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Combining Web Apps and AI – Unlock the Power of the Azure OpenAI Service

Ben Jarvis

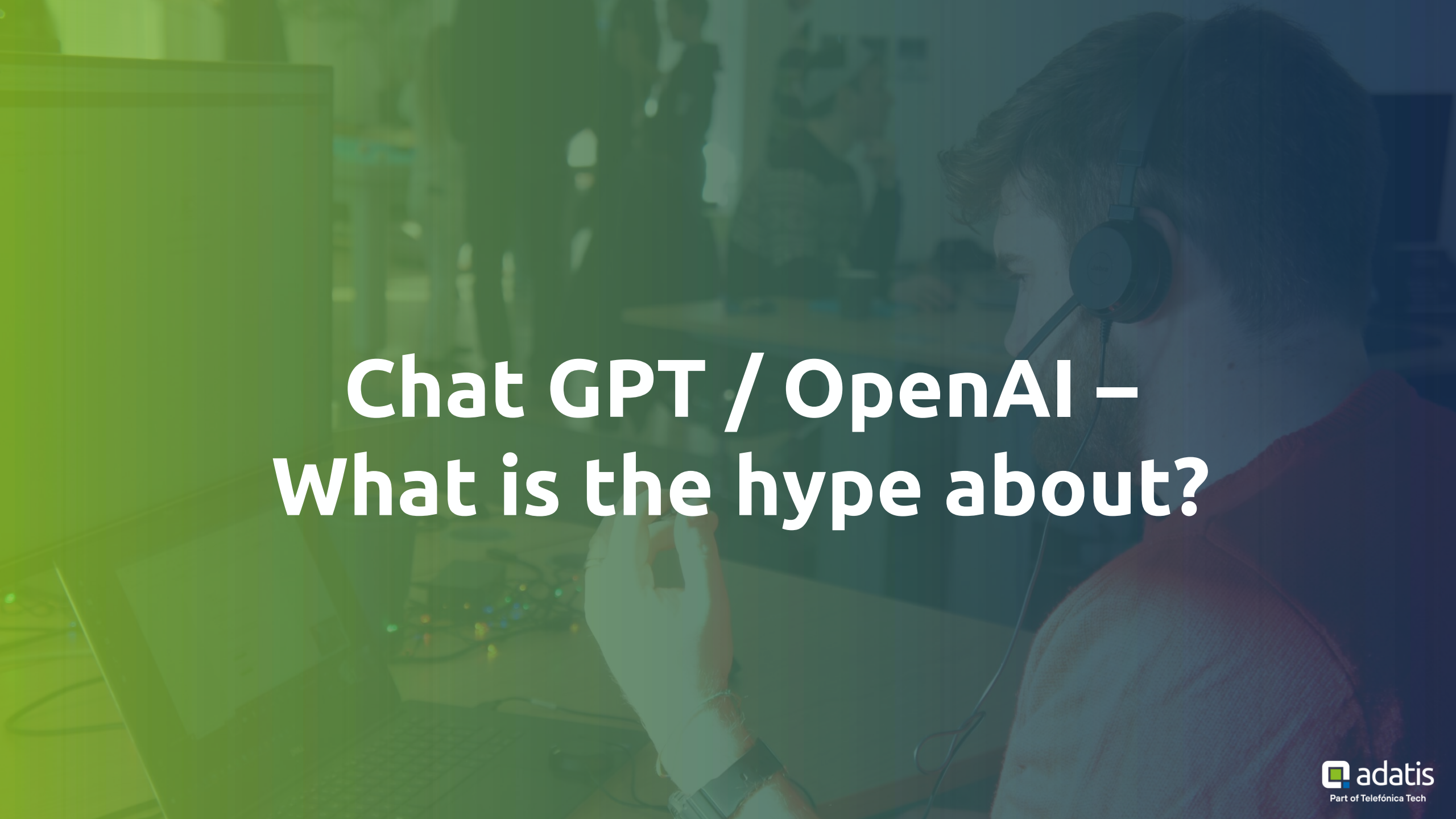
About Me

- **CTO at Adatis**
- **10+ years of experience across:**
 - App Dev
 - Infrastructure/DevOps
 - Data Engineering
- **5+ years architecting and delivering solutions across the full Azure stack**



Agenda

- **ChatGPT / OpenAI – What is the hype about?**
- **Use Cases for LLMs**
- **An Introduction to the Azure OpenAI Service**
- **Building apps with the Azure OpenAI Service**
- **Demo**

The background image shows a person from the side, wearing a headset with a microphone, sitting at a desk with a computer monitor. The scene is dimly lit, suggesting an office or call center environment. The image has a green and blue color overlay.

Chat GPT / OpenAI – What is the hype about?

Chat GPT / OpenAI – What is the hype about?

ChatGPT may be coming for our jobs. Here are the 10 roles that AI is most likely to replace.

Aaron Mok and Jacob Zinkula Updated Sep 4, 2023, 3:24 PM BST



Insider compiled a list of the 10 jobs that could be disrupted by AI tools like ChatGPT, according to experts. Jens Schlueter/Getty Images

Here are the jobs most at risk of being replaced by ChatGPT – is your job safe?

 Comment



Anugraha Sundaravelu

Wednesday 22 Mar 2023 11:24 am

Will ChatGPT Replace Programmers?

Understanding ChatGPT: A Programmer's New Best Friend?



Maria Redillas

STEPHEN THOMAS

IDEAS APR 21, 2023 9:00 AM

Who Will You Be After ChatGPT Takes Your Job?

Generative AI is coming for white-collar roles. If your sense of worth comes from work—what's left to hold on to?

INNOVATIONS

ChatGPT took their jobs. Now they walk dogs and fix air conditioners.

Technology used to automate dirty and repetitive jobs. Now, artificial intelligence chatbots are coming after high-paid ones.

By [Pranshu Verma](#) and [Gerrit De Vynck](#)

June 2, 2023 at 6:00 a.m. EDT

300 million jobs could be affected by latest wave of AI, says Goldman Sachs



By [Michelle Toh](#), CNN

Published 4:45 AM EDT, Wed March 29, 2023



What is ChatGPT?



GPT = Generative Pre-Trained Transformer



AI-based chatbot system that returns relevant, natural sounding answers



Uses NLP (natural language processing) to generate conversations




It is a part of a family of machine learning models called a LLMs (Large Language Models)

What is an LLM?

BJ

What is a large language model (LLM)?



A Large Language Model (LLM) is a type of artificial intelligence (AI) model that has been trained on massive amounts of text data to understand and generate human language. These models are designed to perform a wide range of natural language processing (NLP) tasks, including text generation, text summarization, language translation, sentiment analysis, and more.

LLMs like GPT-3 (Generative Pre-trained Transformer 3) and its predecessors have gained significant attention and popularity due to their ability to generate coherent and contextually relevant text. They are typically based on deep learning architectures known as Transformers, which have proven highly effective in handling sequential data like text.

Here are some key characteristics of Large Language Models:

1. **Scale:** LLMs are trained on massive datasets containing billions of words or more. This extensive training data helps them capture a broad range of language patterns and nuances.
2. **Pre-training:** LLMs undergo a pre-training phase where they learn to predict the next word in a sentence or fill in missing words by analyzing vast amounts of text data. This pre-training equips them with a general understanding of language.
3. **Fine-tuning:** After pre-training, LLMs are often fine-tuned on specific tasks or domains. This fine-tuning process adapts the model's general language understanding to more specialized tasks, such as text classification or language translation.
4. **Generative capabilities:** LLMs can generate human-like text, making them useful for content generation, chatbots, and creative writing applications.
5. **Contextual understanding:** LLMs excel in capturing context and can generate coherent responses by considering the context of the input text.
6. **Broad applicability:** LLMs have found applications in various fields, including natural language understanding, language translation, chatbots, content generation, question-answering systems, and more.

It's important to note that while LLMs have shown impressive capabilities, they also raise ethical concerns related to potential biases in the training data, misuse for generating misleading information, and privacy issues when handling sensitive text data. Consequently, their development and deployment must be carried out with careful consideration of these issues and ethical guidelines.

What is an LLM?



Give me a TLDR



A Large Language Model (LLM) is a powerful AI system trained on vast amounts of text data to understand and generate human language. It can perform tasks like text generation and translation, thanks to its extensive training. LLMs use deep learning and are known for their contextual understanding and broad applications. However, they also raise ethical concerns related to bias and misuse.



What is an LLM?

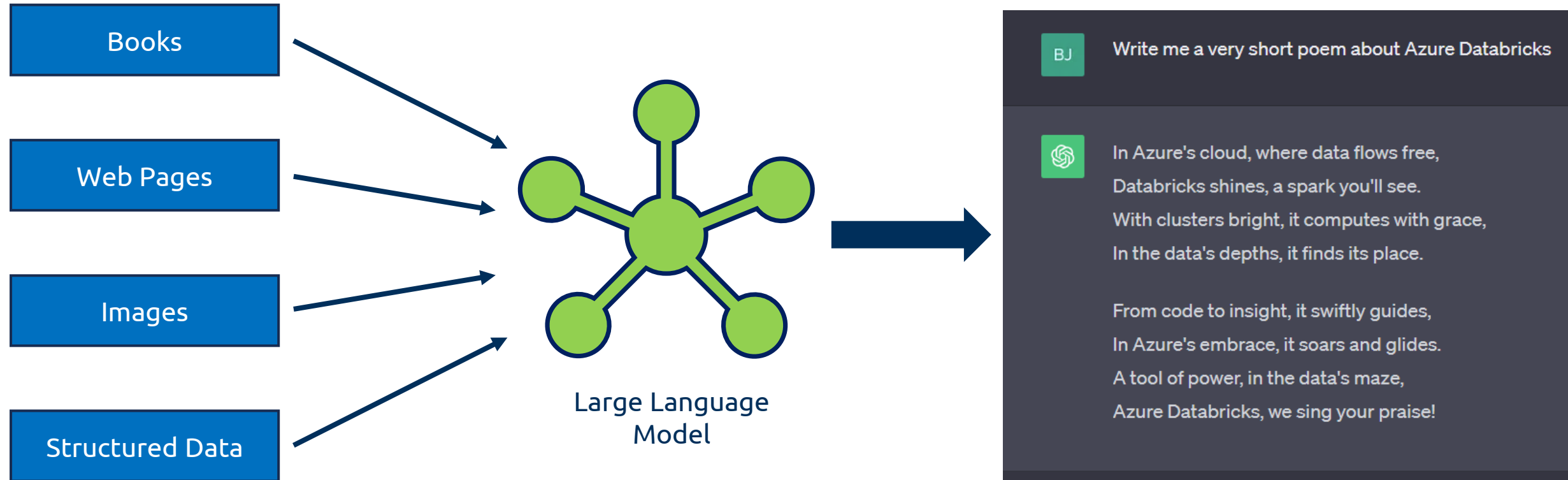
BJ

Summarize this in 3 short bullet points

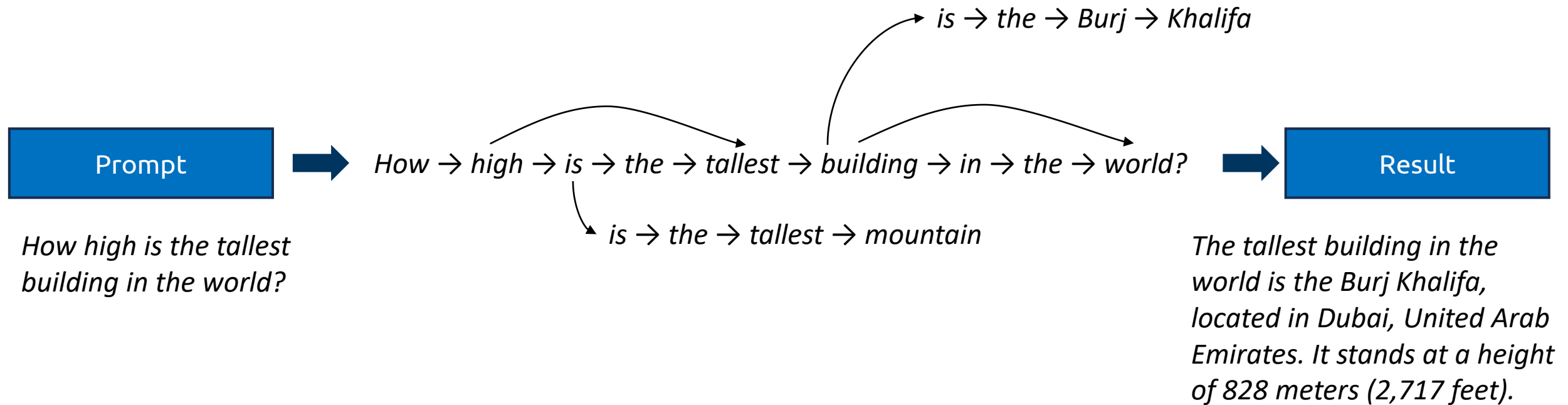


- LLMs are AI models trained on massive text data for language understanding.
- They excel in tasks like text generation and translation due to deep learning.
- Ethical concerns, such as bias and misuse, must be considered in their development and use.

What is an LLM?



What is an LLM?





Use Cases for LLMs

What use cases are LLMs suitable for?

BJ

Tell me a joke about Microsoft Azure



Why did the developer bring an umbrella to their Microsoft Azure meeting?

Because they heard there was a chance of "cloud" bursts!

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Create a funny quiz question about databricks



Sure, here's a humorous quiz question about Databricks:

11. What do you call a Databricks engineer who accidentally deletes a critical dataset?

- a) A Data-wrecker
- b) A Data-destroyer
- c) A Data-daredevil
- d) A Data-survivor

(Answer: a) A Data-wrecker)

BJ

Write a song about SQL Server



(Verse 1)

In the world of data, where records flow,
There's a server that we all know,
It's SQL Server, the database king,
Where data's stored and it starts to sing.

(Chorus)

SQL Server, you're so fine,
Storing data, one line at a time,
With your tables and queries, you make it right,
In the world of databases, you're the shining light.

(Verse 2)

Tables and rows, columns galore,
You handle it all, that's for sure,
From transactions to queries complex,
SQL Server, you're the best.

What use cases are LLMs suitable for?



Content Generation



Content Summarisation
and Search



Pattern Recognition



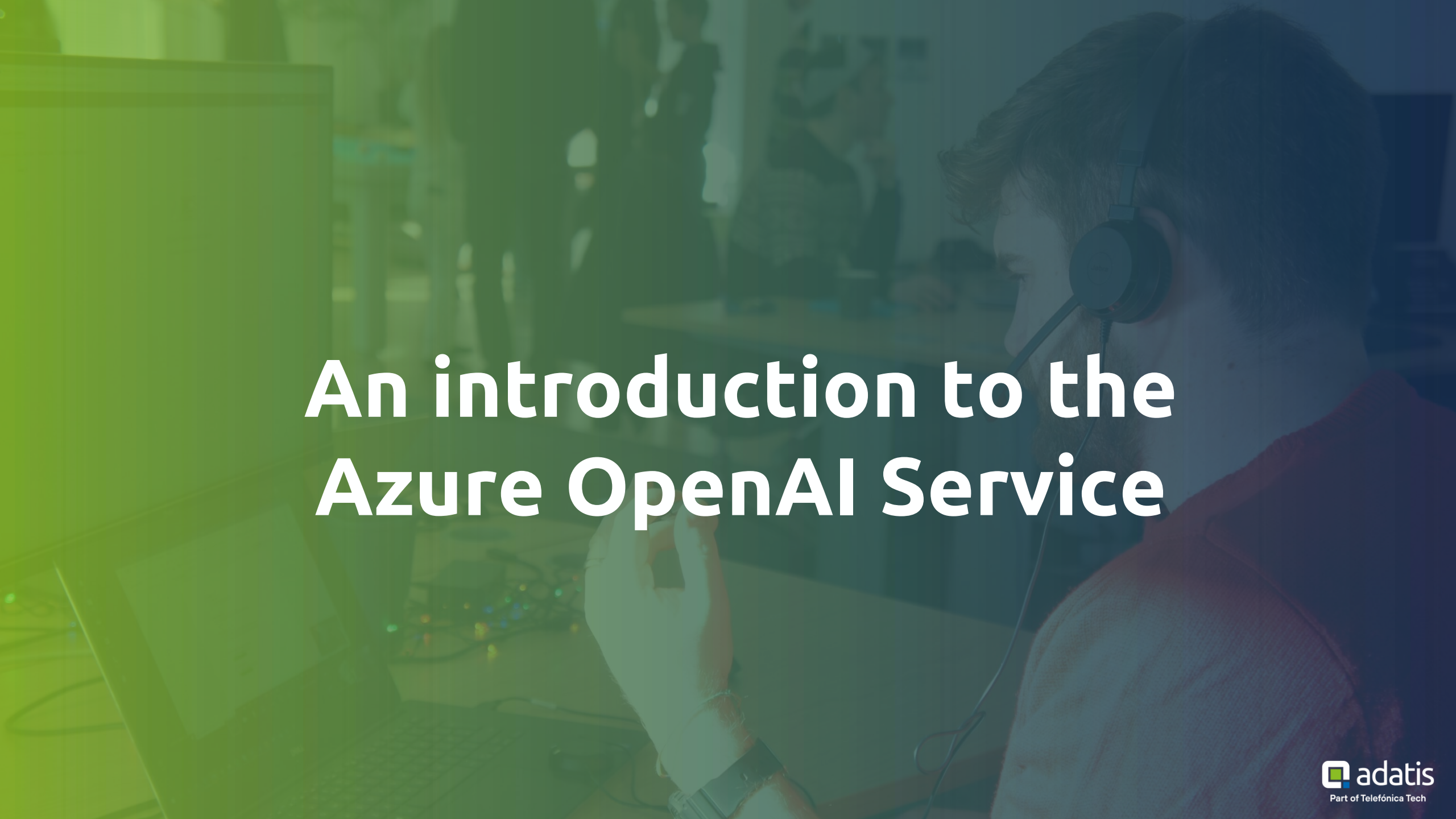
Code Generation



Companion Working



Prediction

A person with a beard and curly hair is shown in profile, wearing a large headset with a microphone. They are sitting at a desk with a computer monitor and keyboard. The background is a blurred office environment with other people. The image has a green and blue color overlay.

An introduction to the Azure OpenAI Service

Azure AI (Cognitive) Services



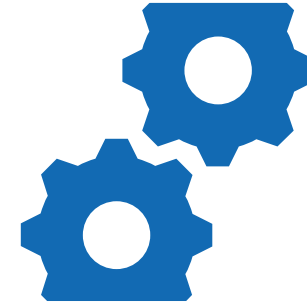
Language



Speech



Vision



Decision

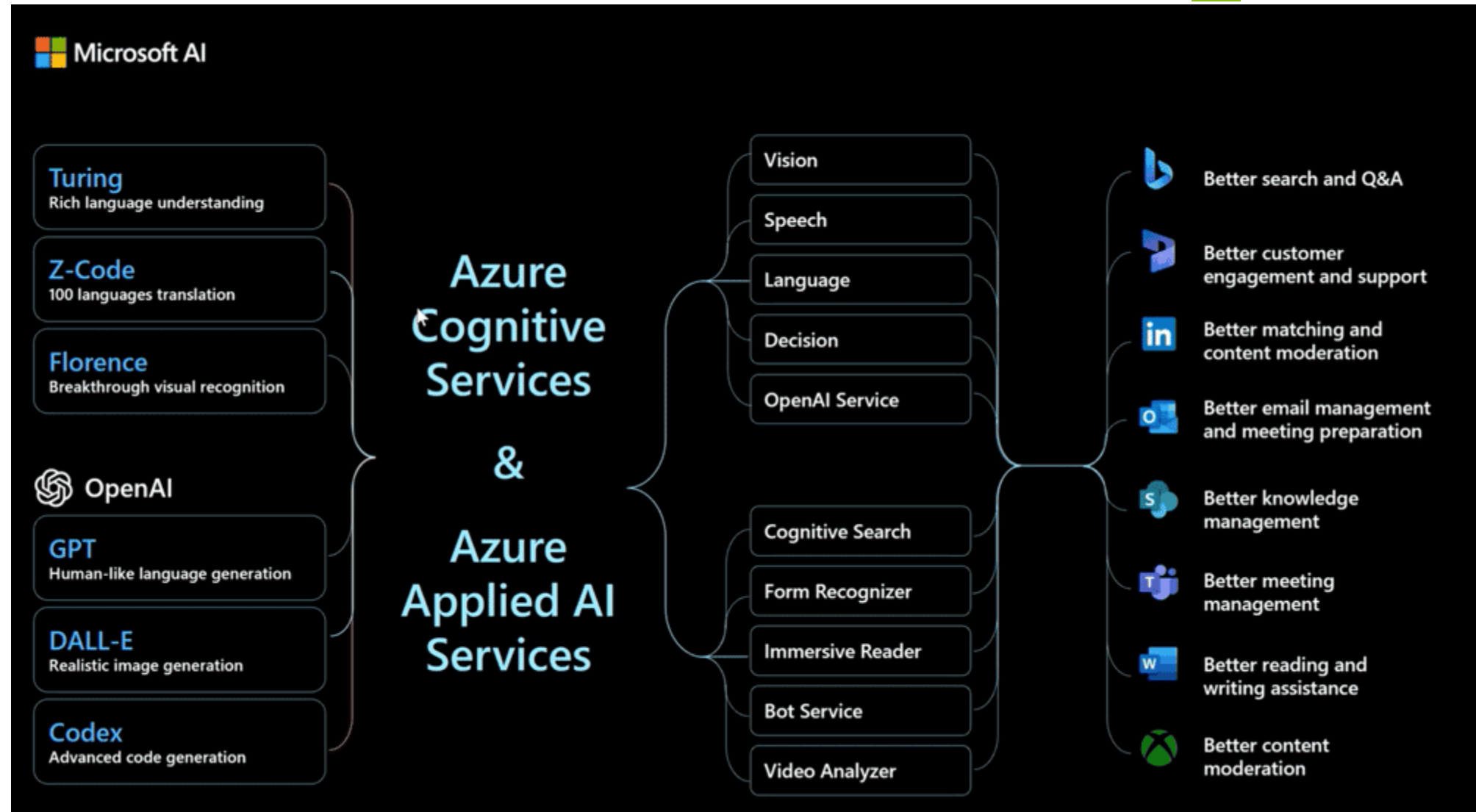


Search

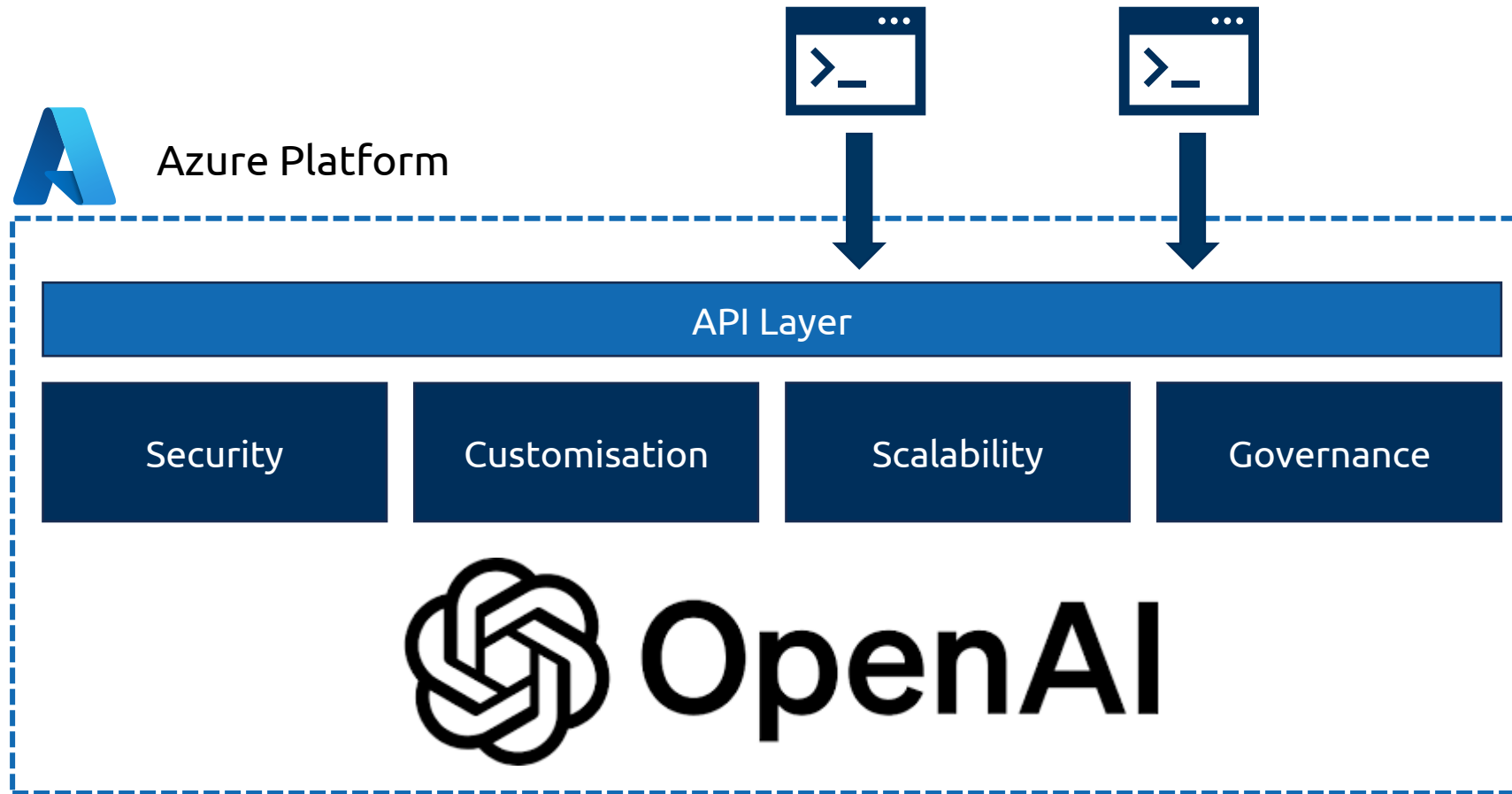


OpenAI

Azure OpenAI Service



Azure OpenAI Service





Building apps with the Azure Open AI Service

Key Considerations



Is an LLM the right tool for the job?



How much is this thing going to cost?

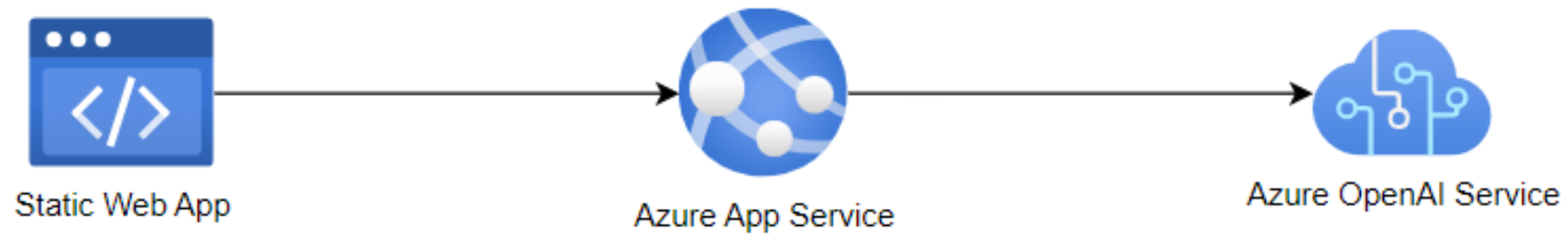


Can we provide the right level of accuracy and explainability?



Is my use case ethical? Am I building the right guard rails to ensure I use the tool responsibly?

Typical Architecture



Integrating Your Application

- **Use REST API directly**
- **Libraries – Semantic Kernel or LangChain**
- **Low-Code / No-Code – Power Automate**

Development Process

The screenshot displays the Azure OpenAI Studio interface, specifically the Chat playground section. The top navigation bar includes the Azure AI logo, the text 'Azure OpenAI Studio', and user information for 'Ben Jarvis' (oai-pgpt-weu (West Europe, 50)). A 'Deploy to' button is visible in the top right. The left sidebar contains a navigation menu with options: 'Azure OpenAI', 'Playground', 'Chat' (selected), 'Completions', 'DALL-E (Preview)', 'Management', 'Deployments', 'Models', 'Data files', 'Quotas', and 'Content filters (Preview)'. The main area is titled 'Chat playground' and features three panels: 'Assistant setup', 'Chat session', and 'Configuration'. The 'Assistant setup' panel includes a 'System message' tab, a 'Save changes' button, and a text area for specifying the chat's behavior. The 'Chat session' panel shows a 'Clear chat' button, a 'View code' button, and a 'Show raw JSON' toggle. It displays a JSON object representing the chat session state. The 'Configuration' panel includes a 'Deployment' dropdown set to 'Private-ChatGPT', 'Session settings' with a 'Past messages included' slider set to 10, and a 'Current token count' indicator showing 408/4000. At the bottom of the 'Chat session' panel is a text input field for user queries and a 'Send' button.

Azure AI | Azure OpenAI Studio

Ben Jarvis
oai-pgpt-weu (West Europe, 50)

Privacy & cookies

Deploy to

Import setup Export setup Show panels

Chat playground

Assistant setup

System message Add your data (preview)

Save changes

Specify how the chat should act

Use a template to get started, or just start writing your own system message below. Want some tips? [Learn more](#)

Use a system message template

Select a template

System message

You are an AI assistant that helps people find information.

Examples

+ Add an example

Chat session

Clear chat View code Show raw JSON

```
[
  {
    "name": "07",
    "distance": 580,
    "runwaySuitabilityPercent": 94,
    "riskLevel": "low"
  },
  {
    "name": "25",
    "distance": 613,
    "runwaySuitabilityPercent": 90,
    "riskLevel": "low"
  }
]
```

Type user query here. (Shift + Enter for new line)

Configuration

Deployment Parameters

Deployment *

Private-ChatGPT

Session settings

Past messages included 10

Current token count

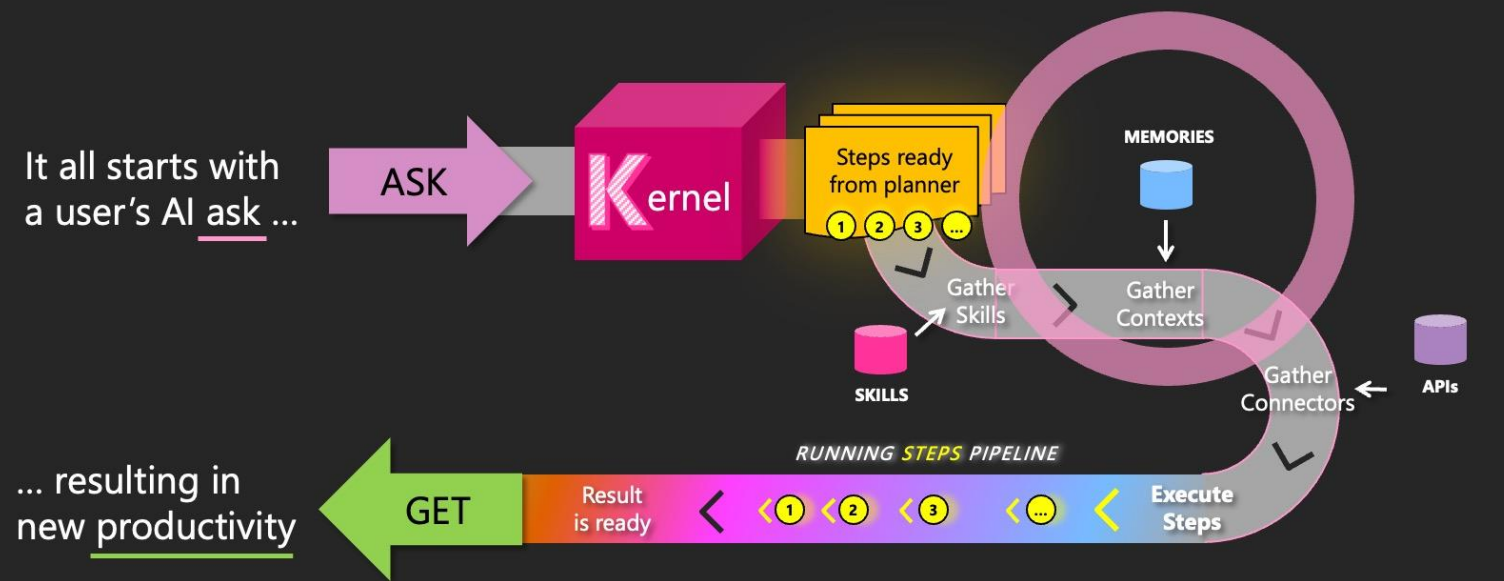
Input tokens progress indicator

408/4000

Azure OpenAI Studio - Experimentation

Development Process

Microsoft Semantic Kernel



aka.ms/semantic-kernel

Development Process

Prompt Engineering

Summarize the following text in two sentences or less.

---Begin Text---

{{ \$INPUT }}

---End Text---

Application Integration and Testing

```
semanticKernel.CreateSemanticFunction(prompt)
```

```
var functionVariables = new ContextVariables();  
functionVariables.Set("INPUT", input);  
  
var result = await  
    summarize.InvokeAsync(functionVariables);  
  
return result.Result;
```


A man with a beard and a headset is shown in profile, working at a computer in a call center. The background is blurred, showing other people at their desks. The image has a green and blue color overlay.

Demo

Introduction

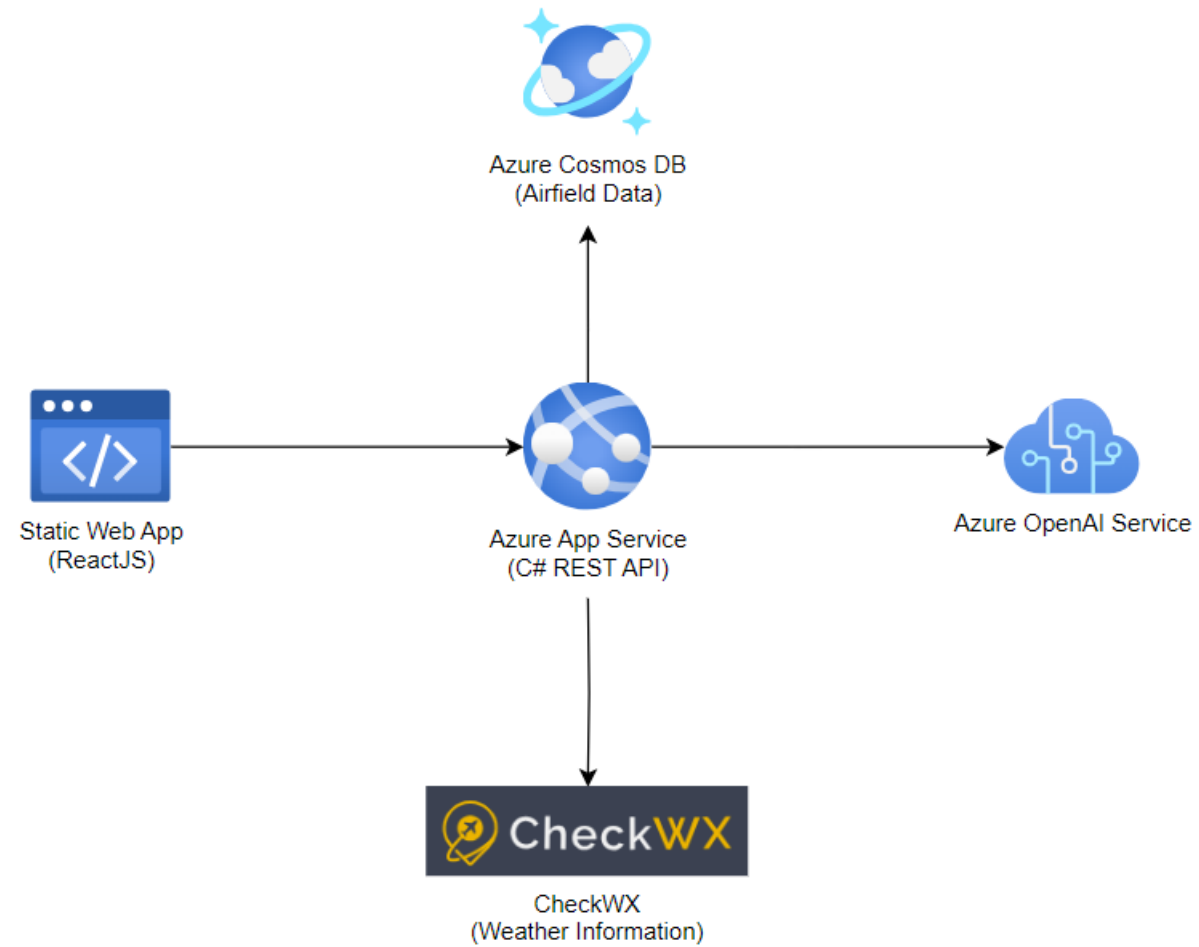




- **Considerations:**
 - **Weather** – wind, visibility, turbulence
 - **Runway** – length, orientation
 - **Procedures** – routings, noise abatement
- **Information Sources**
 - **Weather Websites**
 - **AIP**
 - **Airfield Websites**

Copilot4Pilots

Demo Architecture





Wrap Up



Wrap Up



AI won't take your job – it will make you more productive



We can (quite) easily automate mundane tasks that require us to understand/analyse large volumes of data



Azure OpenAI Service gives us a secure and customisable way to integrate AI into applications



Libraries such as Semantic Kernel make it extremely easy to integrate applications with Azure OpenAI Service



Integration into our application is simple – prompt engineering is where the bulk of our effort is spent

Useful Links



<https://github.com/benjarvis18/ai-copilot-for-pilots>



<https://www.linkedin.com/in/benjarvis18/>



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Any Questions?