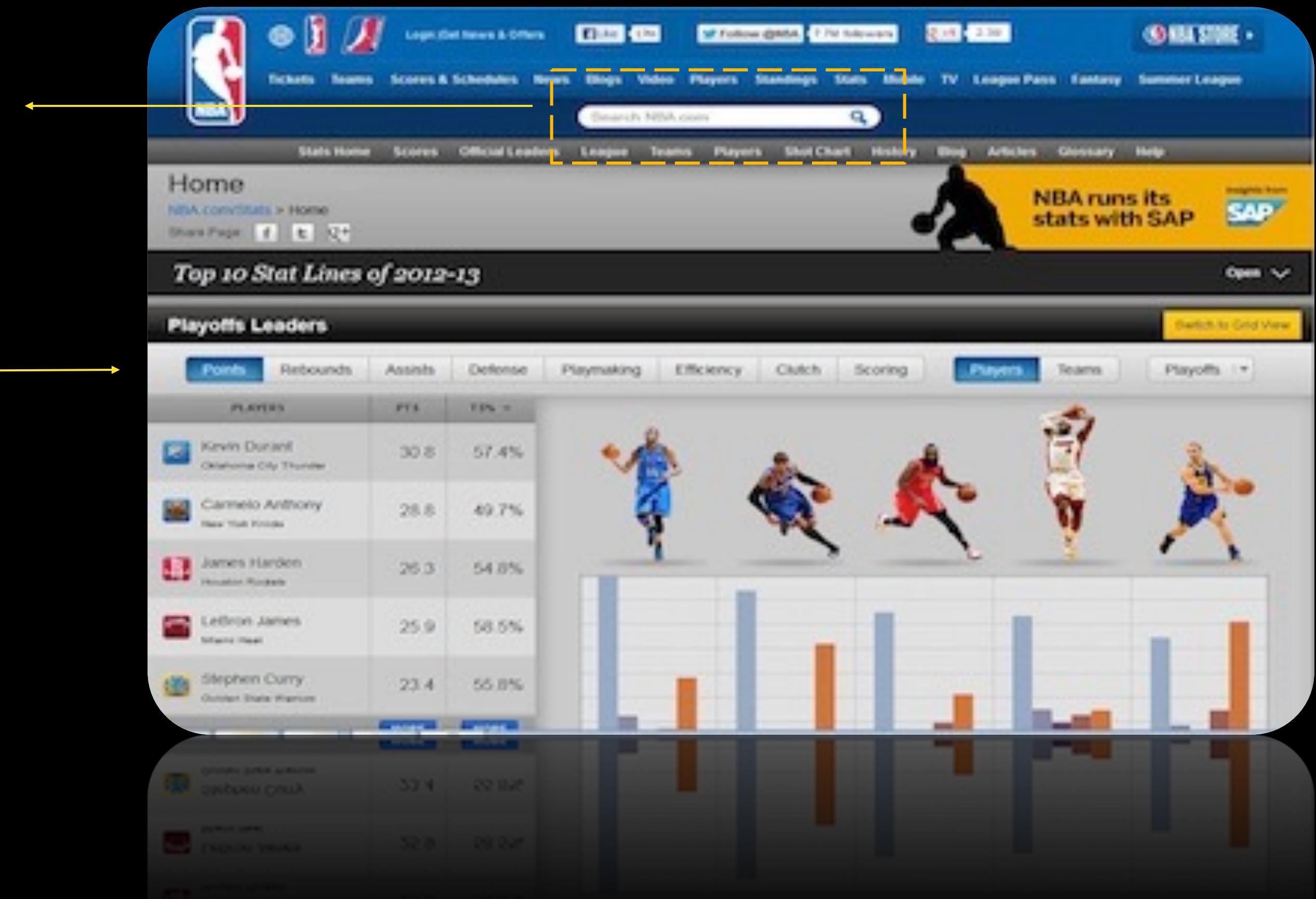
Azure  
OpenAI  
Codex

"How many points did Lebron James score in 2021?"

```
SELECT SUM(points) FROM  
basketball_stats WHERE player =  
'LeBron James' AND game_date  
BETWEEN '2021-01-01' AND '2021-12-  
31';
```

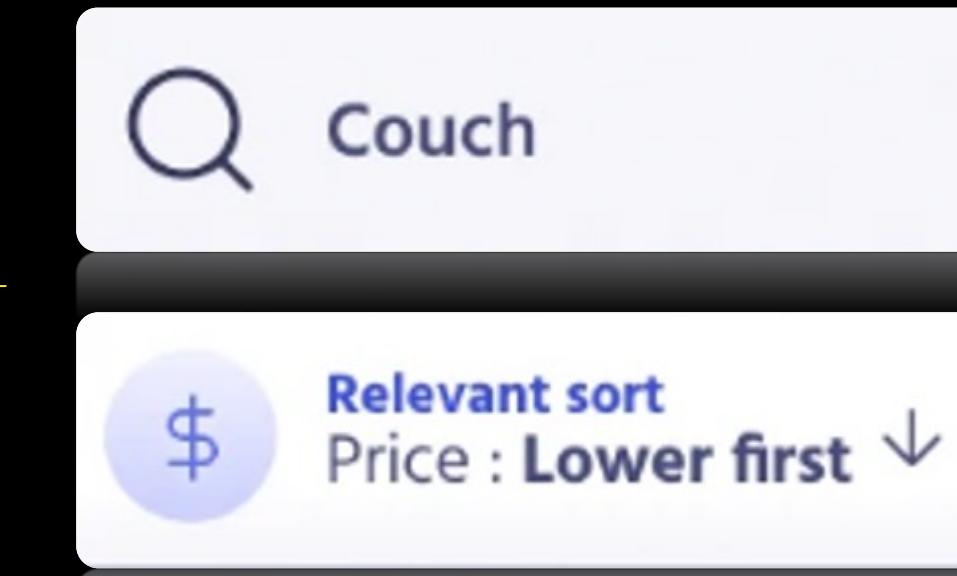
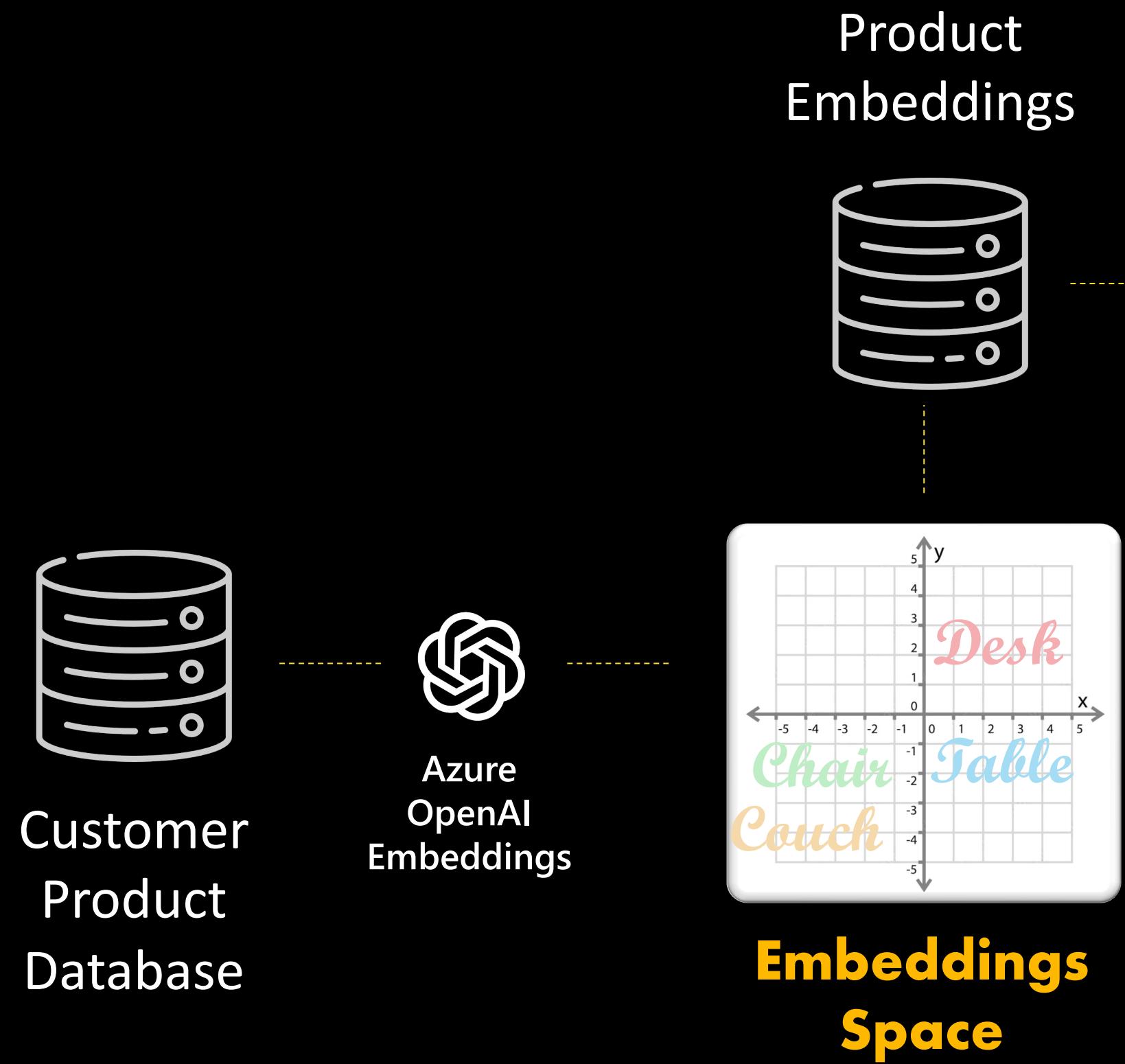
basketball\_stats (player, team, points, rebounds, assists, steals, blocks, turnovers, games\_played)  
("LeBron James", "Los Angeles Lakers", 25, 7, 10, 1, 0, 3, 82), ("Kevin Durant", "Brooklyn Nets", 30, 7, 4, 1, 2, 3, 72)

basketball\_games (home\_team, away\_team, home\_score, away\_score, game\_date)  
("Los Angeles Lakers", "Brooklyn Nets", 110, 105, '2021-12-01'),  
("Milwaukee Bucks", "Golden State Warriors", 120, 115, '2021-12-02')

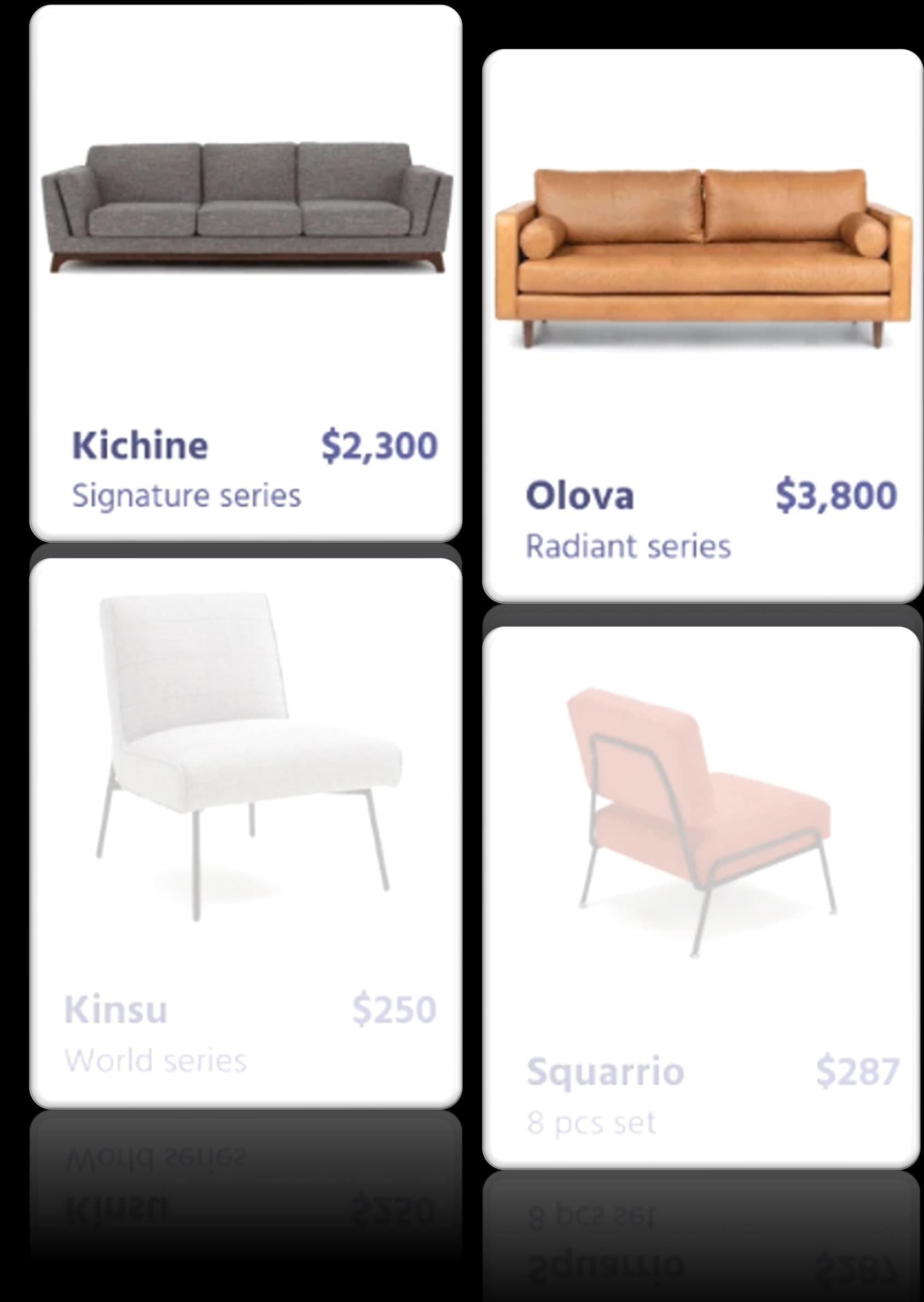


# Retail Example

## Similarity Search



## Similarity Search



# Marketing Example

Digital Creative Assistant – Dalle-2

Synthetic Brand Ambassador (GDPR-safe)

Input  
Generate a white female

Generate

Output

No code Web and App Development

Input

Output

```
constructor(props) {  
  super(props);
```

Add \$3      Withdraw \$5  
Give away all my money

My balance is 9

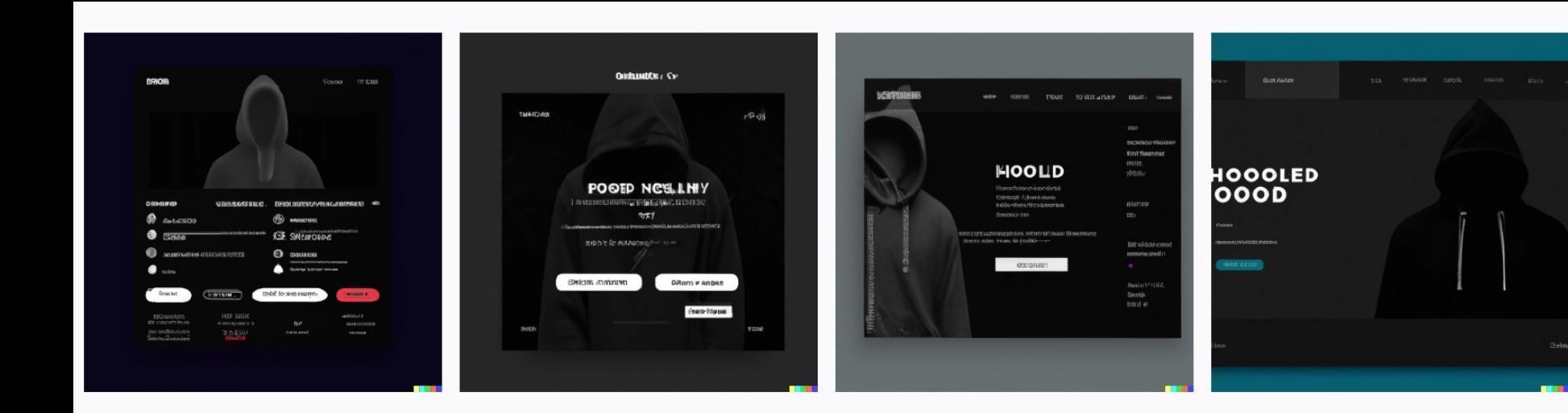
Generate images, concepts and ideas

Input

a green c

Output

Produce rough Layouts



- Intros
- ChatGPT 101
- Business Examples
- Exercise

Design for  
Artificial  
Intelligence

# Conversation Design

<https://www.ibm.com/design/practices/>

This is a natural conversation.



Kaylee



Ivan

Hola! 



how was your weekend bud?



hiya

it was okay

My allergies kind of ruined some plans I had



ah that's annoying I'm sorry

If you're free we should go to a couple of free shows downtown tonight



what time are you thinking?



We can link up at 7 and head out after



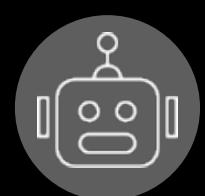
alright, sounds good! i'll text you



sick, see you then



This is a designed conversation.



Bot

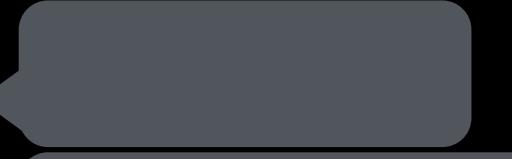
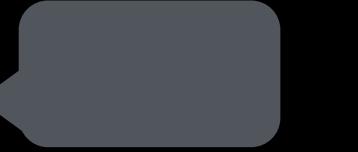
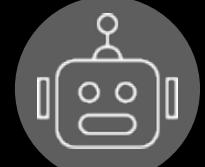
Ivan



Hola! 

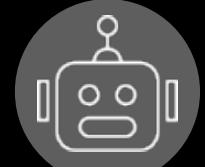


how was your weekend bud?

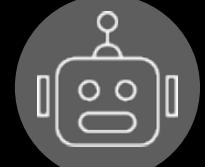


ah that's annoying I'm sorry

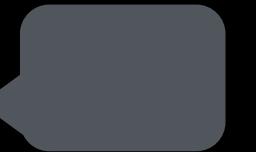
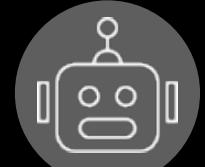
If you're free we should go to a couple of free shows downtown tonight



We can link up at 7 and head out after



sick, see you then





embodied & autonomous



life partner

Our expectations  
are out of sync  
with reality





*yikes.*

Since conversation is the bedrock of meaningful relationships, a bot must be capable of holding an intelligent, two-way conversation.

# Conversation fundamentals

Conversation consist  
of **three things**

***Utterances*** are the  
individual statements  
that are articulated.

***Exchanges*** communicate  
information.

***Topics*** provide context.

Conversations consist of:



Kaylee

Hola! 🙌

how was your weekend bud?

## Utterances

The individual statements that are articulated.



hiya

it was okay

My allergies kind of ruined some plans I had

ah that's annoying I'm sorry

If you're free we should go to a couple of free shows downtown tonight

what time are you thinking?

We can link up at 7 and head out after

alright, sounds good! i'll text you

sick, see you then



Conversations consist of:

## Utterances

The individual statements that are articulated.



## Exchanges

Two or more utterances that exchange information.

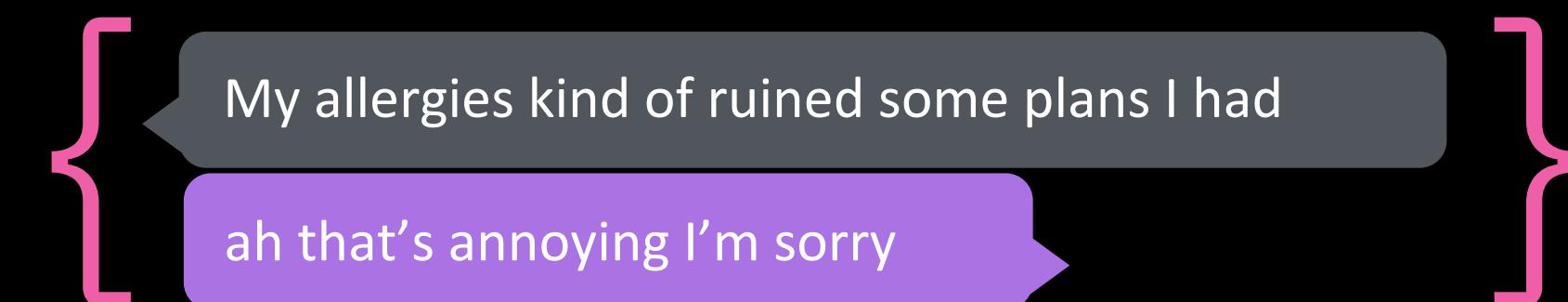


Kaylee



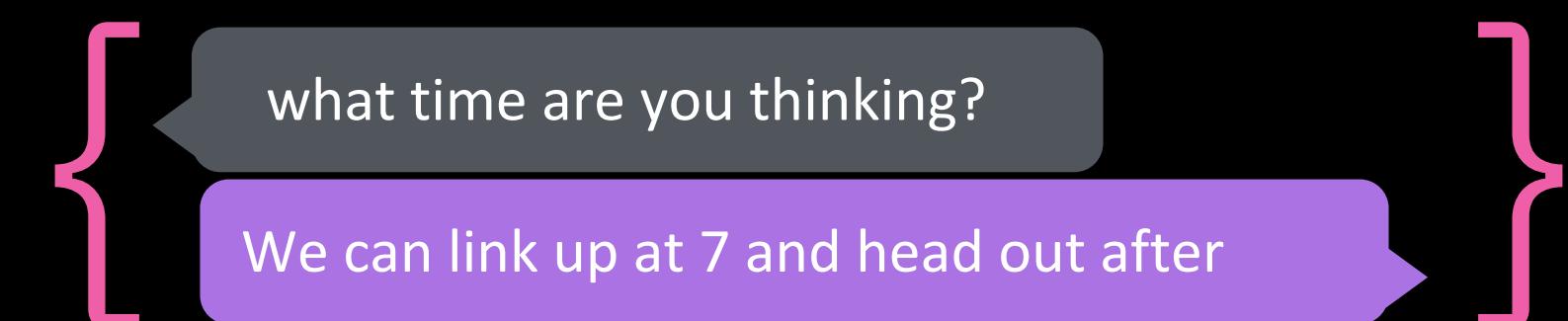
how was your weekend bud?

it was okay



If you're free we should go to a couple of free shows downtown tonight

alright, sounds good! i'll text you



sick, see you then



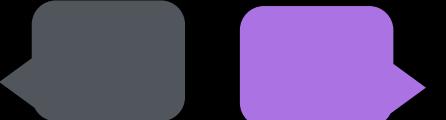
# Types of Exchanges

- greeting
- question  
*answer*
- request  
*grant, refusal, challenge*
- command  
*compliance, noncompliance*
- blame  
*admission, denial*
- offer  
*acceptance, refusal*
- invitation  
*acceptance, declination*
- complaint  
*denial, apology, excuse, justify, challenge*
- assertion  
*agreement, disagreement*
- acknowledgment
- summons  
*answer, ignore*
- compliment  
*acceptance, rejection, agreement, shift, return*
- farewell

Conversations consist of:

## Utterances

The individual statements that are articulated.



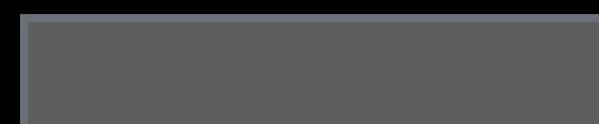
## Exchanges

Two or more utterances that exchange information.

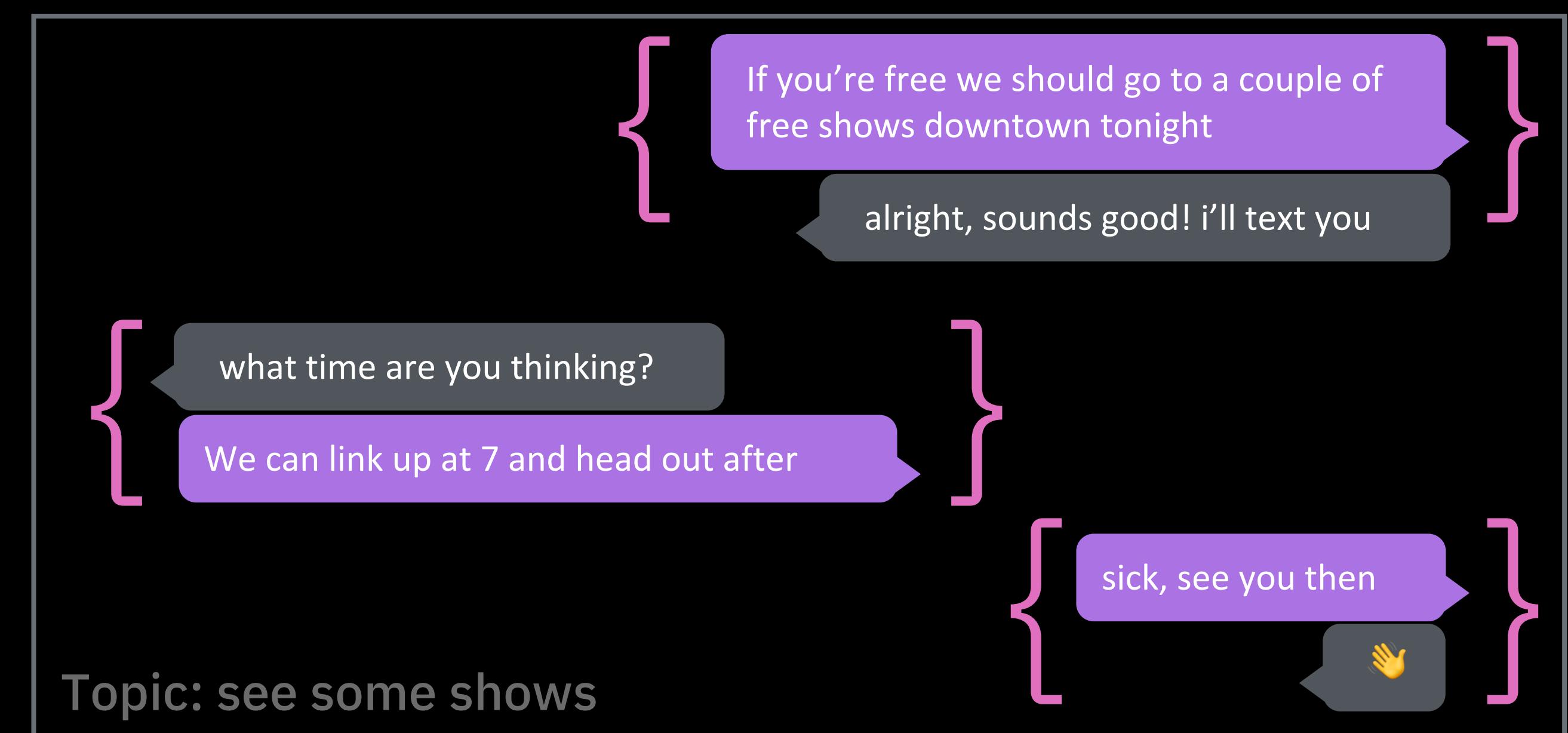
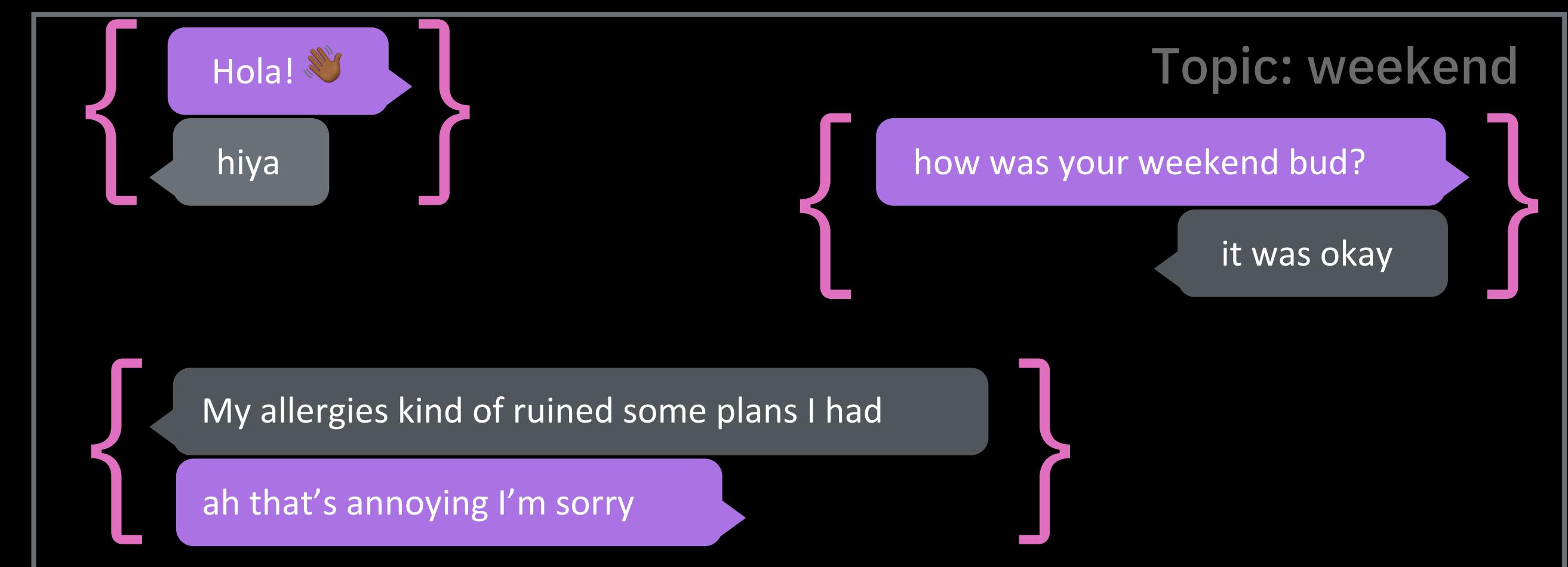


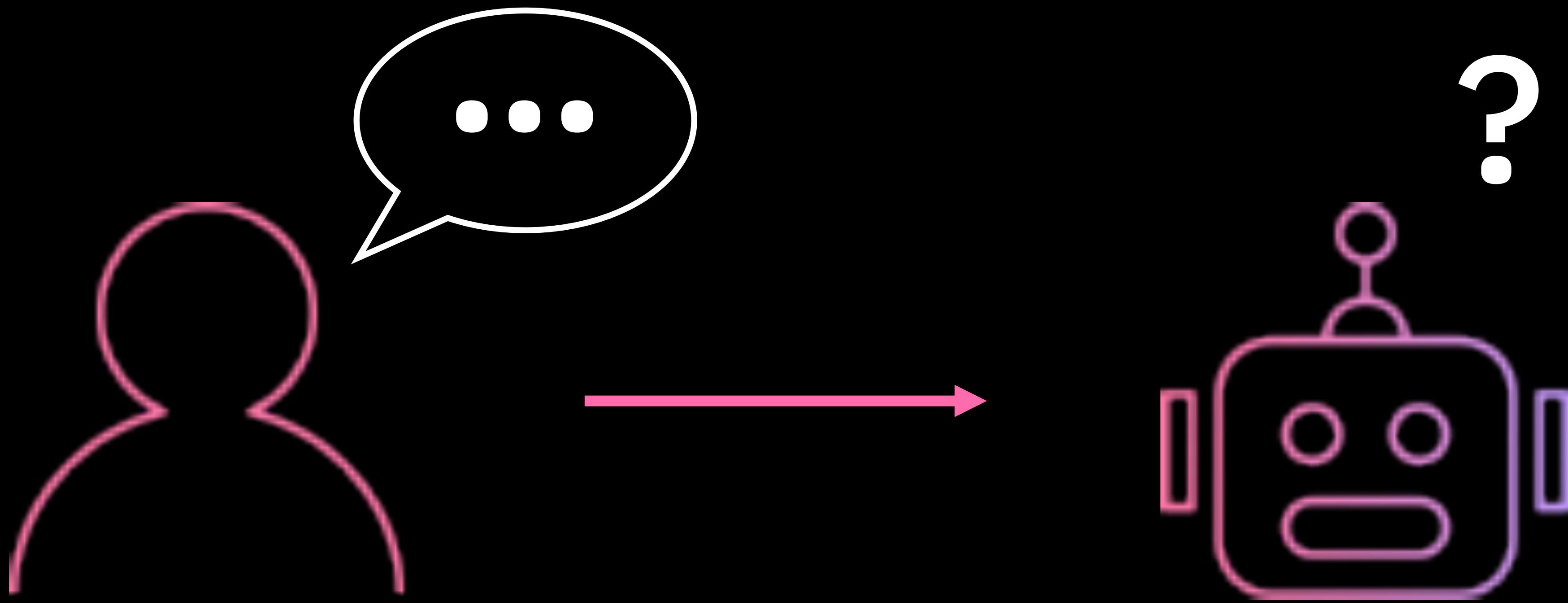
## Topics

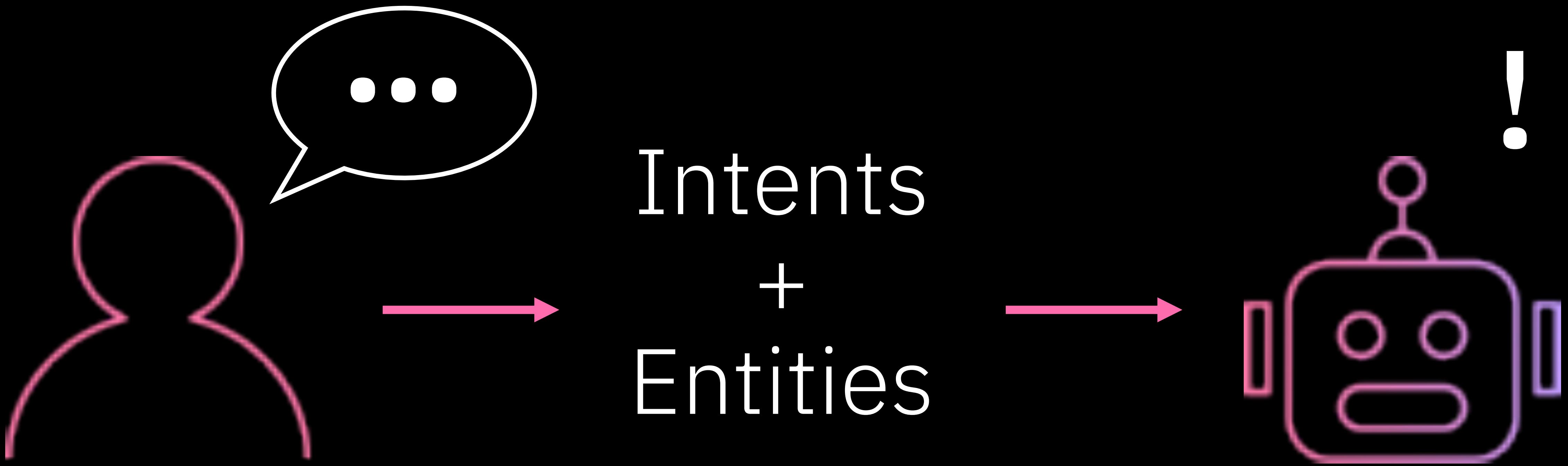
One or more exchanges that provide conversation context.



Kaylee







# Intents

Represents the action or purpose behind their utterance.

You teach your bot to recognize intents by providing different examples of things that a user may say in order to communicate an action or purpose.

## EXAMPLE

Invitation to show

If you're free we should go to a couple of free shows downtown tonight

# Entities

An object that was mentioned in the utterance that is relevant to the user's intent. By recognizing the entities that are mentioned in the user's utterance, the bot can choose the proper response

## EXAMPLE

Downtown, tonight

If you're free we should go to a couple of free shows downtown tonight

It's not just what  
you say. It's **how**  
you say it.

# Exercise

Thank you



portilla@gmail.com

<https://github.com/jiportilla/giveback/>



marilupr@gmail.com

<https://www.linkedin.com/in/marilu-pardo-rodriguez/>

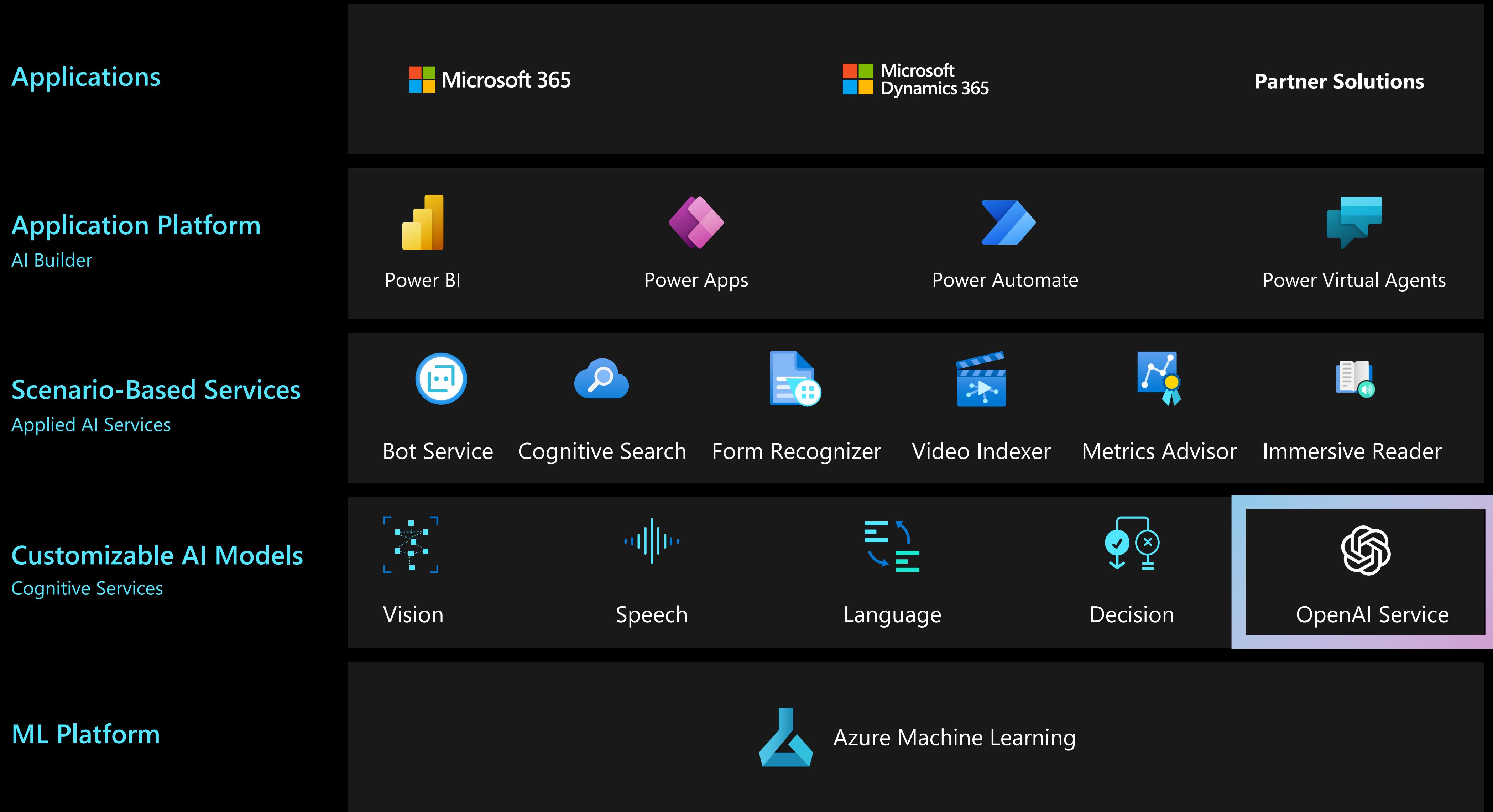


kayleeleitzel@gmail.com

<https://www.linkedin.com/in/kaylee-leitzel/>

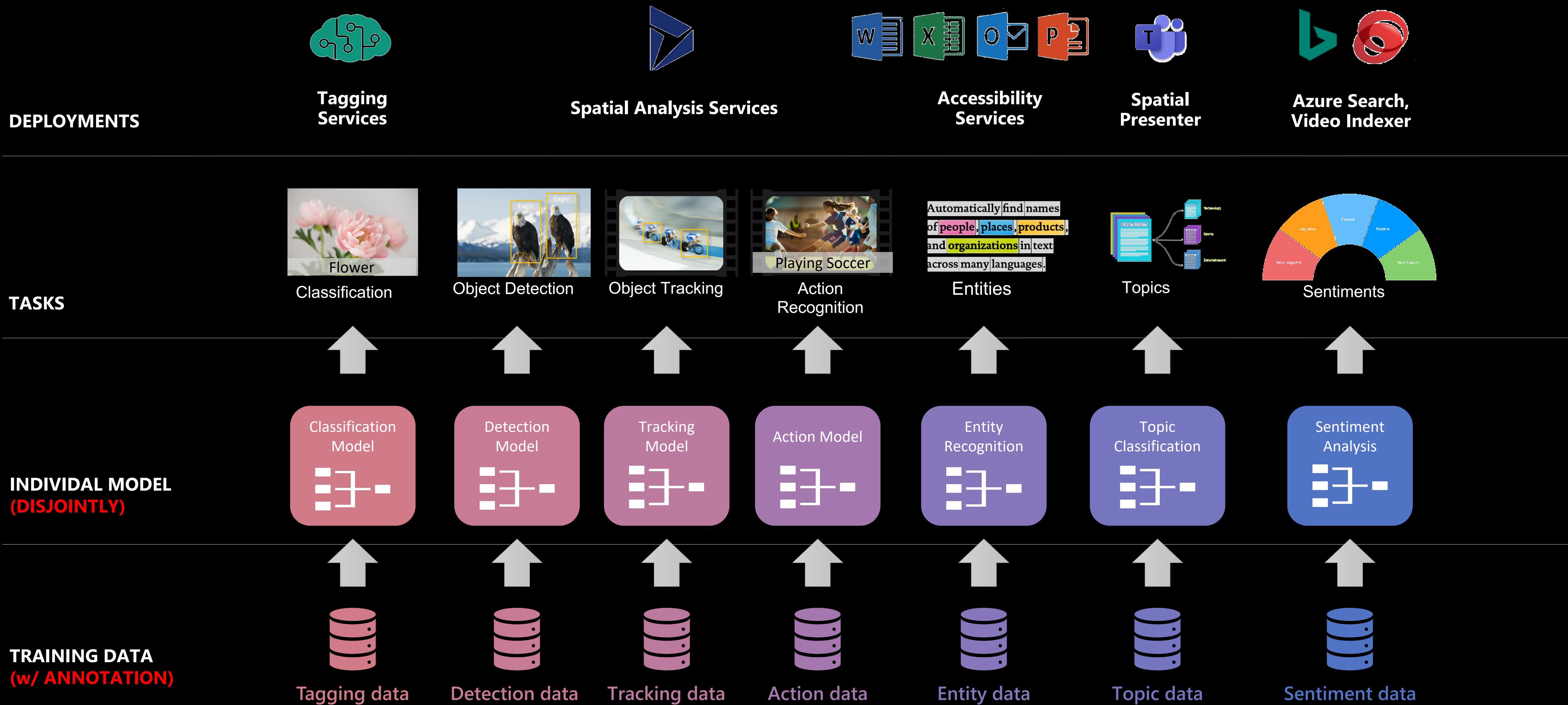
# Backup

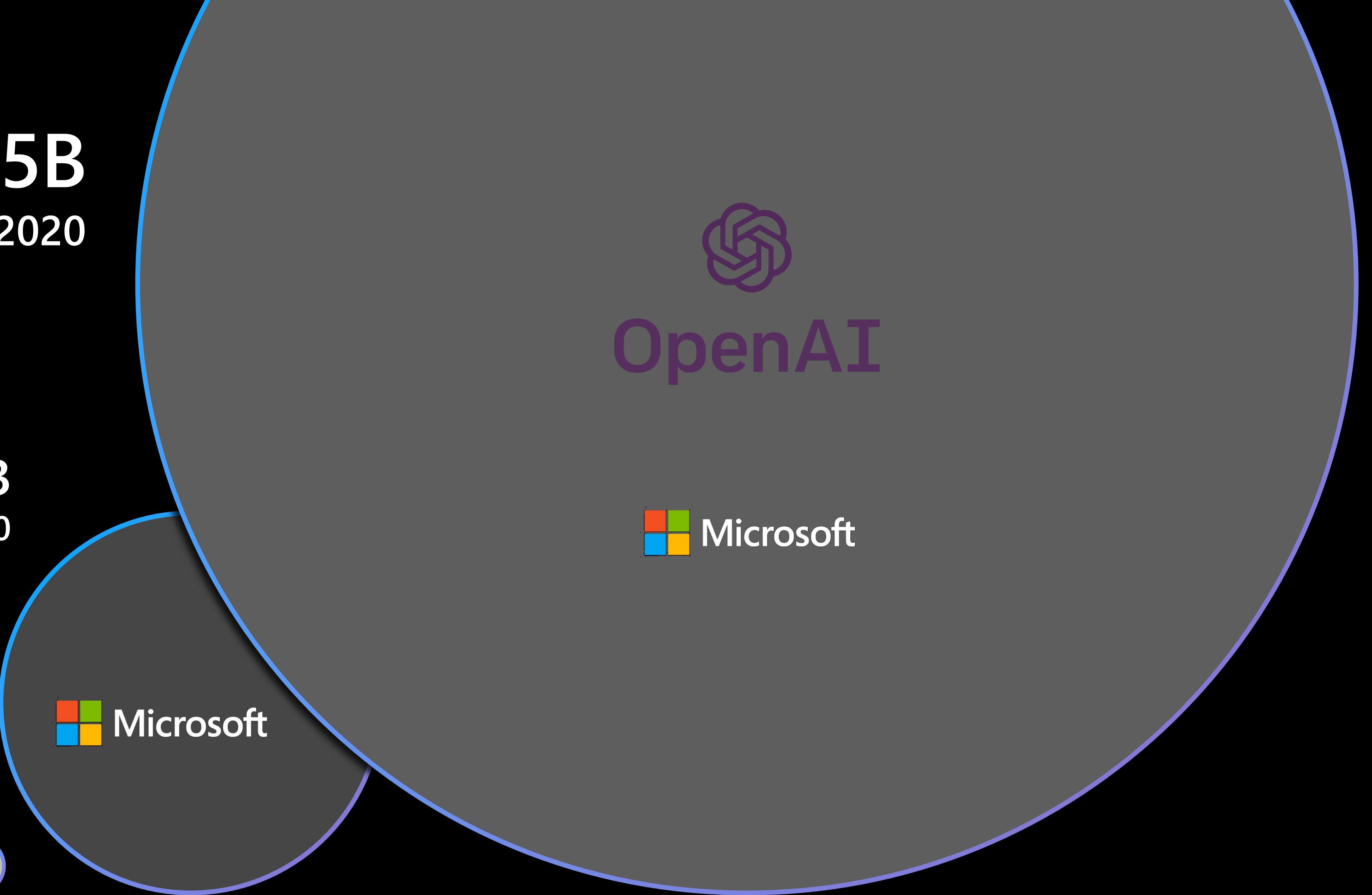
# Azure AI



# Traditional model development

High cost & slow deployment - Each service is trained disjointly





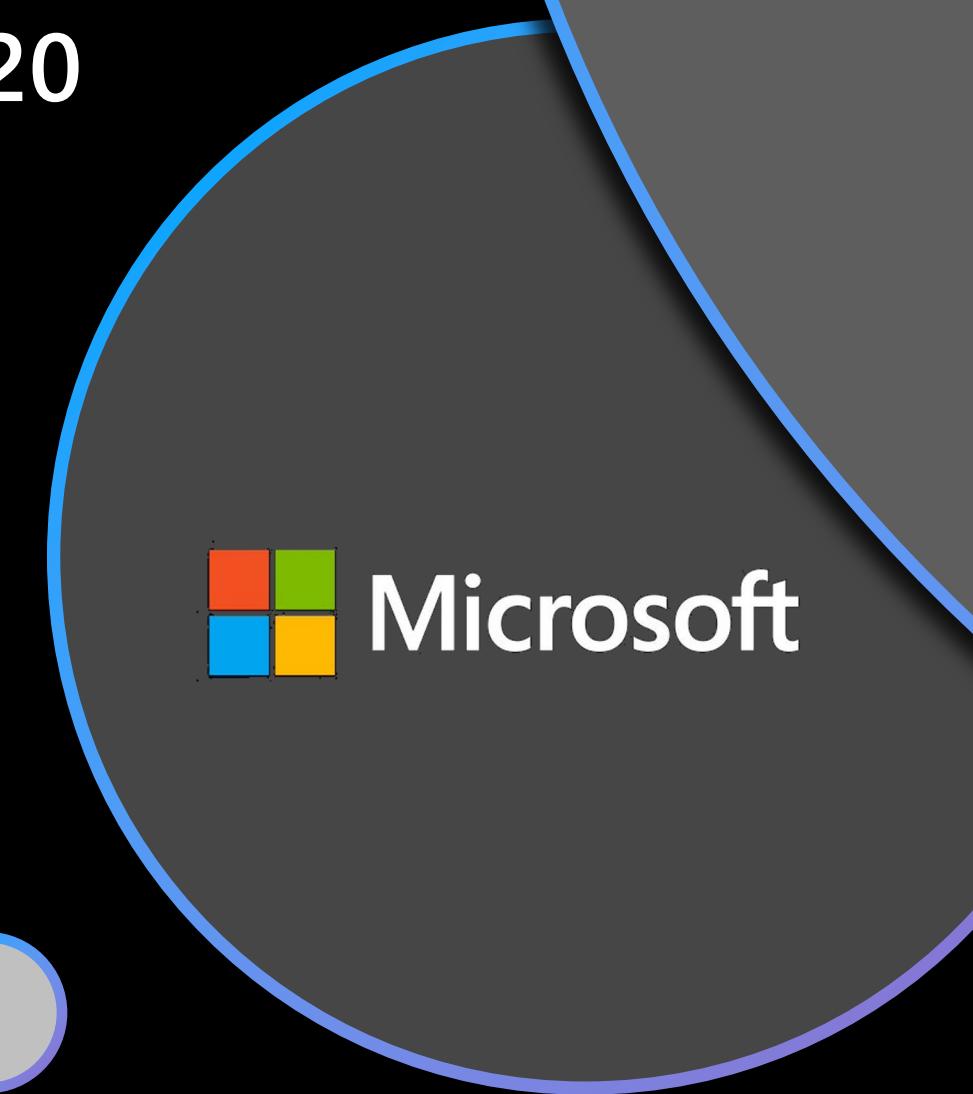
**175B**

GPT-3 | 2020



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**340M**

BERT-Large | 2018



**OpenAI**



**Microsoft**



**Microsoft**