

Build your own Copilot with Semantic Kernel

Arafat Tehsin

Senior Manager – Platform & Digital Engineering – EY



NETFLIX



TikTok



zoom



Spotify®

facebook

Infused with Artificial Intelligence

AI First Apps

- Artificial Intelligence as their core technology and functionality
 - Designed for better user experience
 - Use machine learning algorithms to learn from user behaviors over time
 - Automate repetitive tasks, allowing humans to focus on important things
 - Help users make informed decisions by providing insights and predictions
 - Overall experience



ChatGPT revolutionised the internet

Beware, ChatGPT Is Going After the Attention Economy

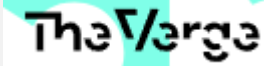
OpenAI will pay developers based on how engaging they can make their chatbots. That incentive model has proved harmful in the past.

January 17, 2024 at 4:00 PM GMT+11



Japan literary laureate unashamed about using ChatGPT

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OpenAI partners with Arizona State University to use ChatGPT in classrooms /

Students and faculty can expect to use more AI on campus.



ChatGPT effect: Coursera sees signups for AI courses every minute in 2023

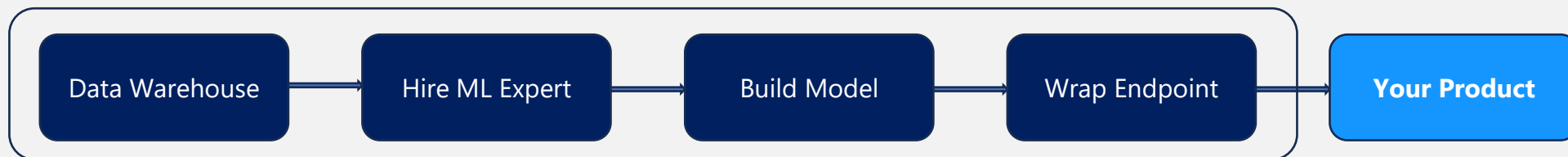
Unprecedented growth

Time to reach 100M users

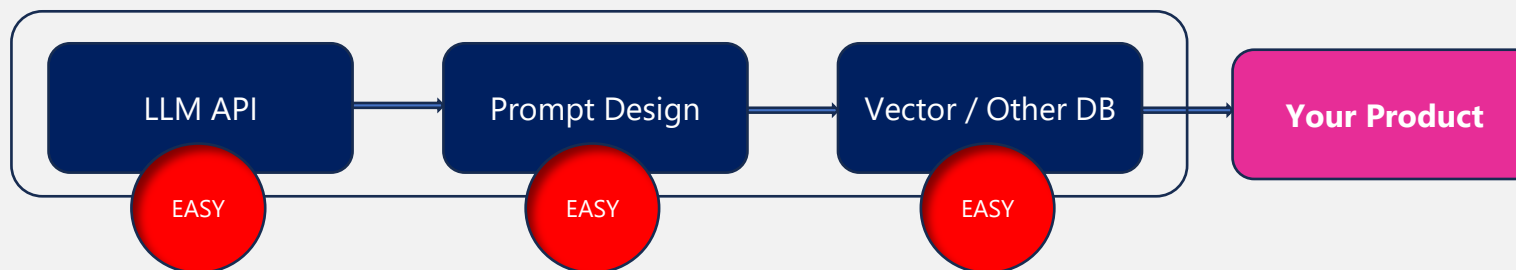


AI Then and Now 🤔

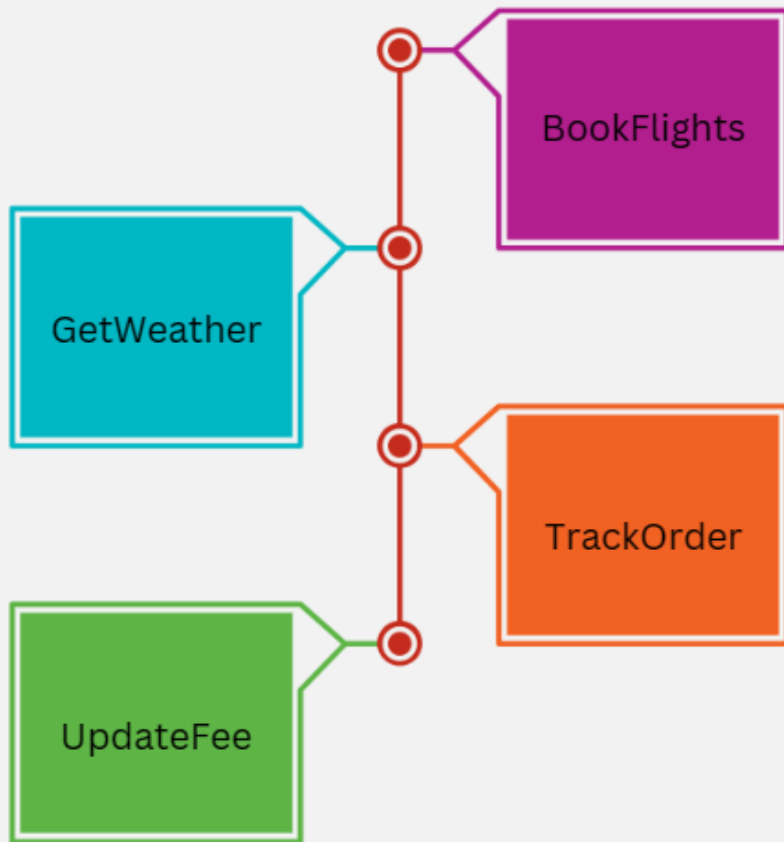
💡 Traditional Machine Learning / AI Development



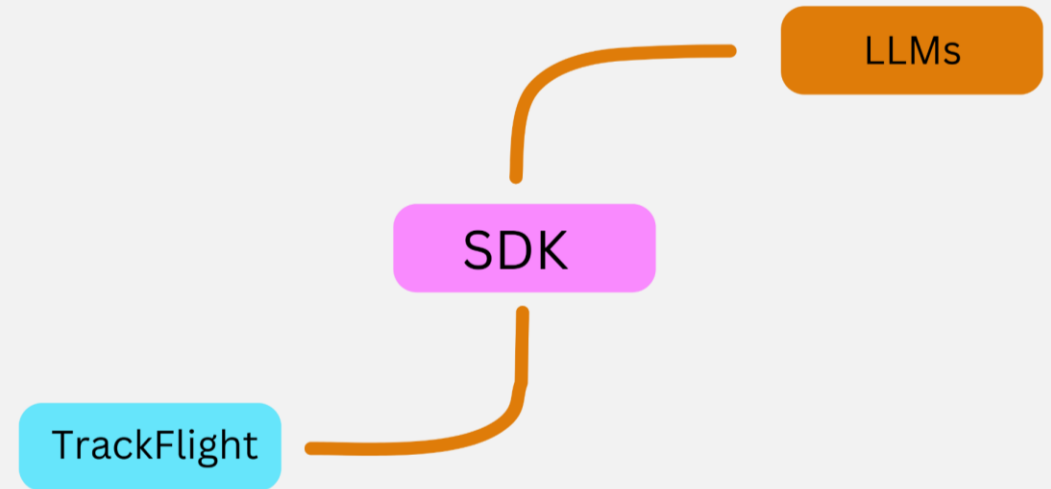
💡 Cognitive and Contextual AI Development



How do I use AI as a core of my app?

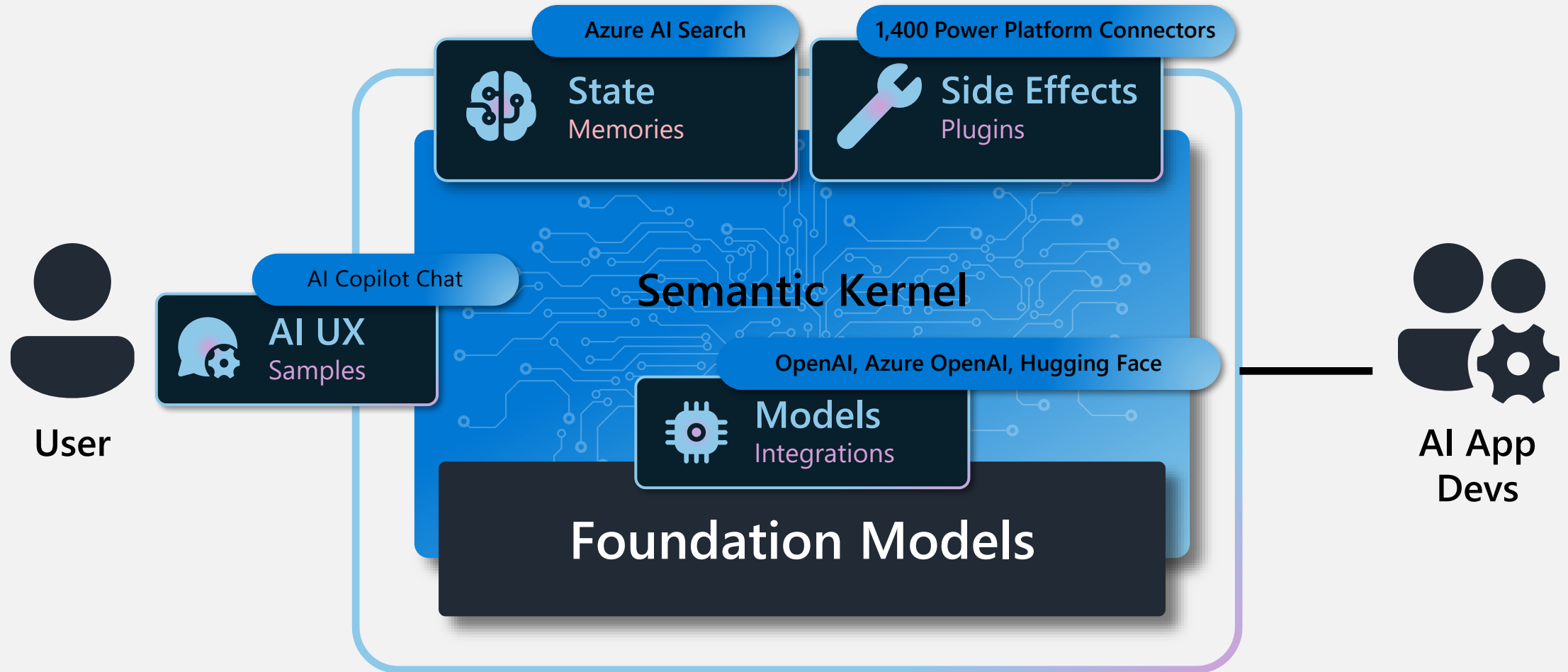


Own API Wrappers /
Orchestration Layer

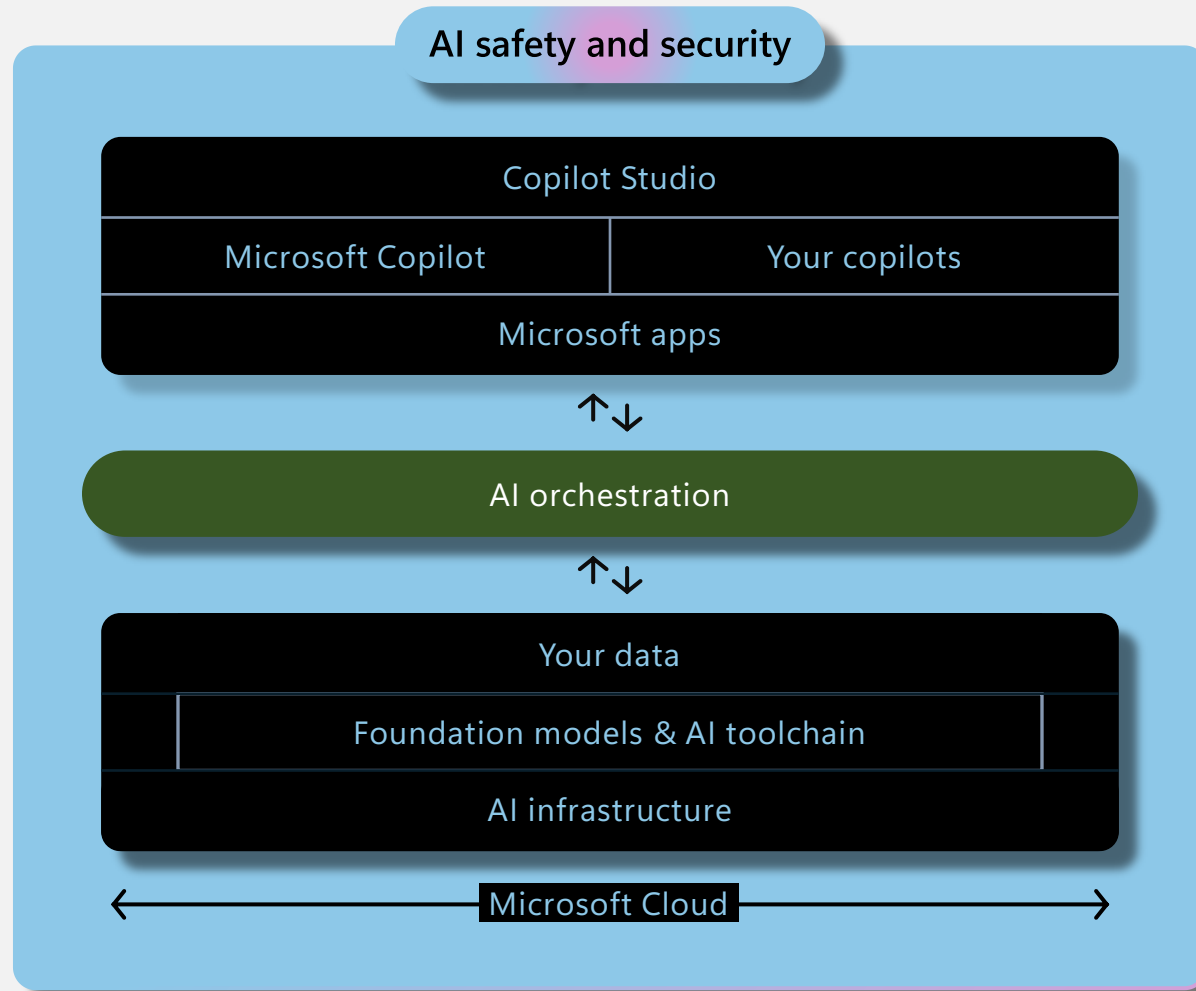


SDK

Semantic Kernel



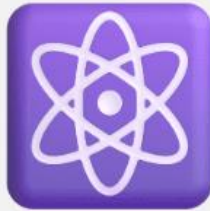
Copilot Stack



AI Agents

- AI that can solve problems with you. More than just a boring chatbot.
 - Copilot: Special type of agent that works side-by-side with you
 - For example, writing an email or provide suggestions for what to write next
- Agents are comprised of 3 main building blocks
 - Retrieve the information - *Plugin*
 - Plan how to use that information - *Planner*
 - Respond back to user or perform an action - *Persona*

Plugins



Planners

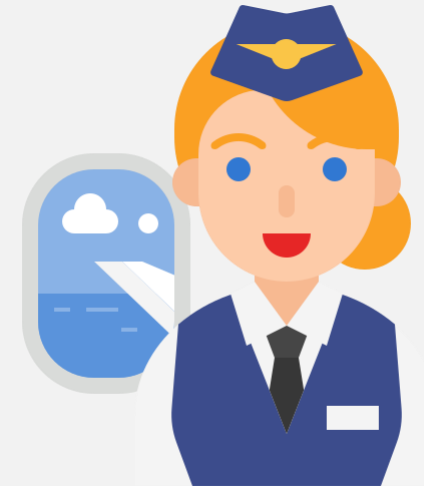
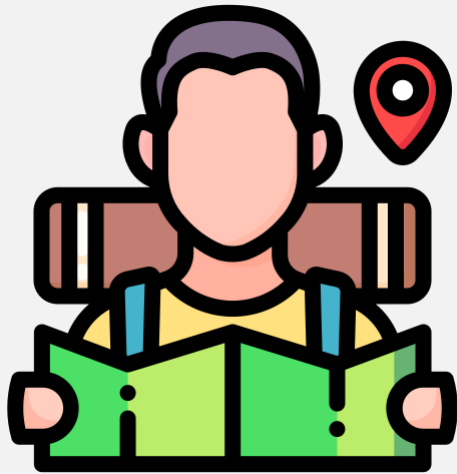


Personas



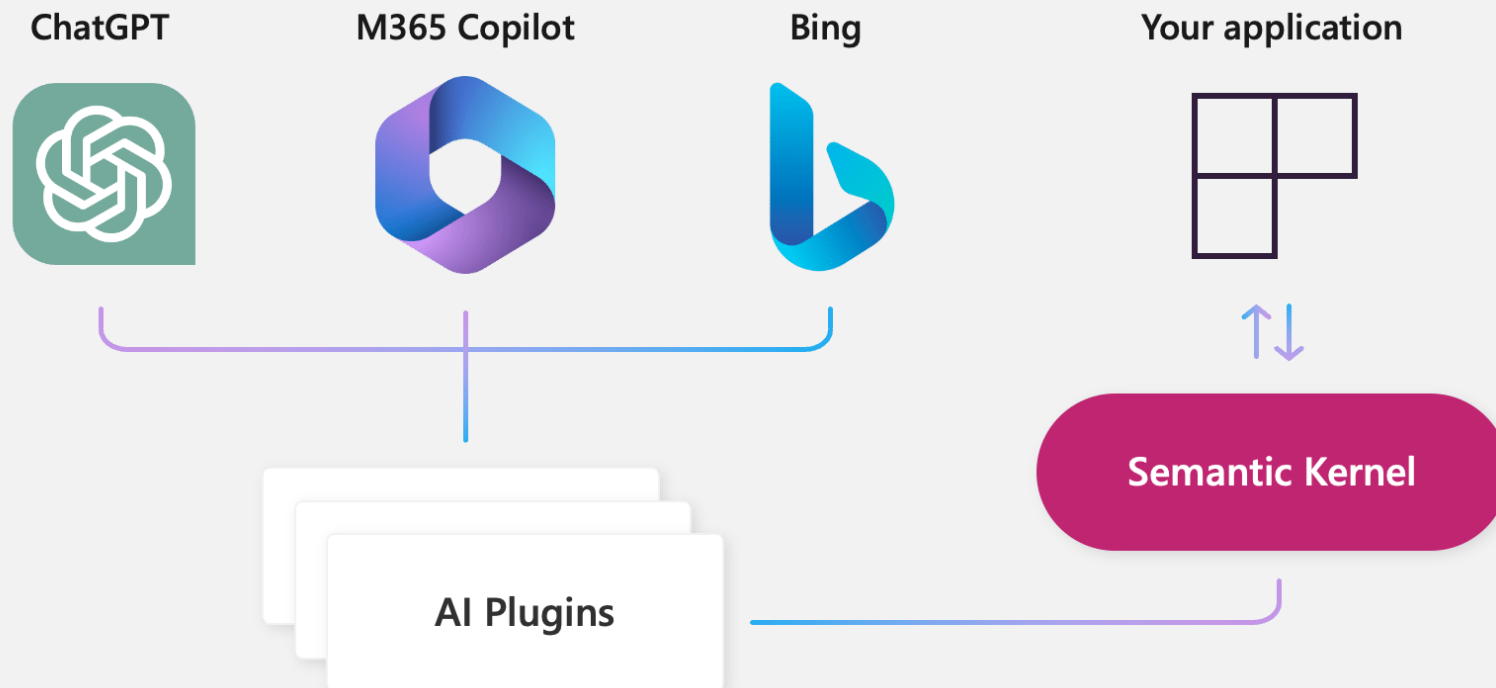
Personas

- Give your agent a personality by providing a sufficient metaprompt / instruction
 - *Is it friendly? Is it helpful? Is it sarcastic?*
- Helps us remain within our scope as well
 - For example, a simple flight tracker wouldn't give you the beach suggestions



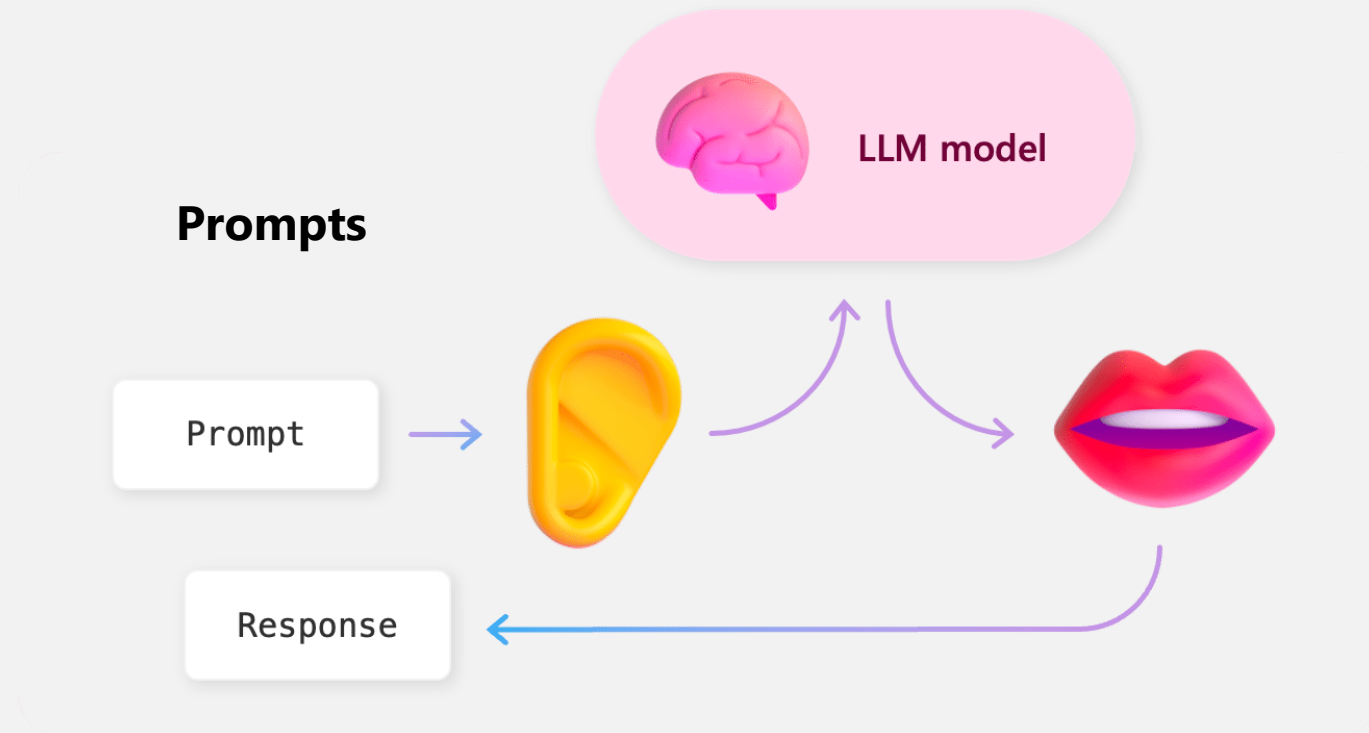
Plugins

- Group of functions that can be exposed to AI apps and services
 - Set of instructions or tasks that your app can perform
- Flight (Plugin) -> TrackFlight (Functions), BookFlight (Functions)
- Semantic description is utmost important while creating functions



Prompts

- Individual steps that tells your app what to do and how to do it
- For example, if you're building a Weather Copilot
 - Get Current Weather from API
 - Take that current weather and format it into user-friendly message



Native Function

- Tools that you use to build your apps / Copilots
- For example, for the Flight Booking:
 - You may need to calculate the cost as per the given time and other factors

Native function



Save information



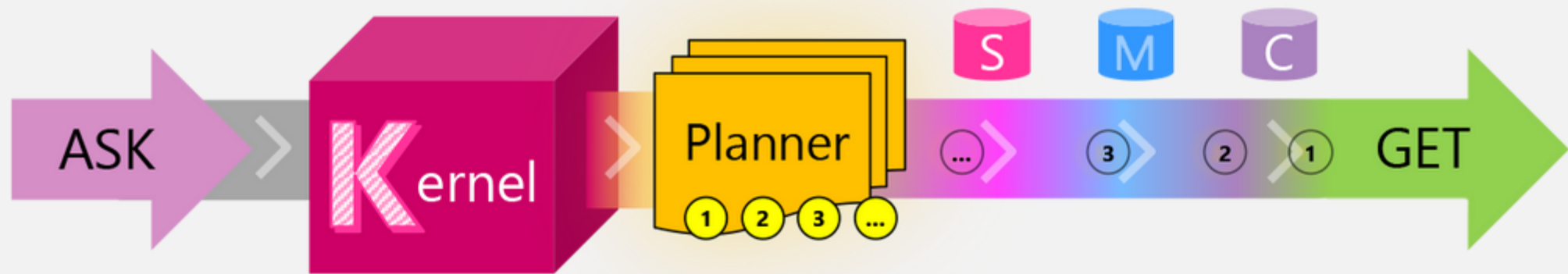
Look things up



Perform actions

Planners

- Planners are a set of tools that allow developers to automatically orchestrate Prompts and Native functions
- Use AI to mix-and-match the plugins registered in the kernel to complete a goal
- It saves time and cost by optimising the number of calls to LLMs



Gen-4 and Gen-5 Planners

- **Handlebar Planners**

- Planner that uses Handlebars syntax to generate a plan
- Good support of loops and conditional statements

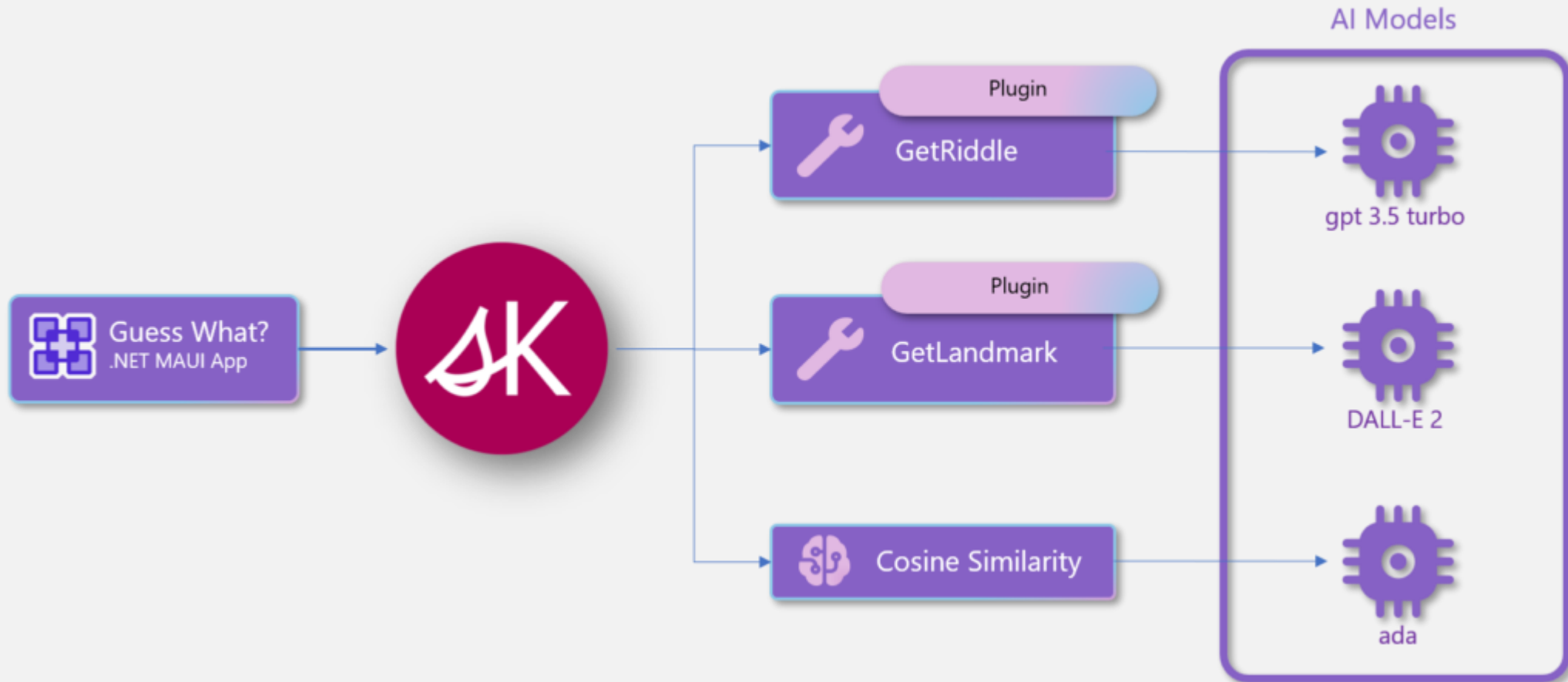
- **Function calling stepwise planners**

- Use ReAct methodology
 - Ability to make a function call, reason over it and then make another function call
- More robust than a vanilla function call by OpenAI



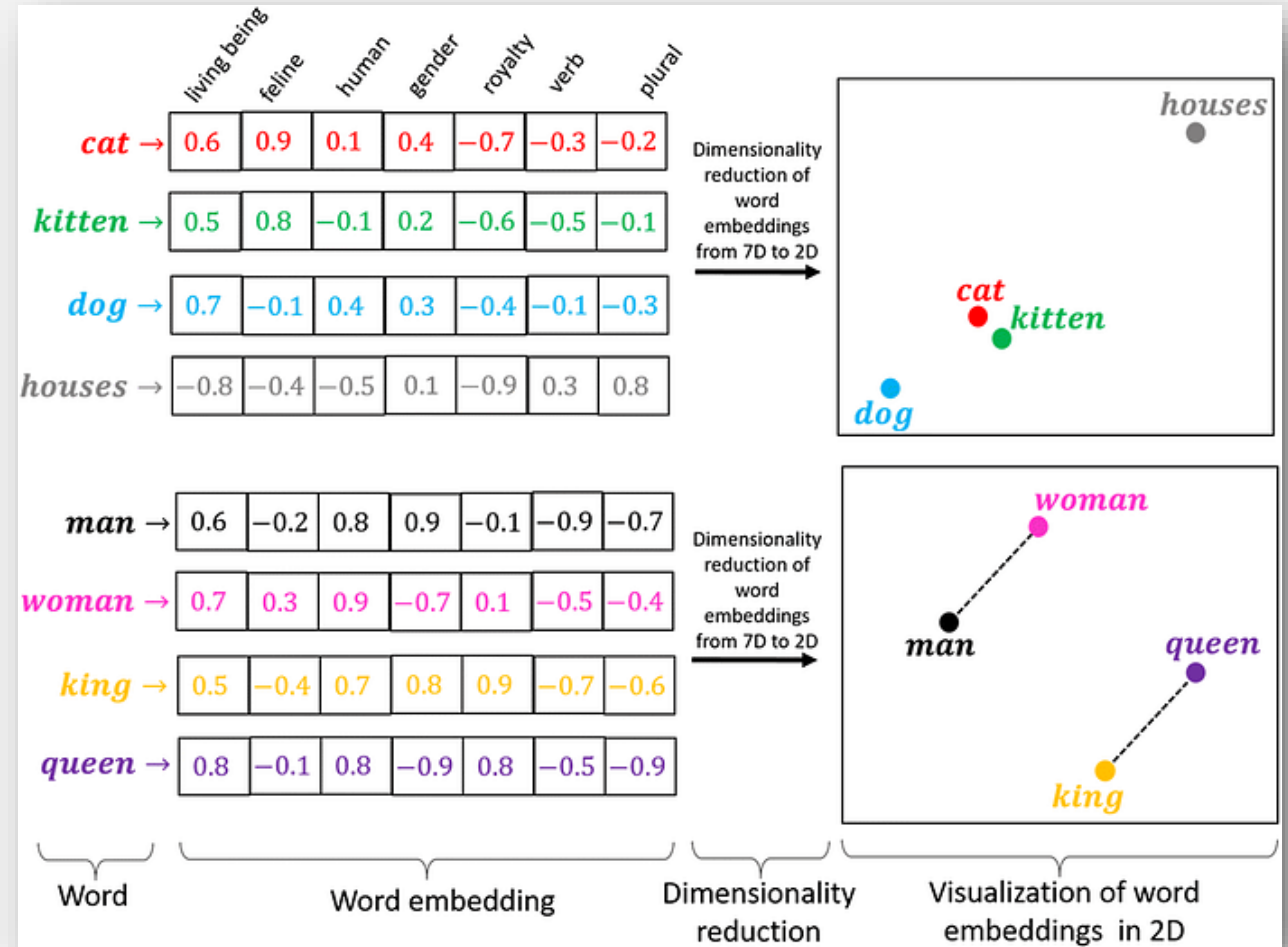
Introducing GuessWhat?

- A cross platform app built using .NET MAUI, powered by Semantic Kernel



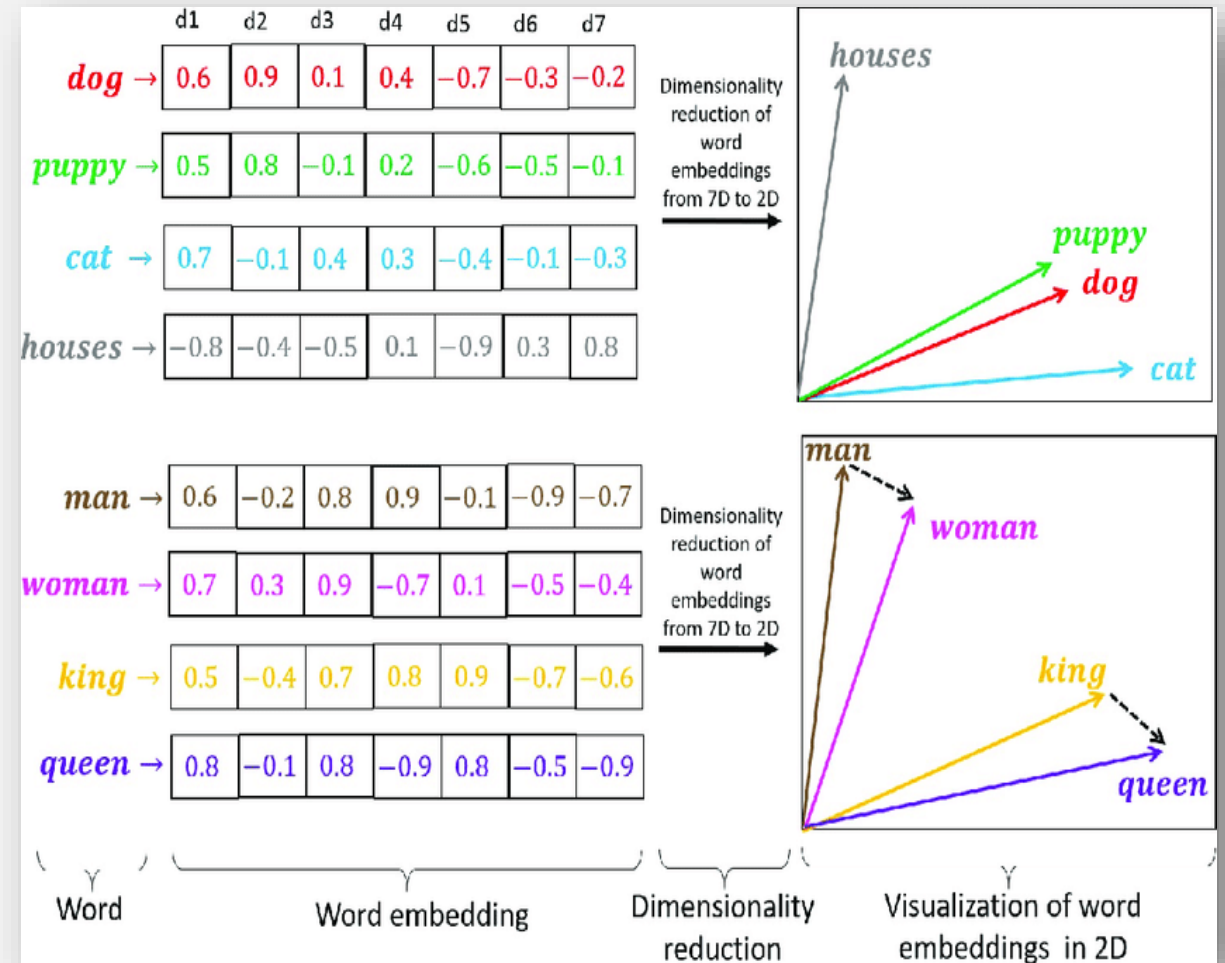
Embeddings

- Computers only understand numbers
- Words are stored in high-dimensional vectors
- For example, "cat" and "kitten" may be closer in the vector space



Cosine Similarity

- Comparing two things but in a different way
- Cosine similarity is calculated by taking the cosine of the angle between two vectors
- If they're in the same direction then it's 1 otherwise -1. If it is in 90° then it's 0

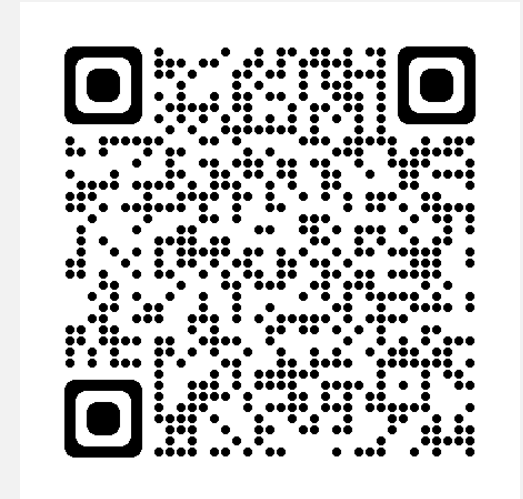


Questions

arafat@outlook.com

[linkedin.com/in/arafattehsin](https://www.linkedin.com/in/arafattehsin)

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