

The Future of AI: Transforming Our World Over the Next 5 Years

Generative AI Fundamentals

RICOH

Ivan Portilla
Portilla@gmail.com
github.com/jiportilla/giveback



Objectives of This Talk

Upon completion of this lecture, you will understand:

- Origins of Modern Artificial Intelligence (AI)
 - ✓ Generative AI & Large Language Models (ChatGPT)
- Using GenAI as UX designers
- Resources available

Leverage AI for enhanced efficiency and innovation in design and development processes.

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

Agenda

1. Artificial Intelligence
 - GenAI (ChatGPT)
2. Demos
3. Closing Remarks & Q&A

GenAI

Join at
slido.com
#6626 917

<https://app.sli.do/event/b2zCNmqYrtVbpjGnXqTgpc>

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

Generative AI

The best thing about AI is its ability to ...

Adapt = 30%

Process = 22%

Analyze = 7%



GTP-4

Why is the sky blue?

OpenAI GPTx Answer:

The screenshot shows the OpenAI Playground interface. At the top, it says "Playground" and has "Your presets" and "Save" buttons. The conversation is as follows:

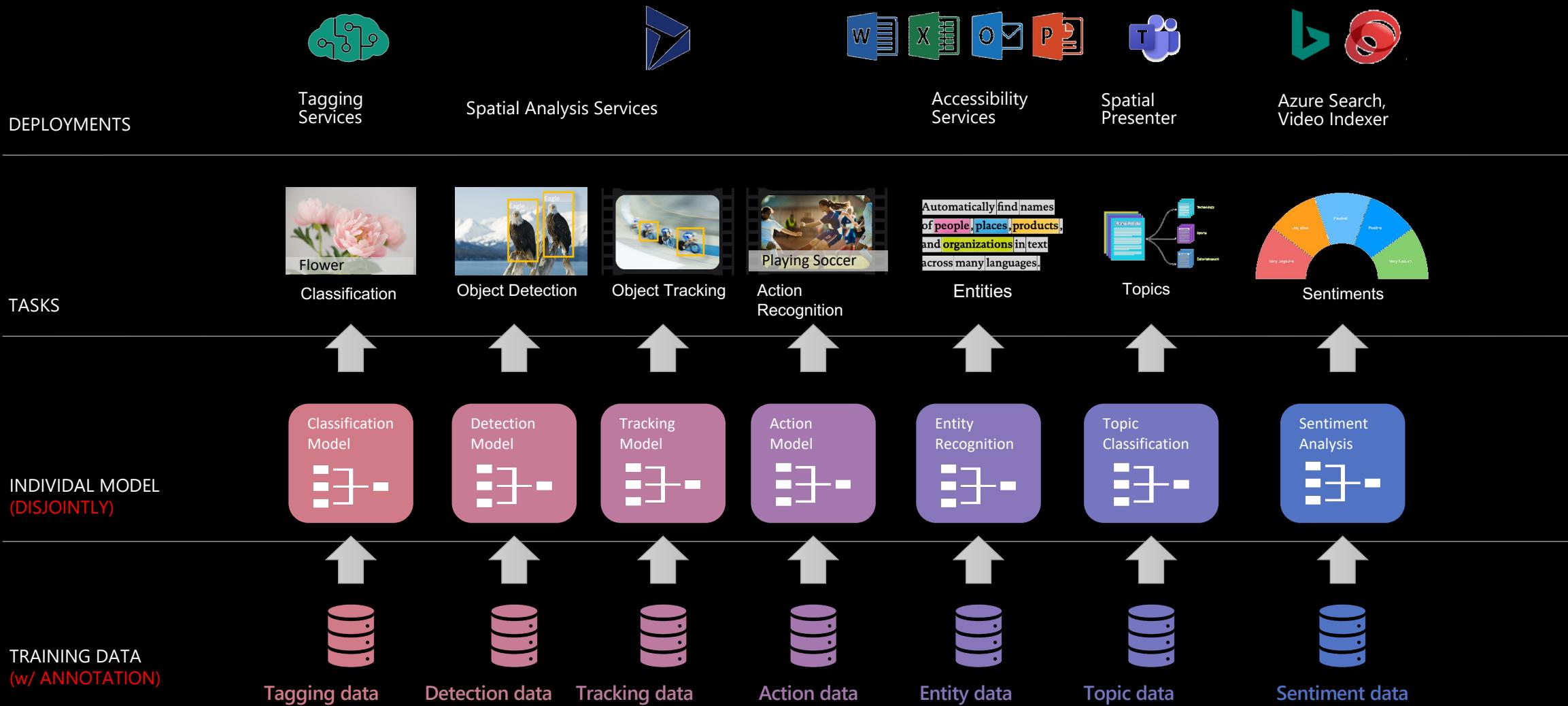
| SYSTEM | USER | ASSISTANT |
|-----------------------------|---------------------|--|
| you are a science professor | why is the sky blue | The sky appears blue because of a phenomenon called Rayleigh scattering. Essentially, when sunlight enters Earth's atmosphere, the shorter blue wavelengths are scattered more effectively by the gases and particles in the air compared to the longer red wavelengths. This scattering causes the blue light to be diffused in all directions, giving the sky its blue appearance to our eyes. |

The sky blue because the Earth's atmosphere scatters sunlight in all directions and blue light is scattered more than the other colors because it travels as shorter, smaller waves

[https://platform.openai.com/playground?
mode=complete](https://platform.openai.com/playground?mode=complete)

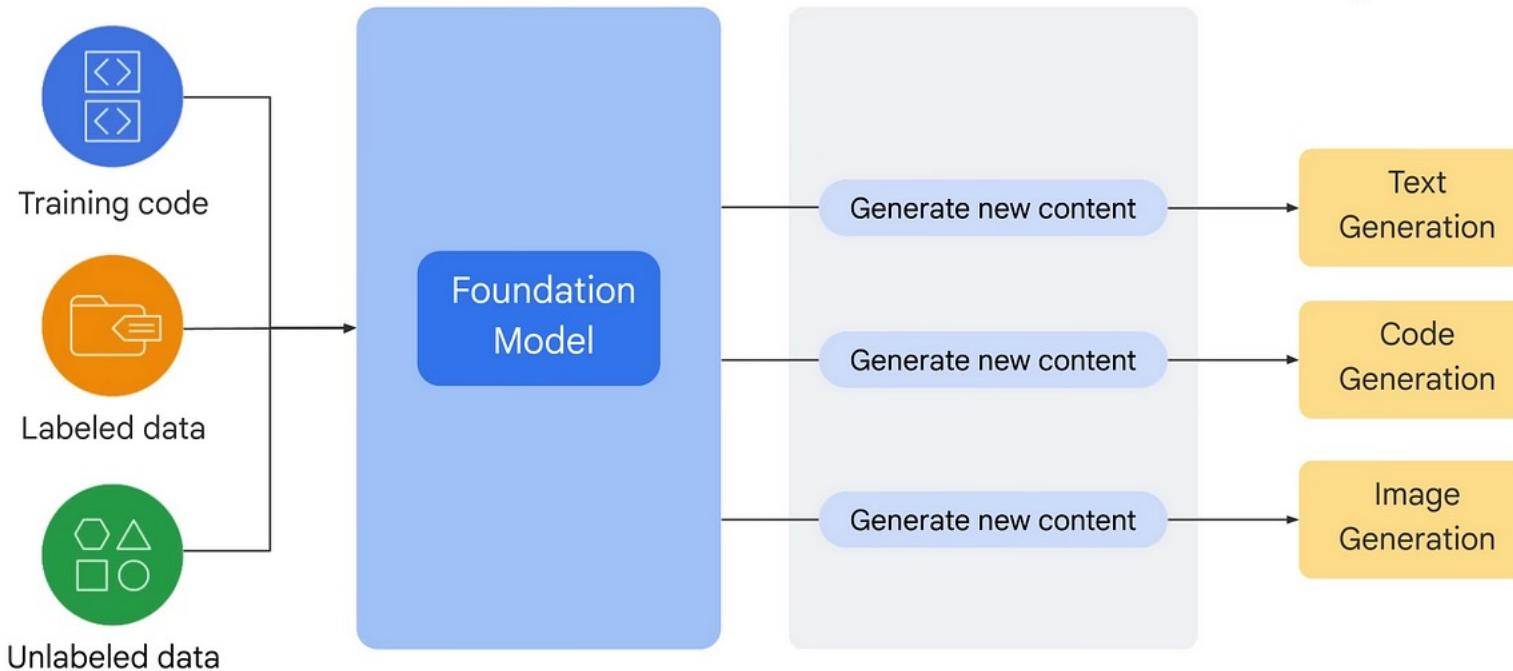
Traditional model development

High cost & slow deployment - Each service is trained disjointly



Foundation Models

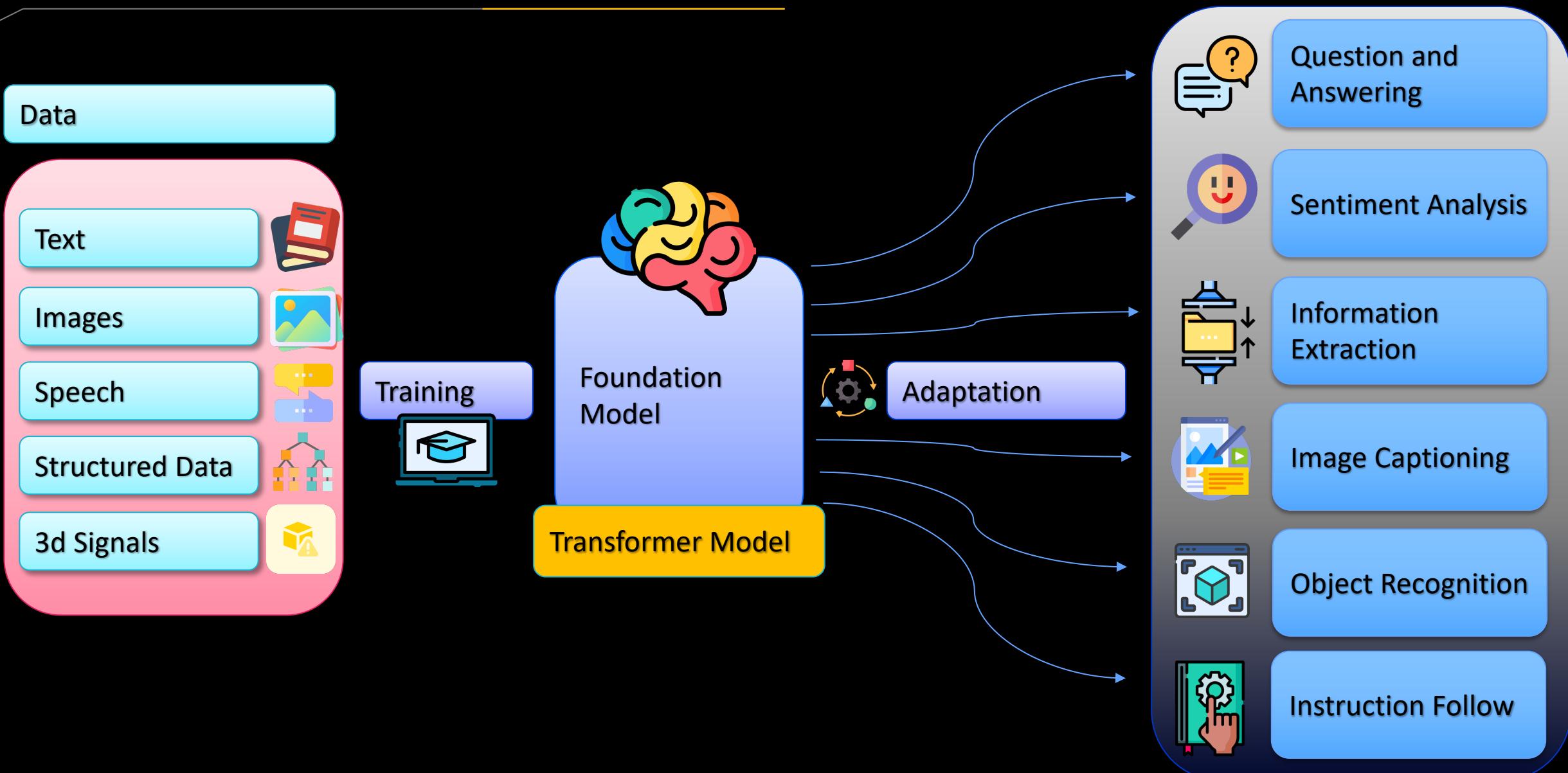
Gen AI Supervised, Semi-Supervised & Unsupervised Learning



Attention is all you need-> <https://arxiv.org/abs/1706.03762>



Foundation Models



Prompt Engineering

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 Jane's talk
was quite good.

Thank you for the book. Here's my address 2111 Ash Lane,
Boulder, CO 80301

Best,
Marilú

Name: Marilú

Mailing Address: 2111 Ash Lane, Boulder, CO 80301

Text Classification

Custom Named Entities (Few-Shot)

Extract job titles from the following sentences.

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

Job title: **Linux Engineer**

###

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

Job title: **none**

###

Sentence: Marc Simoncini | Director | Meetic

Job title: **Director**

###

Sentence: Damien 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**

Abstractive Summarization

Contact Center Summarization

Summarize this for a call center agent:

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

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

Agent: Good morning, Peter, 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 Peter Smith. Peter is asking for tips on manual payroll processing. The agent also informs Peter that certain aspects of payroll processing are regulated by the Internal Revenue Service (IRS) and the Department of Labor (DOL).

Business Examples

Text – to - Text

Generation, Summarization,
Extraction, Translation,
(Re)Search, Editing, Rewriting

Text – to – Image/Video

Image generation, Image
editing, Video generation and
editing, Game assets.

Text – to - Task

Software agents, Virtual
assistants, Automation

Text – to - Audio

Text-to-Speech, Audio
generation.

Software Engineering

Technical preview

Your AI pair programmer

The screenshot shows a dark-themed code editor interface. At the top, there's a tab bar with files: 'fetch_pic.js' (selected), 'push_to_git.py', 'JS d3_scale.js', 'JS fetch_stock.js', and 'JS material_ui.js'. Below the tabs is a code editor window containing the following JavaScript code:

```
1 const fetchNASAPictureOfTheDay = () => {
2   return fetch('https://api.nasa.gov/planetary/apod?api_key=DEMO_KEY', {
3     method: 'GET',
4     headers: {
5       'Content-Type': 'application/json',
6     },
7   })
8     .then(response => response.json())
9     .then(json => {
10       return json;
11     });
12 }
```

A small 'Copilot' button is visible at the bottom left of the code editor. Below the code editor, the GitHub Copilot logo (a white icon with two people) and the text 'GitHub Copilot' are displayed.

Local AI
Ollama
LM Studio
Jan

UX Design

Streamlining the Developer Handoff Process with AI

Enhancing the Prototyping Process through AI

Integrating AI into the UX Design Process

Case Studies of Successful AI Integration in UX

AI in Customer Interaction and Retention

AI for Job Scheduling and Progress Tracking

Graceful AI-Human Handoff

Local AI
Ollama
LM Studio
Jan

Law

Copilot

10:01 AM

How can I help you today?

Search options

Case Law Research

Summarize

Correct Grammar

Draft Email or Letter

Brainstorm Content

Emotional Support

Translate

Citation Check

Prompt Creator

Freeform Prompt

Feedback

Tech Support



Case Law Research

Research case law, brief cases, summarize and query them.



Summarize

Summarize text. Just copy and paste what you would like to summarize.



Grammar Check

Correct grammar. Just copy and paste what you would like to grammar check.



Draft Email or Letter

Draft email or letter. Guided drafting of emails or letters.



Brainstorm

Brainstorm content ideas with this guided prompt.



Emotional Support

Emotional support. Having a stressful day? Let's talk.



Translate

Translate. Copy and paste text to translate into multiple languages.



Citation Checker

Citation Checker. Check your legal citations using the Indigo Book.



Freeform Prompt

Freeform Prompt. Enter your freeform prompt into GPT-4 directly.



Prompt Creator

Prompt Creator. Assisted custom prompt creation tool.

Education

The screenshot shows a digital education platform interface. On the left, there's a sidebar with icons for TA (Teaching Assistant), Modules (selected), New Chat, and Conversations. The main area displays a "Welcome to CSCI-128 2024 Spring!" message. Below it is a search bar labeled "Search lessons". The main content area shows a vertical timeline of four weeks:

- Week 00: Intro** (2 LESSONS)
 - Slides - Introductions
 - Runestone Book
- Week 1: Variables & Operators** (4 LESSONS, 9 HOMEWORK)
- Week 2: Types & Binary Representations** (7 LESSONS, 8 HOMEWORK)
- Week 03: Branching, Algorithmic Thinking, & Basic Debugging** (6 LESSONS, 8 HOMEWORK)

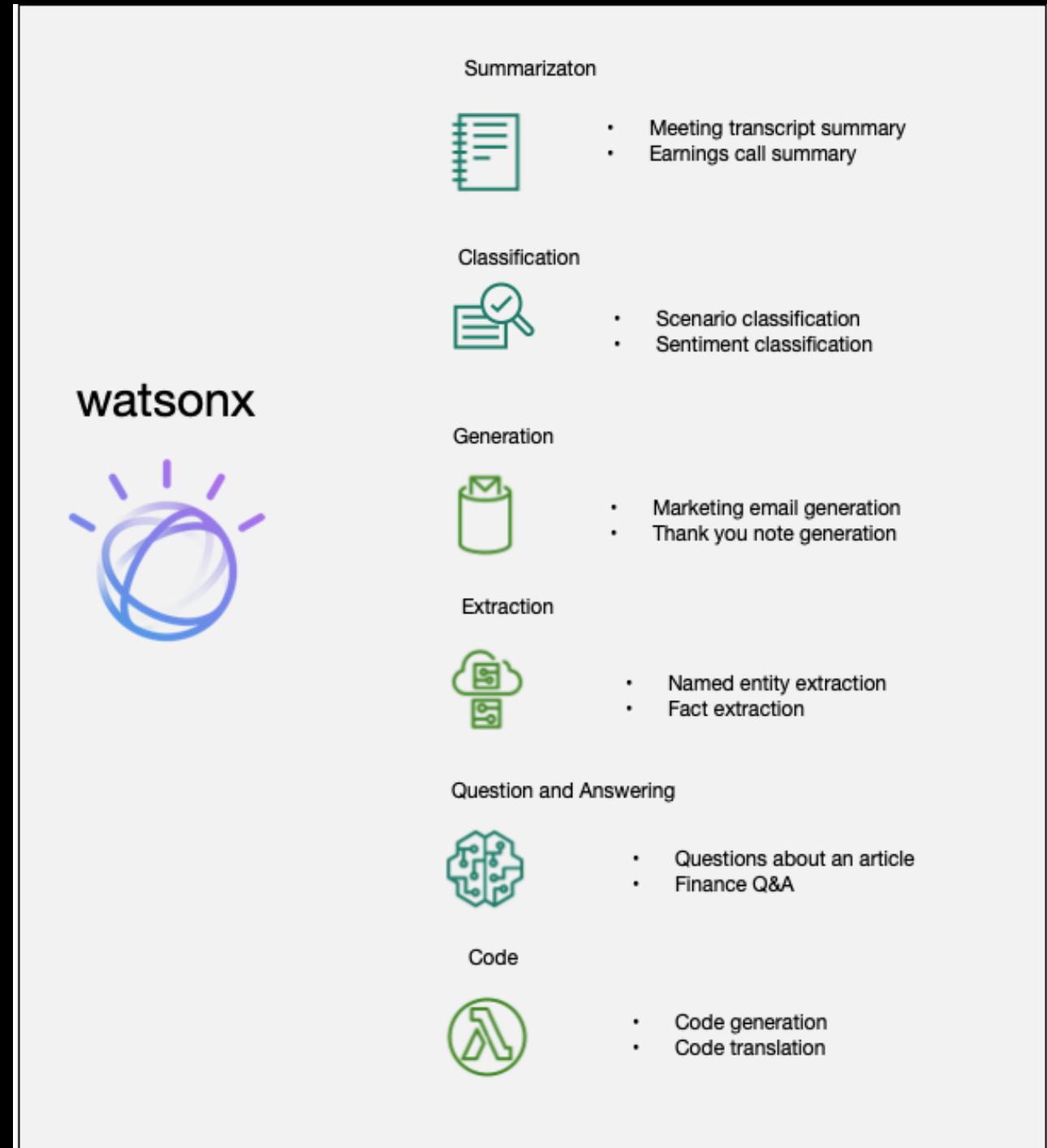
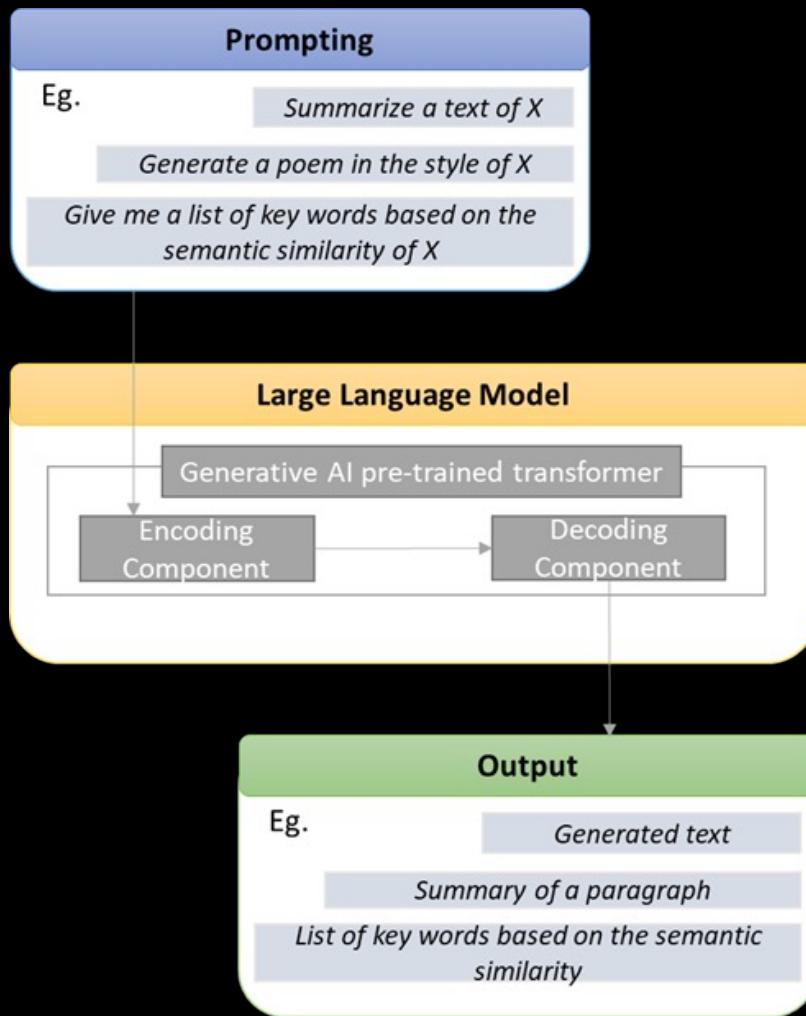
<https://www.aiedu.org/teach-ai>

Lab exercise

IBM watsonx studio

<https://dataplatform.cloud.ibm.com/>

GenAI



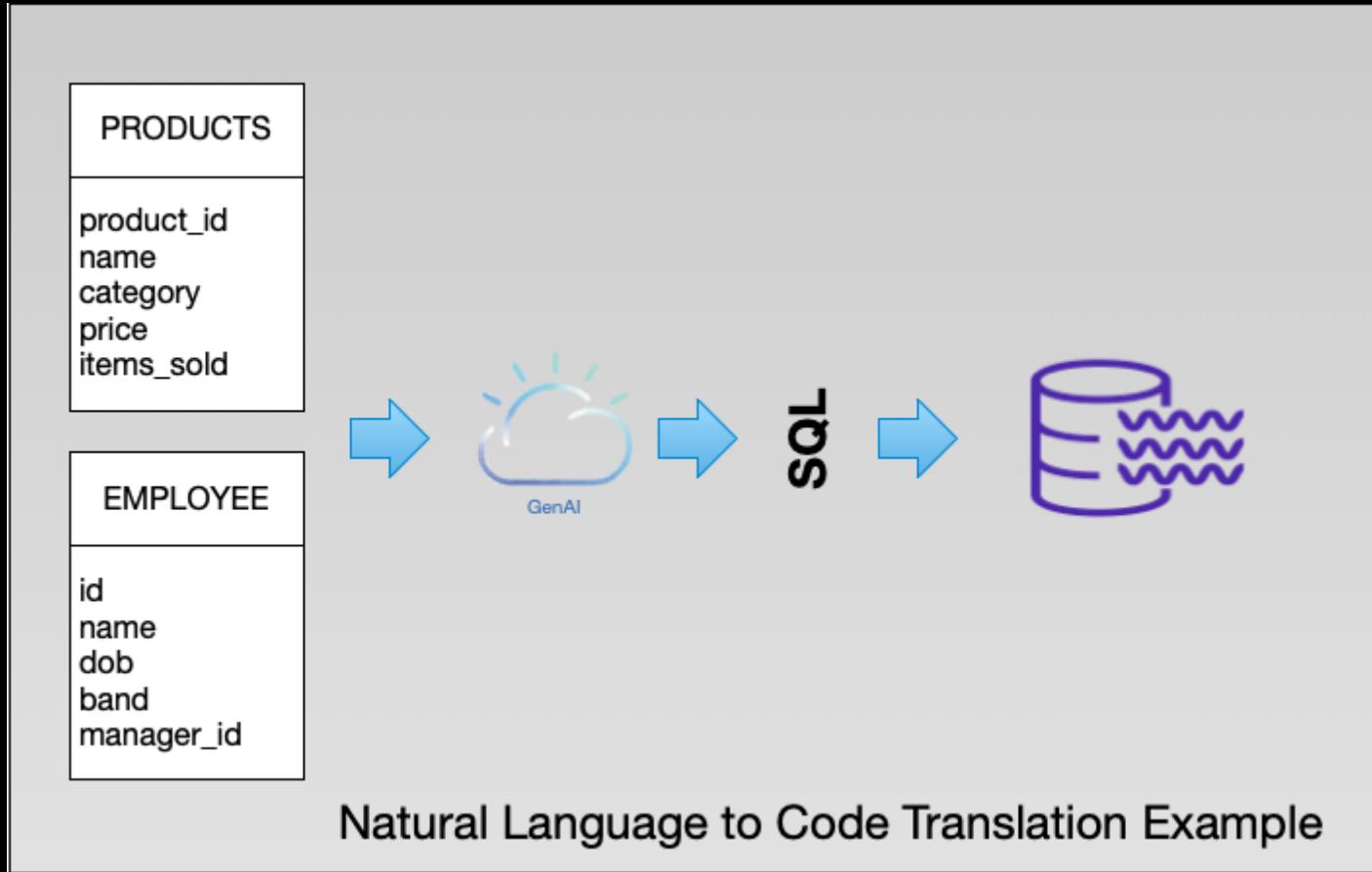
Lab 2

English – Code Translation

Query top five products based on the price and items sold

Query the count of employees in band L6 and with manager ID as 23079

Write SQL Query given the table name is {Table} and columns are {Columns} for the question : {question}.



Look ahead

AGI



The Evolution of AI

General AI
Revolutionary

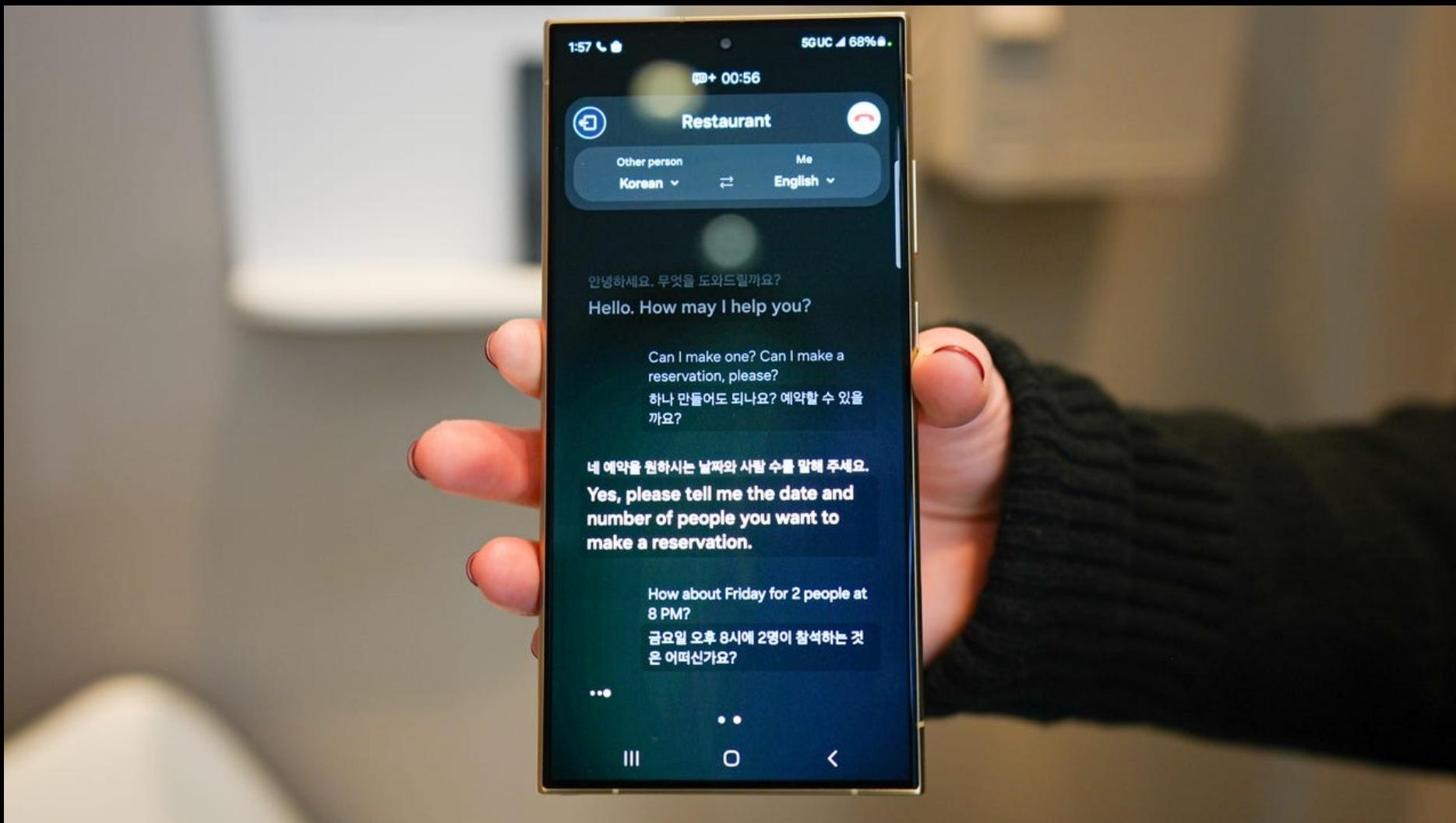
Narrow AI
Emerging

Broad AI
Disruptive and
Pervasive

2050 and
beyond

▼ We are
here

Live Translate



<https://youtu.be/3hPoEmIBQdY?si=y0w6Qj9POCZnbc8w&t=51>

Meta Smart Glasses



<https://www.meta.com/smart-glasses>

Smarter Siri

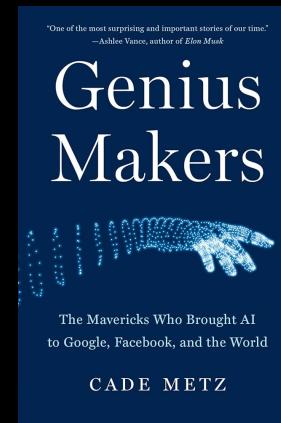
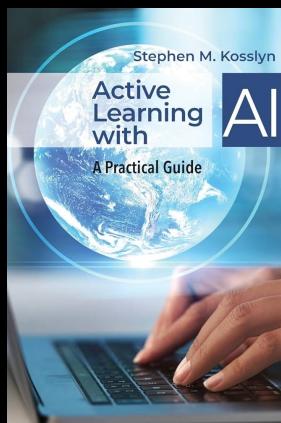
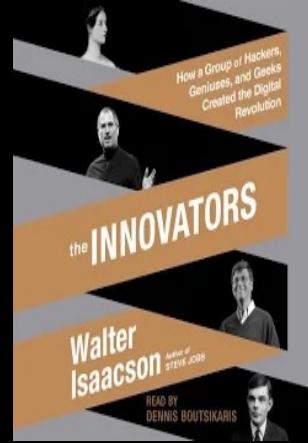
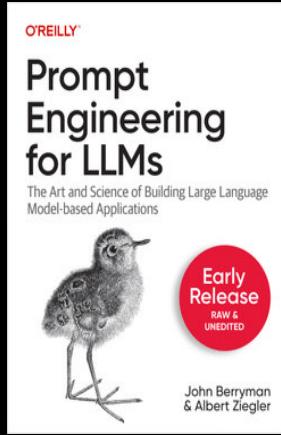
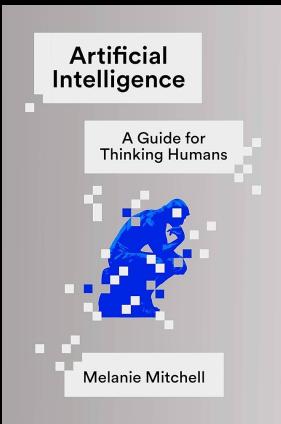
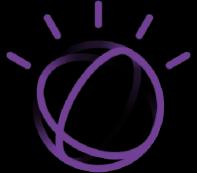


<https://developer.apple.com/wwdc24/>

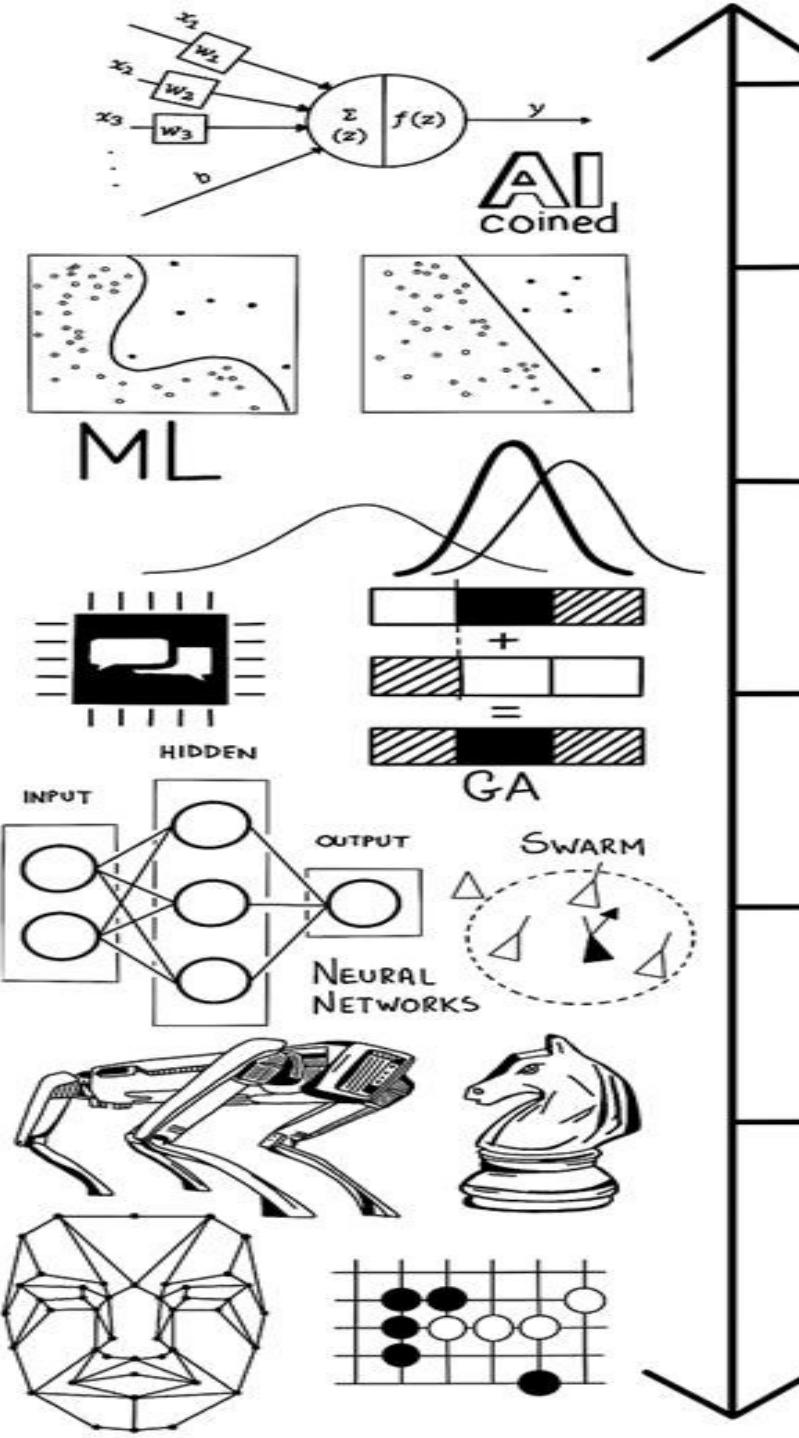
Q & A

Ivan Portilla

portilla@gmail.com



RECAP



1950s

- The term "Artificial Intelligence" is coined.
- Concept of artificial neural network is introduced.
- Model of the Perceptron is invented.
- LISP programming language is invented.

1960s

- ML models for prediction introduced.
- Unimat robot works on a car assembly line.
- Shakey the robot has natural movement, and problem solving abilities.
- Paper highlighting the flaws of Perceptrons creates doubt of the concept.

1970s

- BKG wins at Backgammon (with luck).
- Evolutionary algorithms popularized.
- Freddy the robot is able to use "visual perception".
- Prolog programming language invented.

1980s

- LISP machines for expert systems.
- Hope for neural networks via the introduction of backpropagation.
- Swarm intelligence is popularized.

1990s

- TD-Gammon shows the power of reinforcement learning.
- Experiments with autonomous cars.
- IBM's Deep Blue champions chess.
- Rise of Internet bots and search.

2000s

- Game of checkers solved.
- Face recognition with neural networks.
- IBM's Watson wins at Jeopardy.
- XBox Kinect's advanced motion detection.
- Smart voice assistants by tech giants.
- Google's Alpha Go champions Go.
- AI specific hardware and IoT devices.
- Tumor detection better than doctors.
- Self-driving cars.

Understanding GenAIOps, LLMOps, RAGOps

