



International
JavaScript
Conference

by  devmio

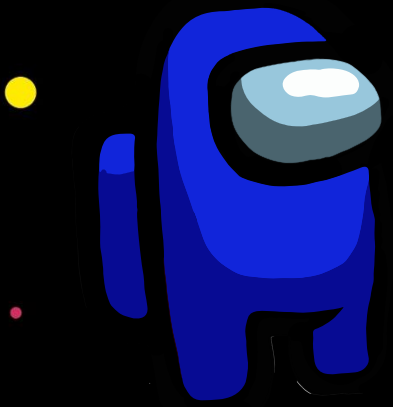
AI Agents on Demand



The background of the slide is a black space filled with small, colorful dots representing stars or planets. Six Among Us characters are scattered around the central text: a pink one in the top left, a green one in the top center, a blue one in the top right, a light blue one in the bottom center, a red one in the bottom right, and a green one in the bottom left. The text "AI Agent on Demand" is written in a white, sans-serif font, centered horizontally and vertically.

AI Agent on Demand





Code > Create > Coach > Repeat

Ron Dagdag
R&D Engineering Manager



“Opinions expressed are my own.”



Microsoft®
Most Valuable
Professional



Award Categories

AI, Windows Development,
Internet of Things, Mixed Reality

AMONG US

AGENDA:

- What is an AI AGENT?
- Demo
- Agent Coaching Guide



Artificial Intelligence

Machine Learning

Deep Learning

Generative AI



Artificial Intelligence

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



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

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



Generative AI

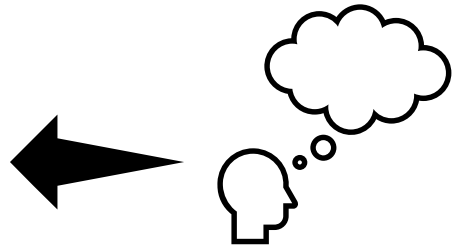
Create new written, visual, and auditory content given prompts or existing data.

CONCAT: A programming tool for constructing collaborative agents



This document is currently
not available here.

Mong Chin Chan
Chiu Wo Choi
Ron Lyle G. Dagdag
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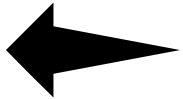


Abstract/Summary

The field of artificial intelligence, particularly on intelligent agents, is one of the busiest these past decades. These agents can greatly simplify the normal, day-to-day tasks of humans by performing these tasks themselves without human intervention. However, the construction of agents requires an understanding of advanced technologies such as knowledge representation, inferencing, and the like.

One of the most common responsibilities of any person is to convene meetings and to set appointments. However, these tasks can be very tedious and time-consuming because most often than not, meetings need to be cancelled or rescheduled for various reasons. In the corporate world where time is of the utmost importance, these seemingly menial jobs could waste a lot of precious resources.

Date of Publication
1999



Document Type
Bachelor's Thesis

Degree Name
Bachelor of Science in Computer Science

https://animorepository.dlsu.edu.ph/etd_bachelors/14206/

Data Pipeline Flow



Generative AI App Flow



Generates Predictions
like Autocomplete

Fuzzy inputs, transformation, outputs

	Traditional Software Development	AI Software Development
INPUTS	<ul style="list-style-type: none">- Text with defined set (string)- Numeric (int, float)	<p>Fuzzy inputs: Open ended text</p> <ul style="list-style-type: none">- Tabular data, markdown, text, math operation
TRANSFORMATION	<ul style="list-style-type: none">- Math Calculations- If, else, else if- For/while loops	<p>Fuzzy transformations:</p> <ul style="list-style-type: none">- Extract list of key words- Rewrite as paragraph- Answer a question- Brainstorm new ideas- Perform logic/math reasoning
OUTPUTS	<ul style="list-style-type: none">- Text with defined set- Numeric (int, float)	<p>Fuzzy output: text</p> <ul style="list-style-type: none">- Paragraph- Number(s)- JSON / Markdown
Notes	<ul style="list-style-type: none">- Can be replicated	<ul style="list-style-type: none">- Probabilistic: can be different every time

Fuzzy inputs, transformation, outputs



Gen AI Models designed as Language Completion Tool



~~Repository of~~



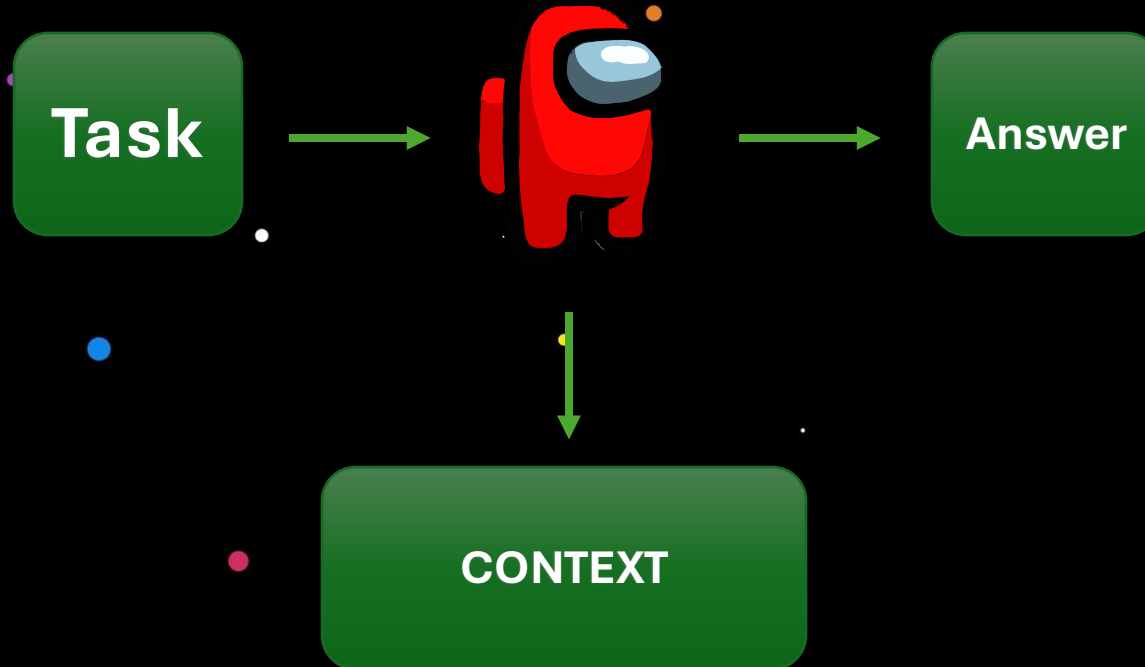
CONTEXT

CONTEXT

CONTEXT

How to add Context?

AKA Knowledge



Generate Prediction

1. Instruction Prompting

SYSTEM



Please act as an efficient, competent, conscientious, and industrious professional assistant.

Help the user achieve their goals, and you do so in a way that is as efficient as possible, without unnecessary fluff, but also without sacrificing professionalism.

Always be polite and respectful, and prefer brevity over verbosity.

2. Few Shot Examples

Prompt:

```
This is awesome! // Negative  
This is bad! // Positive  
Wow that movie was rad! // Positive  
What a horrible show! //
```

Output:

```
Negative
```

3. Retrieval Augmented Generation (RAG)

I want you to act as a question answering bot which uses the context mentioned and answer in a concise manner and doesn't make stuff up.

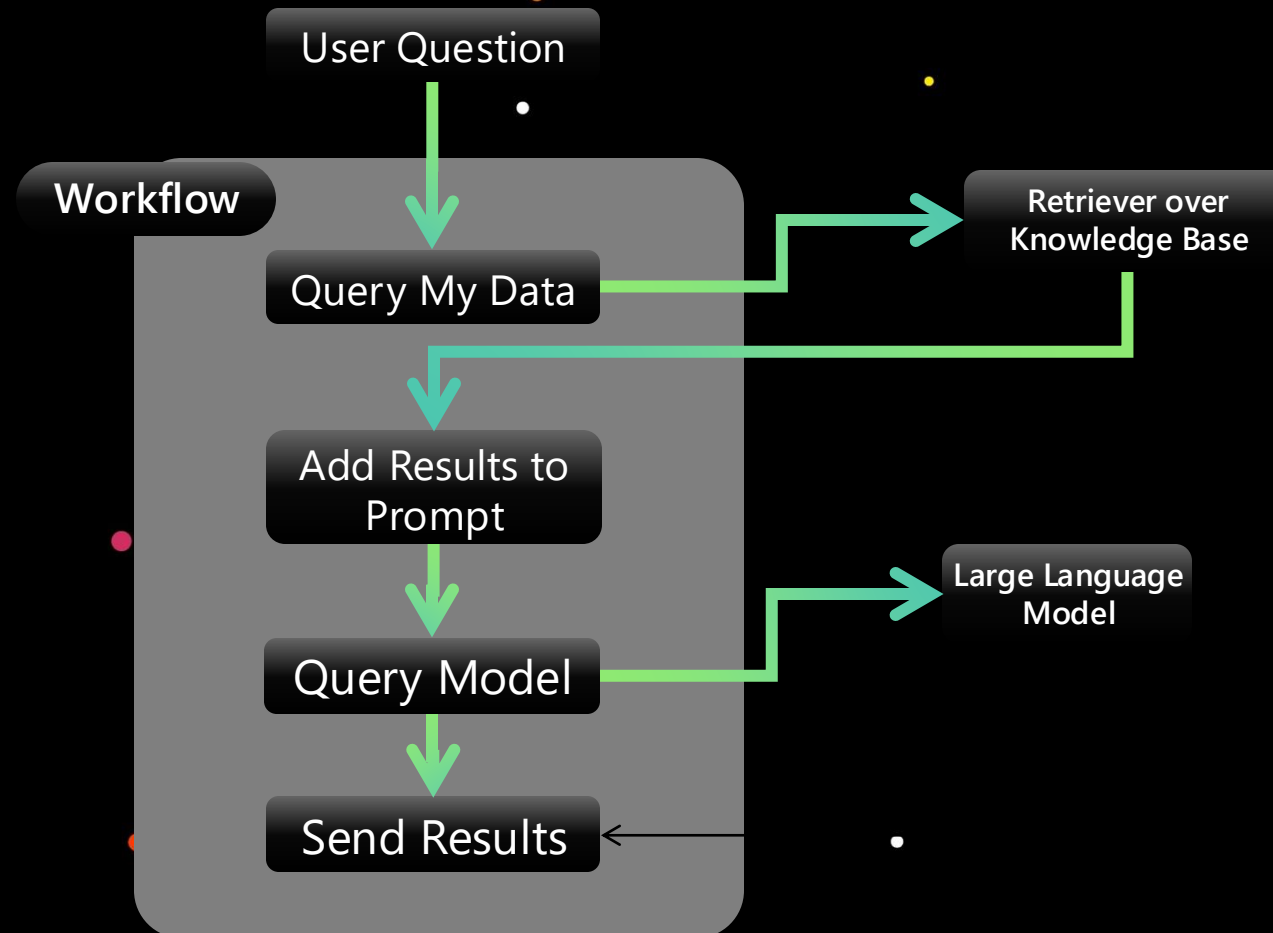
You will answer question based on the context - {relevant context}.

You will create content in {specific language} language.

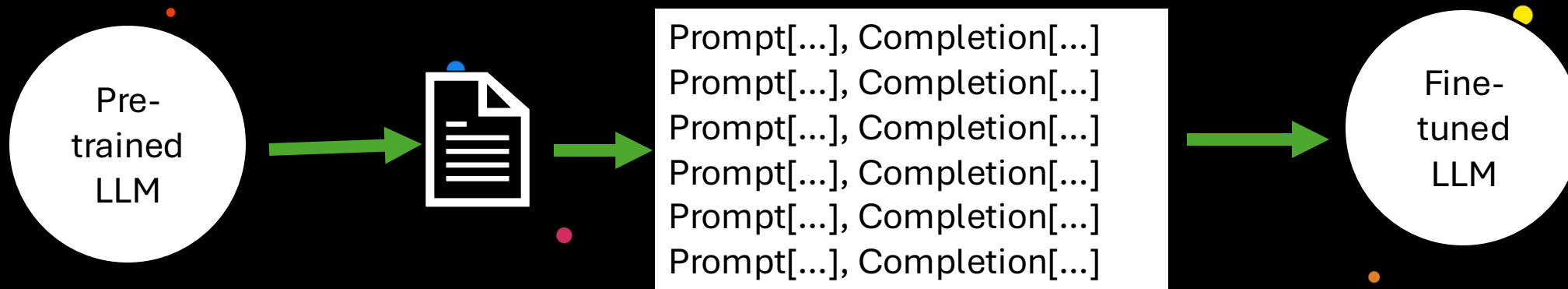
Question: {user question}

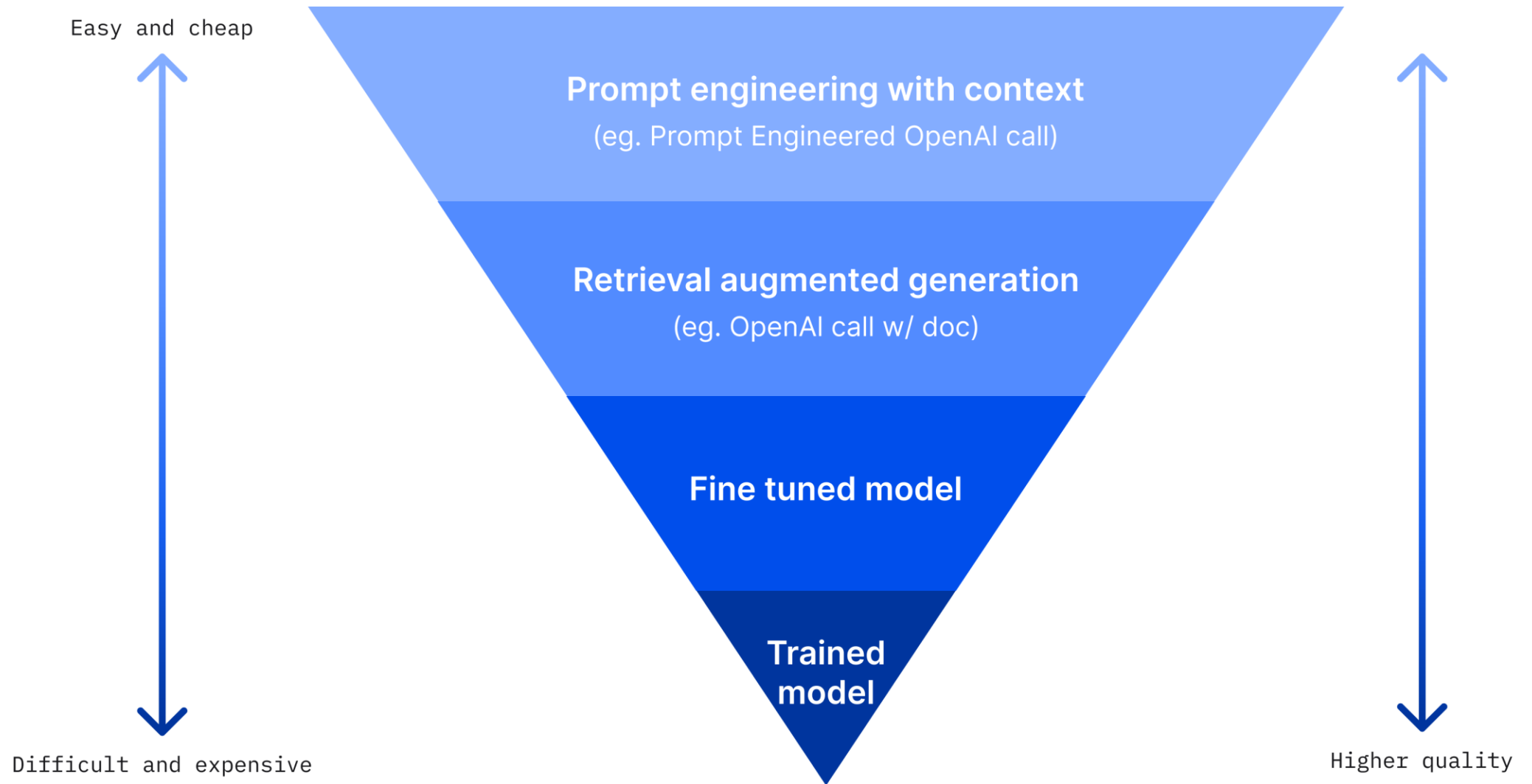
Answer:

3. Retrieval Augmented Generation (RAG)



4. Fine Tuning

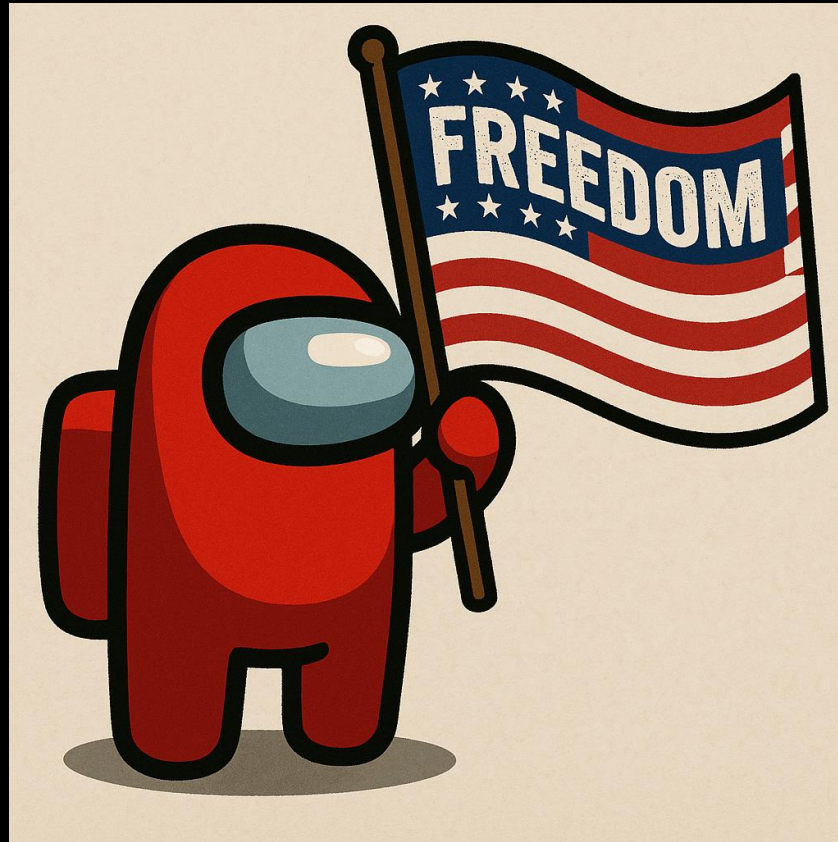




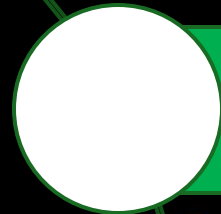
AGENTS



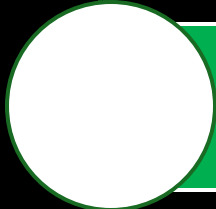
AGENCY



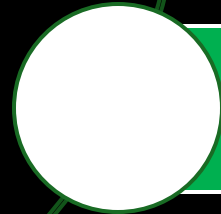
AGENCY



Completion / Intent-based



JSON / Object-based



Function / Tool-based

AI Agent

An agent in LLM-based applications is a semi-autonomous software entity leveraging large language models to perform specific tasks through natural language interaction.



Create
a plan



Retrieve
context



Perform
an Action

Function Calling

Meta Prompt

You're an AI assistant designed to help users search for hotels. When a user asks for help finding a hotel, you should call the search_hotels function.

Function

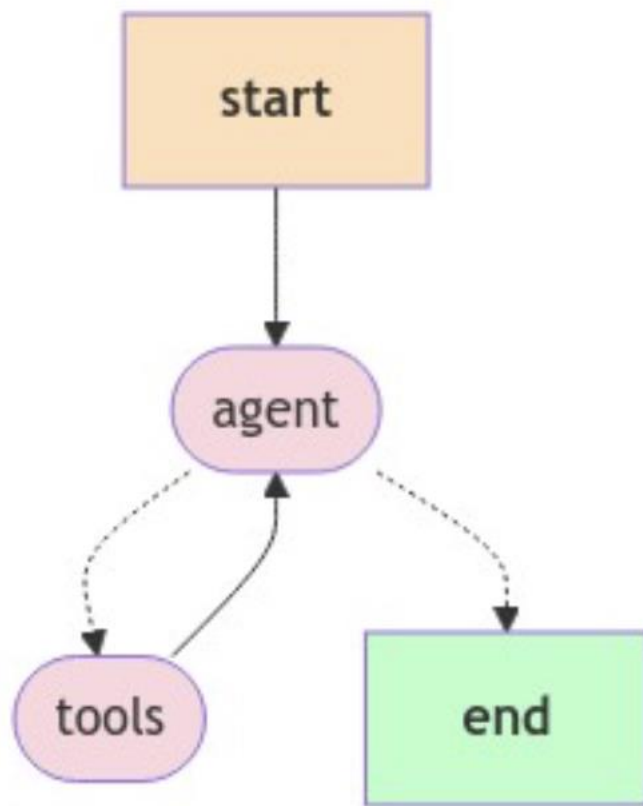
```
{
  "name": "search_hotels",
  "description": "Retrieves hotels from the search index based",
  "parameters": {
    "type": "object",
    "properties": {
      "location": {
        "type": "string",
        "description": "The location of the hotel (i.e. Seattle, WA)"
      },
      "max_price": {
        "type": "number",
        "description": "The maximum price for the hotel"
      }
    },
    "required": ["location", "max_price"]
  }
}
```

Prompt

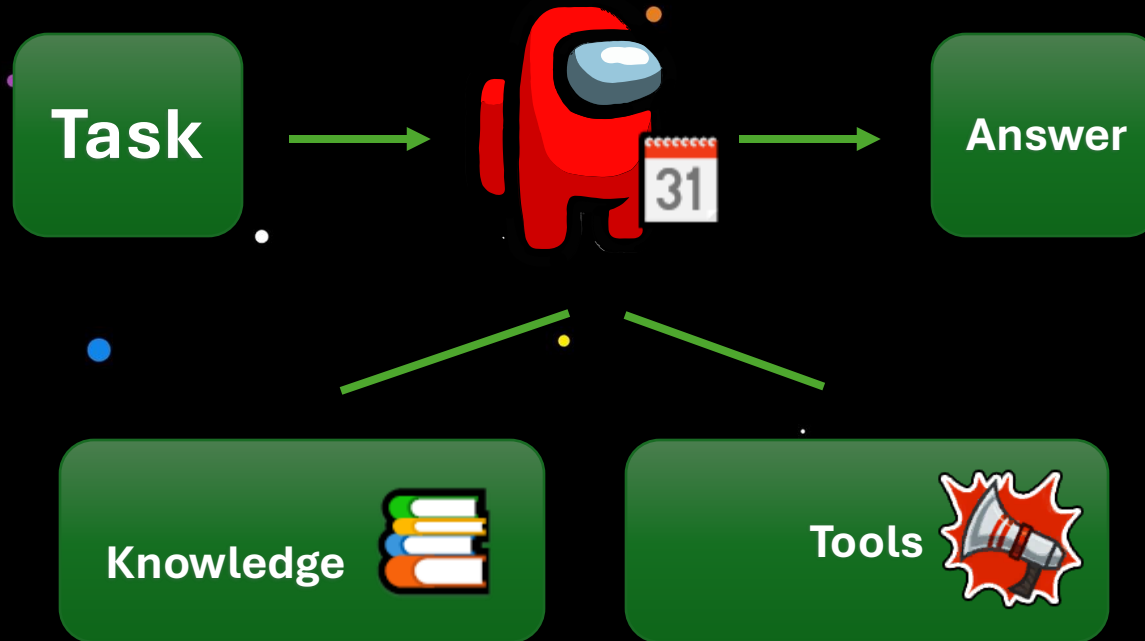
Hotel with
a private
beach cost
max 300
dollars in
Singapore.

Response

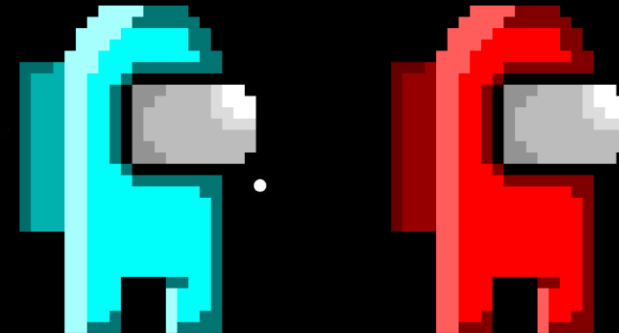
```
Search_hotels{
  "location": "Singapore",
  "max_price": 300,
}
```

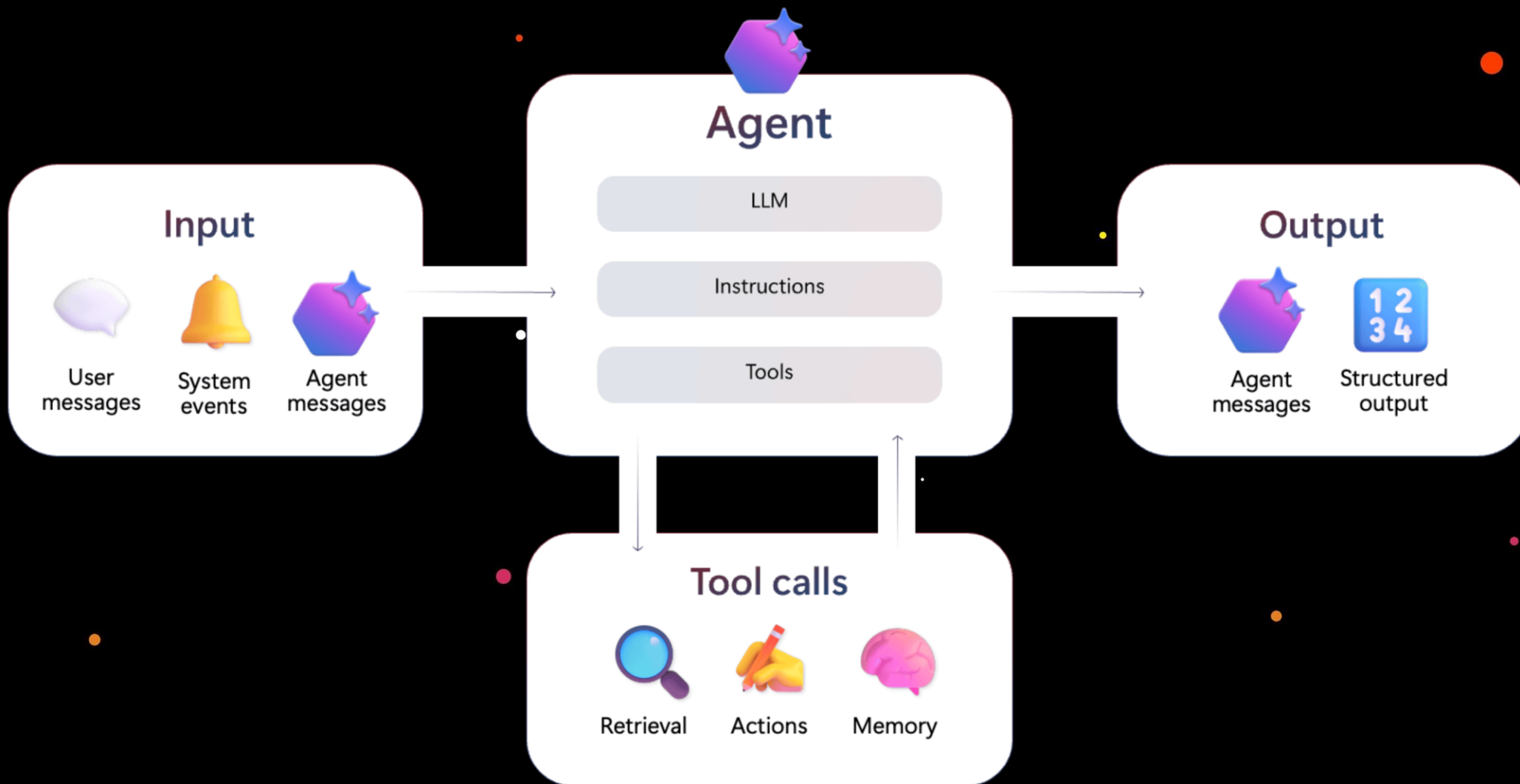


What is an AI Agent?

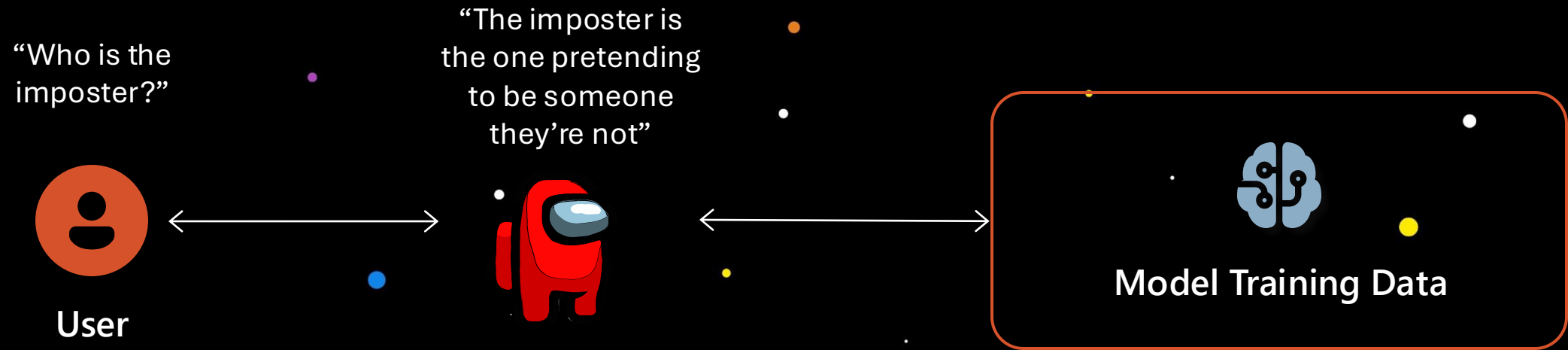


Do Things vs Generate Prediction





A Generative AI Application without RAG



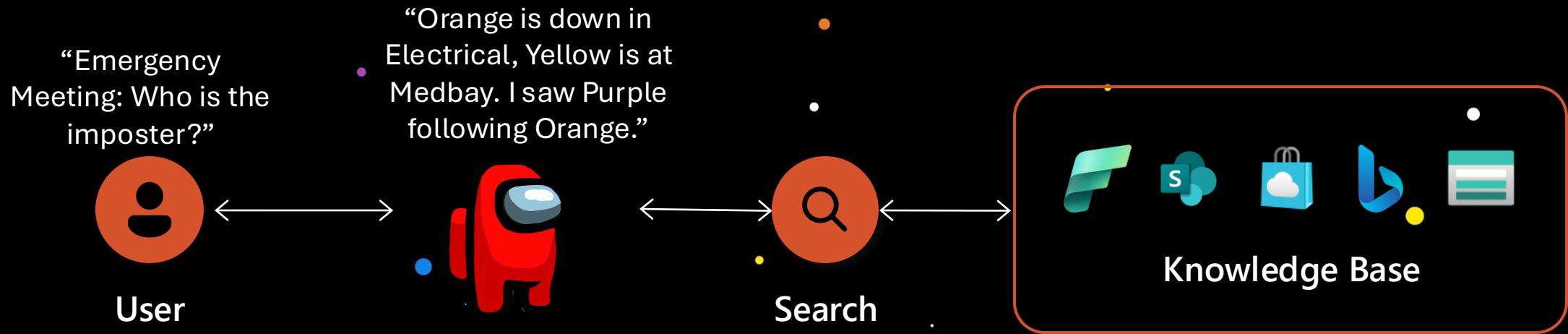
Limitations

Responses not grounded in relevant data to the user

Responses are limited to the training data of the model

Higher probability for model to fabricate answers

A Generative AI Application with RAG



⚠ Limitations

- Provides relevant responses for users but model is limited to data sources
- Works well for information retrieval scenarios but not action based ones
- Questions outside of the planned scope may not be effectively answered

A Generative AI Application with Agents

“Is everything in security room? When you see something sus, report it”



User

“I see Blue and Purple move towards green aggressively. I will push the emergency meeting button”

EMERGENCY BUTTON
PUSHED



Knowledge Sources

(search, files, databases, storage etc.)



Actions

(Pre-built or custom tools to automate processes)



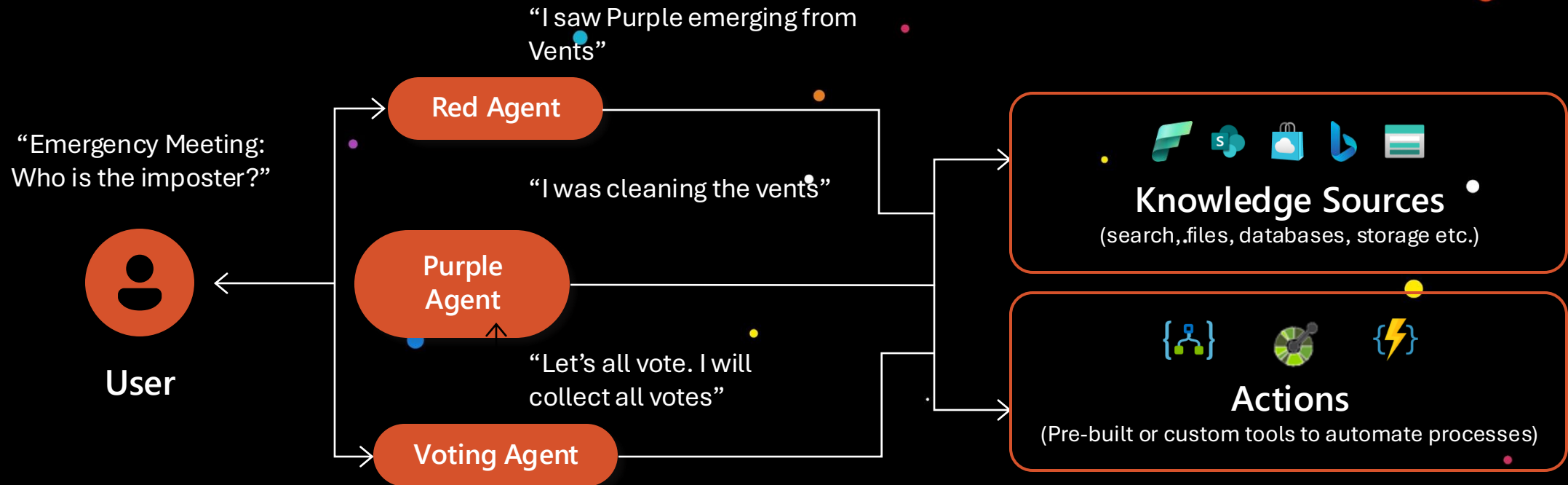
Benefits

Agents perform complex tasks

Agents plan out actions based on user input

Agents use knowledge bases, defined business processes and tools

• A Generative AI Application with Multiple Agents



✓ Benefits

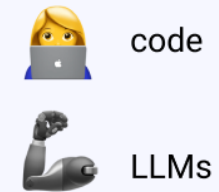
Agents perform only specific assigned tasks

Agents are not overloaded with complex prompts

Agents only have access to specific tools and data, it needs to complete its assigned task

Cognitive Architecture

Levels of autonomy in LLM applications



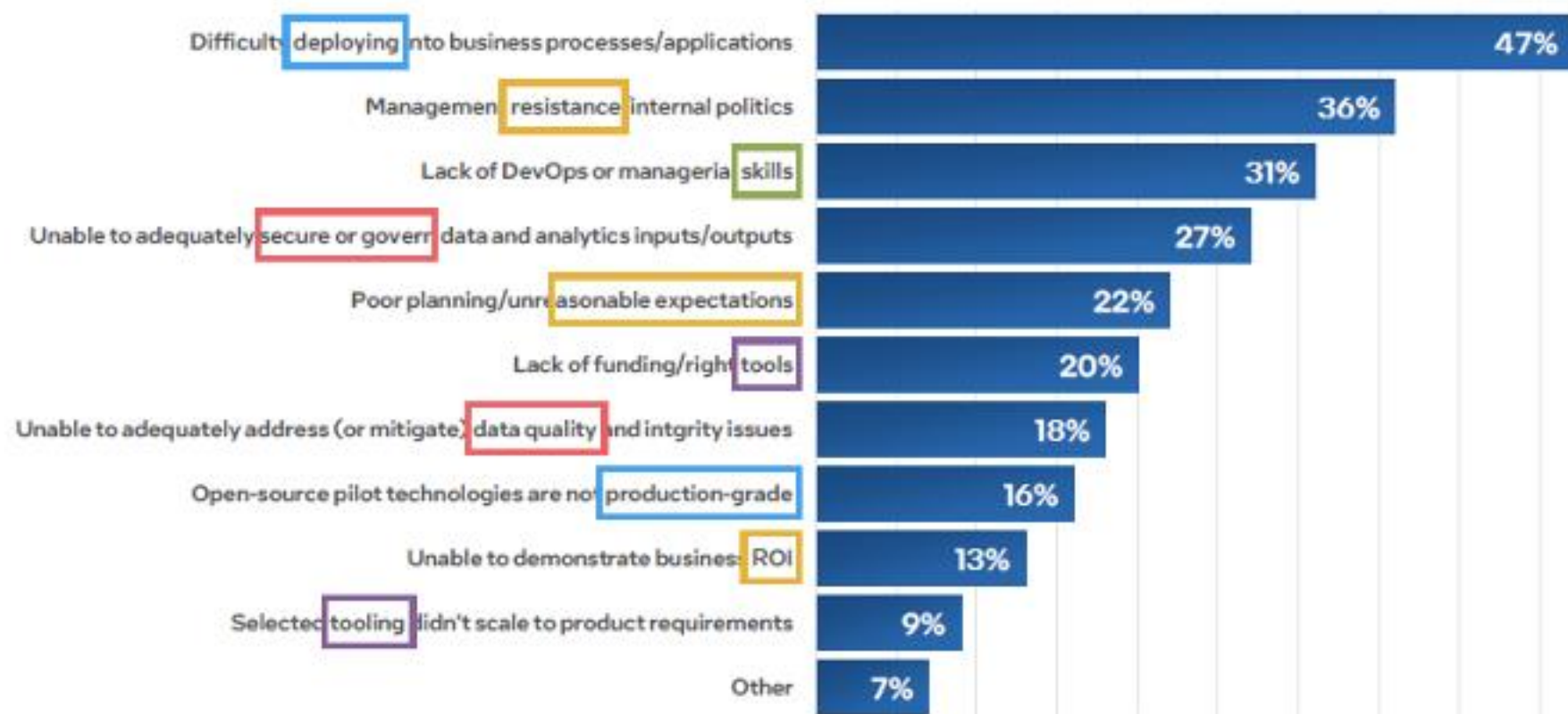
		Decide Output of Step	Decide Which Steps to Take	Decide What Steps are Available to Take
HUMAN-DRIVEN	1 Code			
	2 LLM Call	 <i>one step only</i>		
	3 Chain	 <i>multiple steps</i>		
	4 Router		 <i>no cycles</i>	
AGENT-EXECUTED	5 State Machine		 <i>cycles</i>	
	6 Autonomous			



**Lots of
AI Projects
FAIL**

Why AI Projects Fail*

Production is the main barrier
towards delivering business value



Legend



"Productizing ML is one of the biggest challenges in AI practices today. Many AI projects, more than 80% according to research, get stuck in the lab, produce partial success, or consume far more resources and time than initially planned."



Azure AI Foundry

Foundry Agent Service

Securely build, deploy, and scale AI agents with ease

Rapid development
and automation

Extensive data
connections

Flexible model
selection

Enterprise-grade
security

ai.azure.com

Using the Foundry Agent Service

Agent

Large Language
Model with defined
instructions and tools

Tool

Services and
functions that extend the
agent's ability

Threads

Manages and
truncates Messages

Run

Activation of an
Agent to perform
tasks based on
Thread contents and
configured Tools

Azure AI Foundry Agent Service in Action

Step 1
Create an Agent

Step 2
Create a Thread

Step 3
Run the Agent

Step 5
Check the Run status

Step 6
Display the
Agent's Response

Agent
Contoso Sales Agent

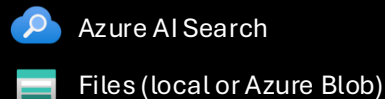
Instructions

You are an advanced sales analysis agent for Contoso, specializing in assisting users with sales data inquiries

Model



Your data (optional)



Tools (optional)

File Search
Code Interpreter
Function Calling
Bing Search
Microsoft SharePoint
Microsoft Fabric
Azure Logic Apps
Azure Functions
OpenAPI 3.0 specified tools

Thread

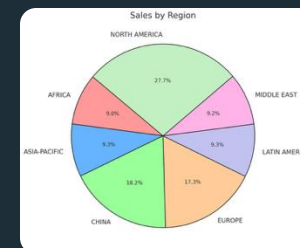
Sales analysis

User's message
Tell me the total sales by region

Agent's message
Here is the sales:
Europe: \$15478.00
America: \$78792.00

User's message
Show as a pie chart

Agent's message



Run 1

1 Function Calling Tool
Query SQLite DB

2 Create message

Run 2

1 Code Interpreter Tool
Create a pie chart

2 Create message

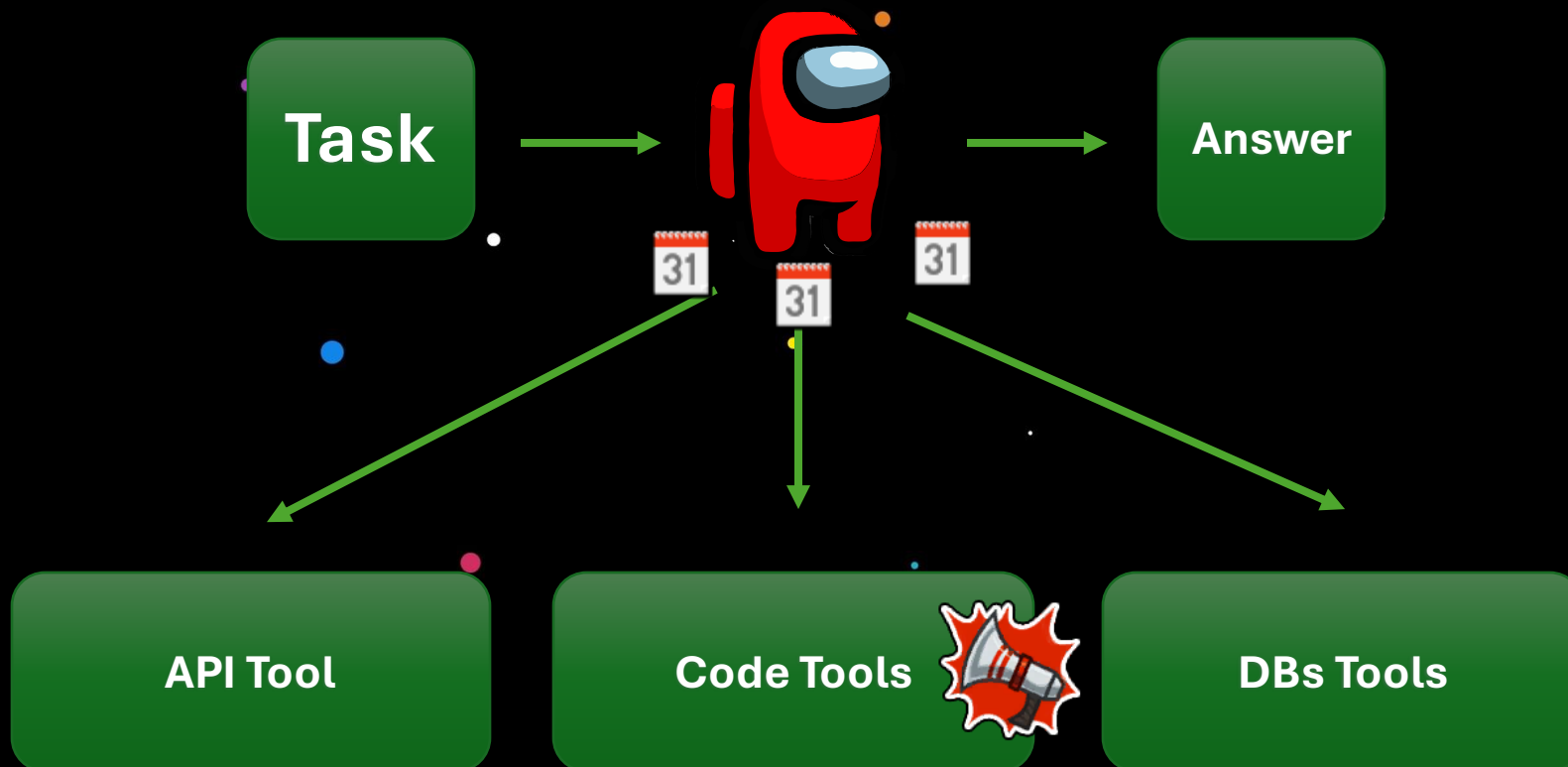
DEMO



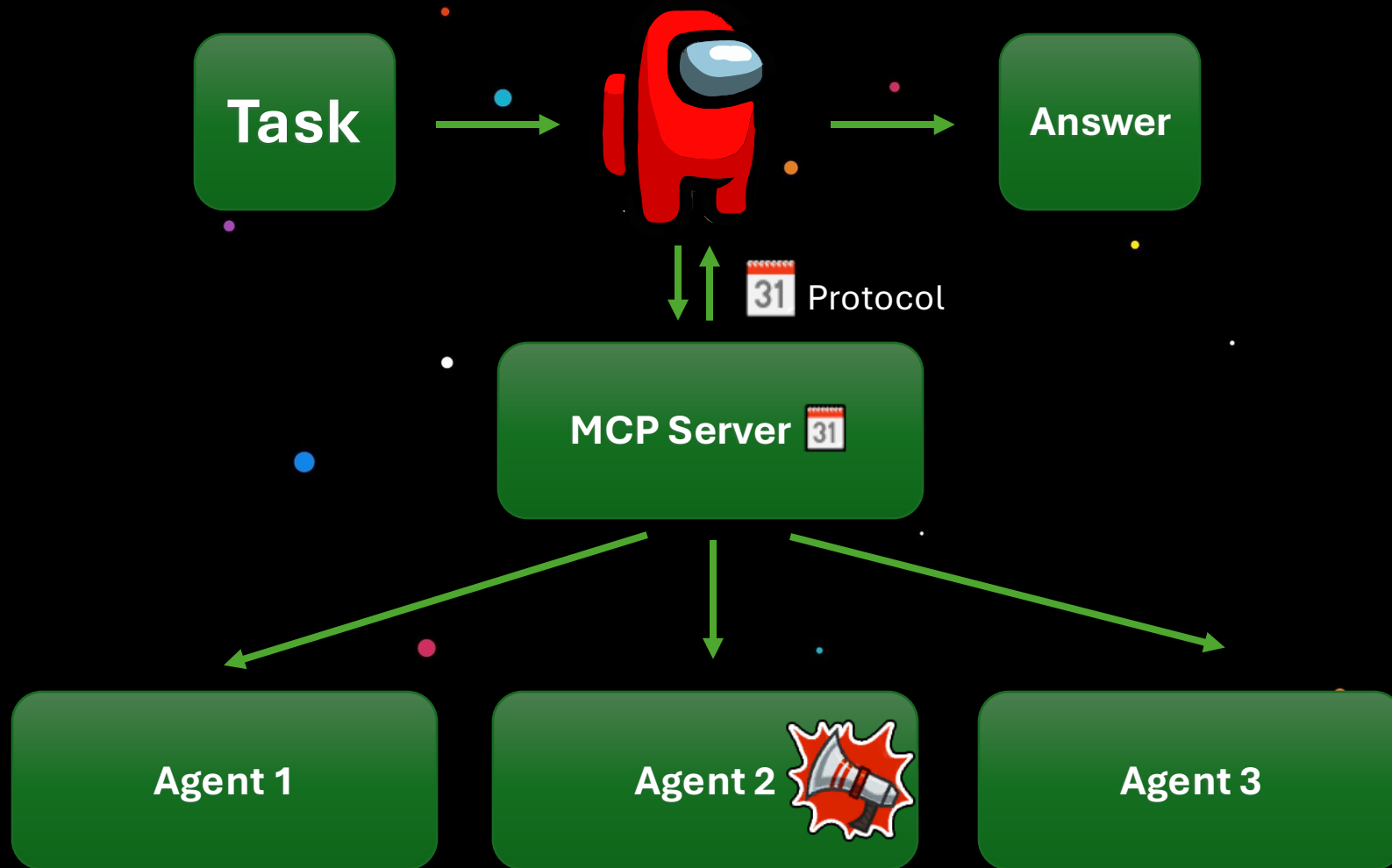
The background is black with scattered dots in yellow, purple, blue, orange, and pink. A purple triangle is visible in the bottom right corner.

MCP Model Context Protocol

AI Agent

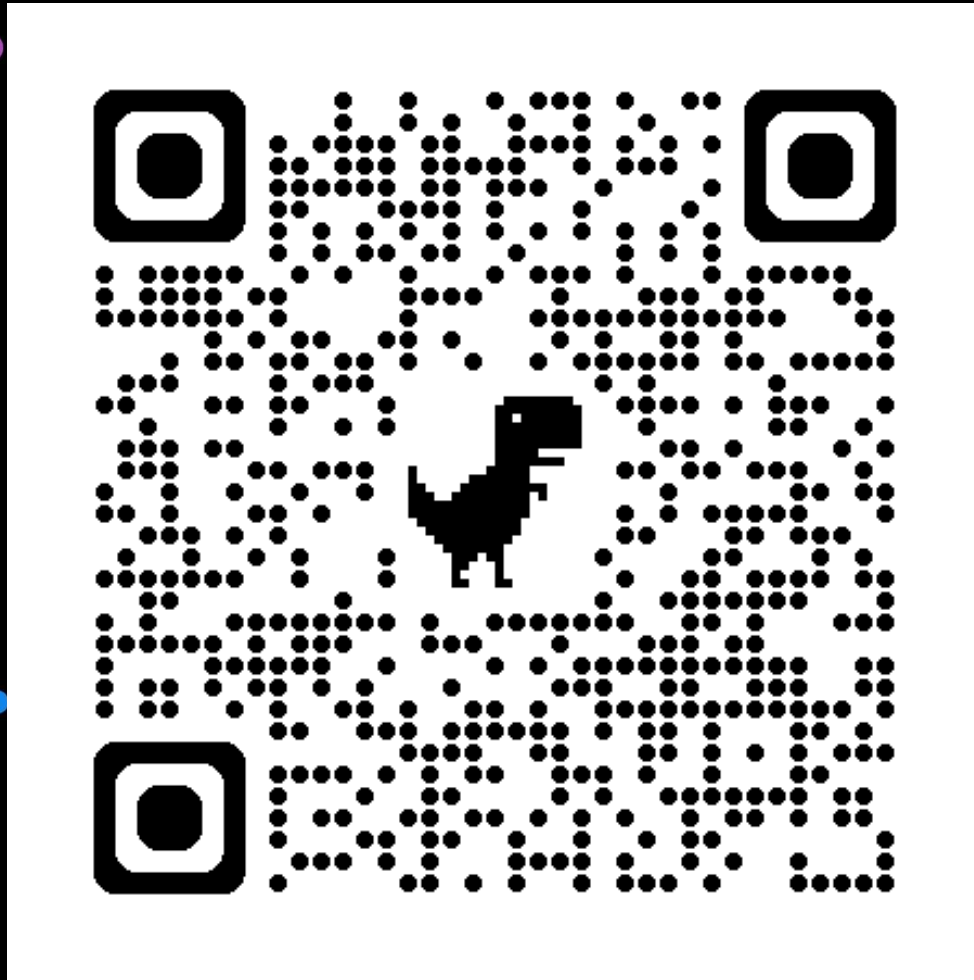


MCP



Fuzzy inputs, transformation, outputs

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

Ron Dagdag



Microsoft®
Most Valuable
Professional



Award Categories

AI, Windows Development,
Internet of Things, Mixed Reality

R&D Engineering Manager at 7-Eleven

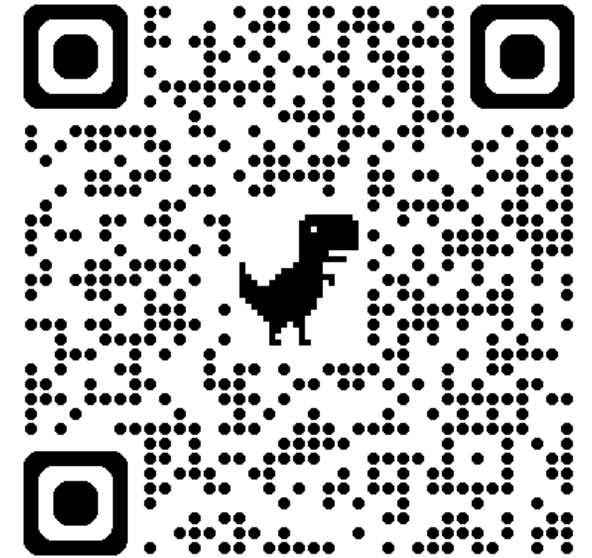
9th year Microsoft MVP awardee

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Linked In
www.linkedin.com/in/rondagdag/

Thanks for geeking out with me about AI Agents



We ask for
your feedback!

**PLEASE
VOTE
NOW!**



THANKS

