
On being a Good
Agentic AI Coach

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7-ELEVEN

"Opinions expressed are my own."


What are qualities of a Good Coach?

Qualities of a great sports coach

1. Understands the Sport and Leads by Example
2. Sponge for Knowledge / Profound Thinker / Visionary
3. Shares the Knowledge / Educates Others
4. Highly Energized and a Motivator
5. Knows the Athlete, Values and Respects that Relationship

https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/IOC/What-We-Do/Protecting-Clean-Athletes/Athletes-Space/Athletes-Entourage/Coaches/EN-Qualities-of-a-coach.pdf

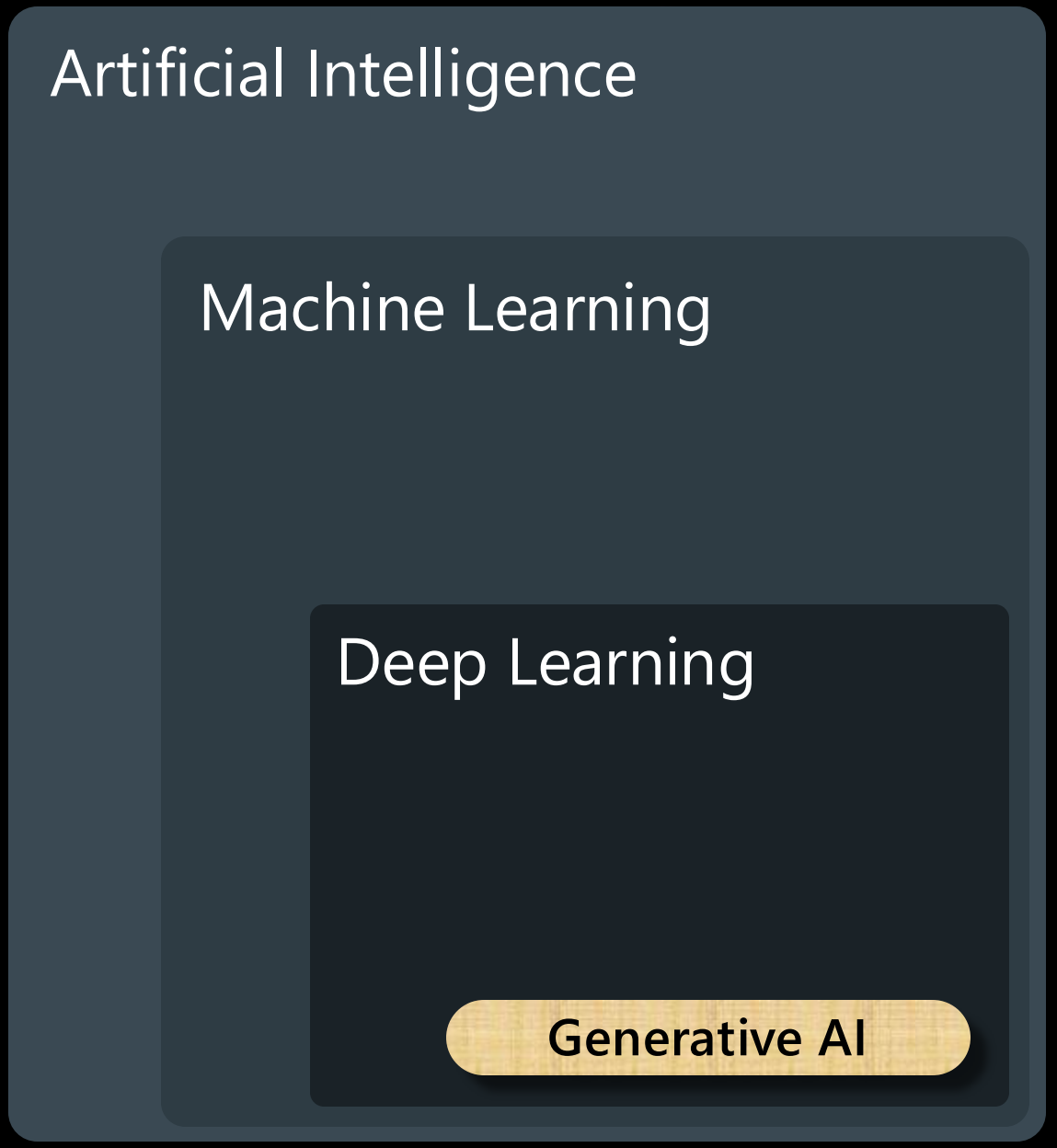
Qualities of a great sports coach

6. Is an Effective Communicator & Teacher
7. Is a Good Listener
8. Is Disciplined, Strong in Character and Integrity
9. Leads by Example with very High Attitude to Hard Work
10. Displays Commitment and Clear Passion for the Sport

AMONG US

AGENDA:

- What AI AGENTS?
- What are multi Agents?
- Key Elements of Agents
- Agent Coaching Guide



1956

Artificial Intelligence

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

1997

Machine Learning

subset of AI that enables machines to learn from existing data and improve upon that data to make decisions or predictions

2017

Deep Learning

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

2021

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.

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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.

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

Data Pipeline Flow

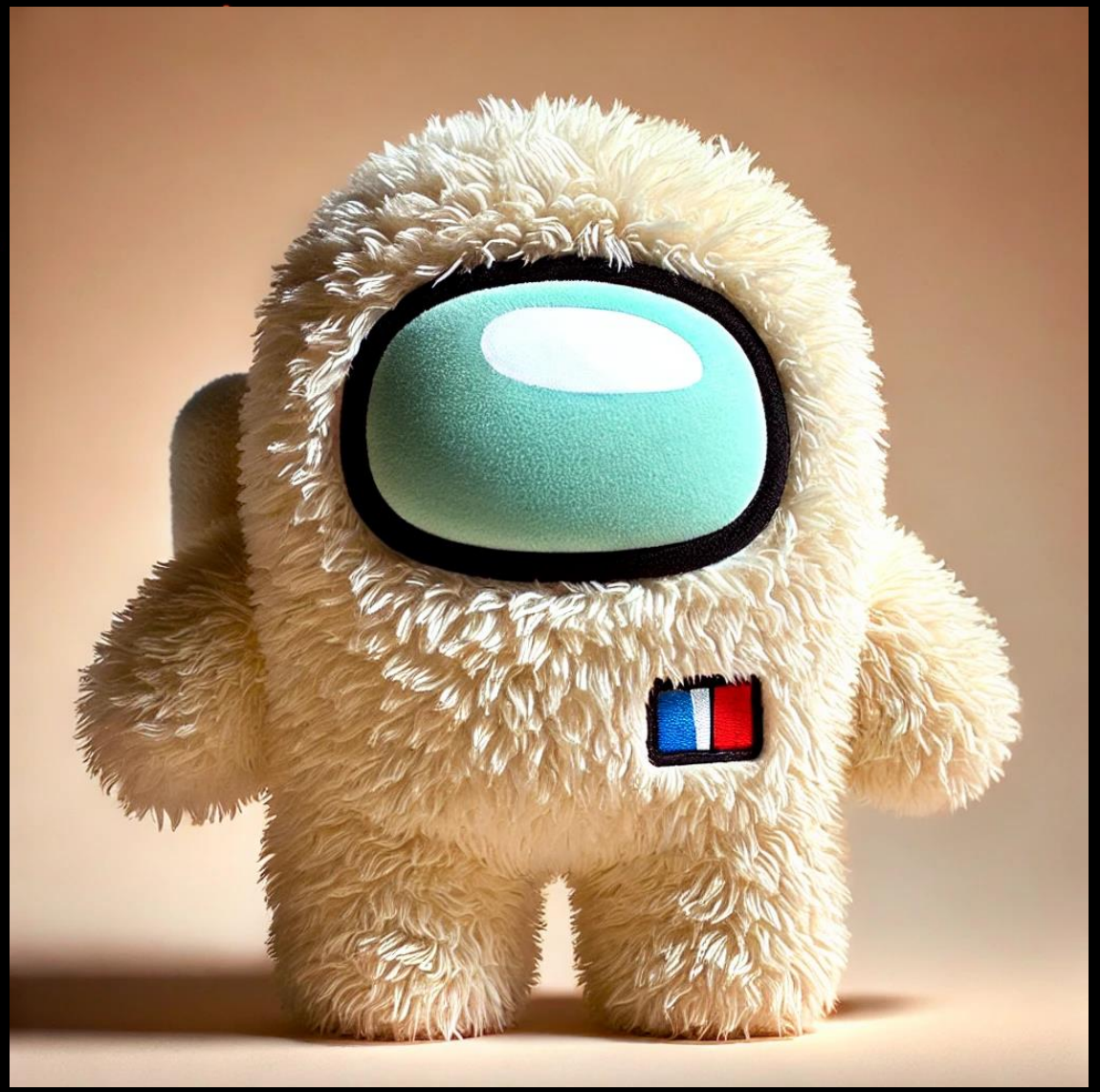
Generative AI App Flow

Generates Predictions
like Autocomplete

Fuzzy inputs, transformation, outputs

	Traditional Software Development	AI Software Development
INPUTS	- Text with defined set (string) - Numeric (int, float)	**Fuzzy inputs**: Open ended text - Tabular data, markdown, text, math operation
TRANSFORMATION	- Math Calculations - If, else, else if - For/while loops	**Fuzzy transformation**s: - Extract list of key words - Rewrite as paragraph - Answer a question - Brainstorm new ideas - Perform logic/math reasoning
OUTPUTS	- Text with defined set - Numeric (int, float)	**Fuzzy output**: text - Paragraph - Number(s) - JSON / Markdown
Notes	- Can be replicated	- Probabilistic: can be different every time

Fuzzy inputs, transformation, outputs



CONTEXT

CONTEXT

CONTEXT

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)

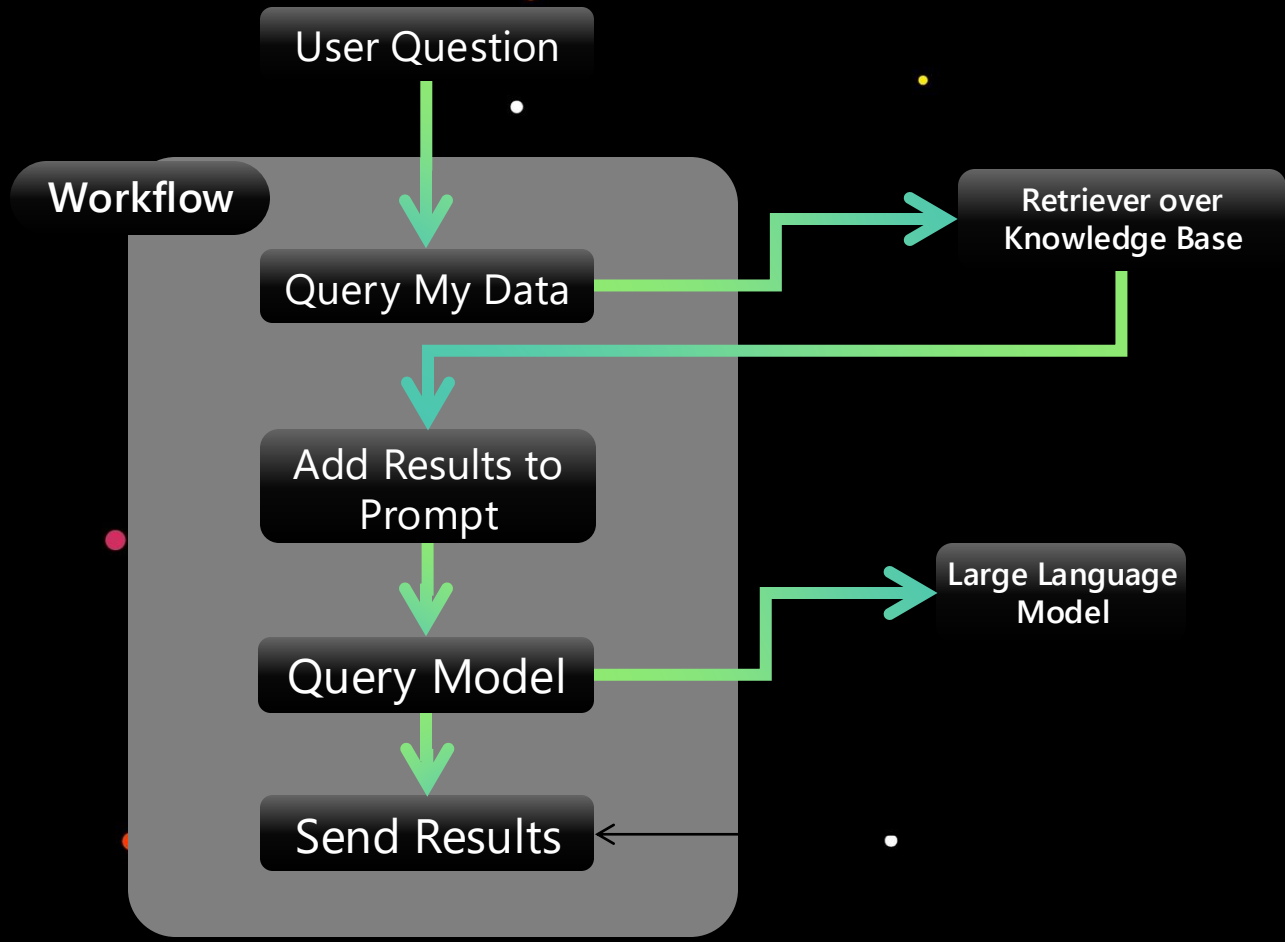
I want you to act as a question answering bot which uses the context mentioned and answer in a concise manner and doesn't make stuff up.

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

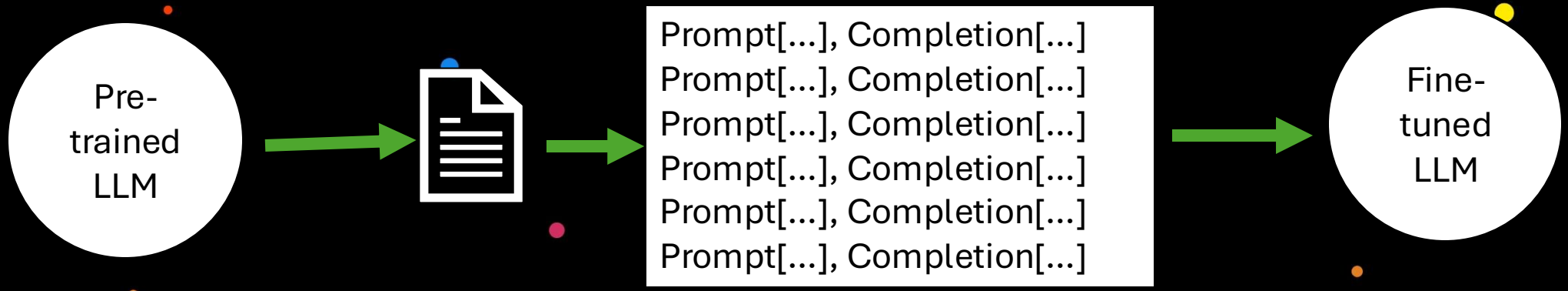
You will create content in {specific language} language.

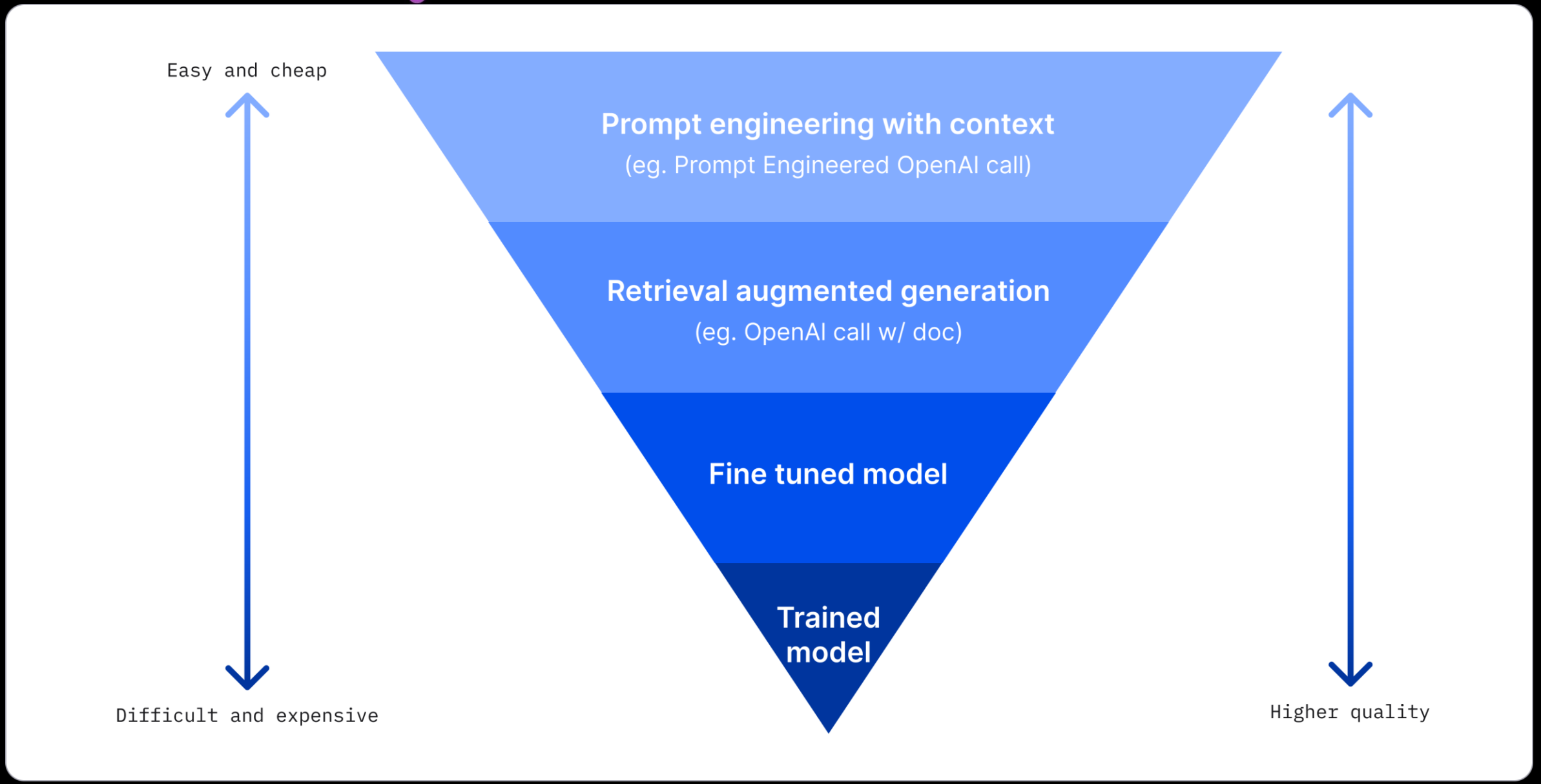
Question: {user question}
Answer:

3. Retrieval Augmented Generation (RAG)



4. Fine Tuning





Img source: Four Ways that Enterprises Deploy LLMs | Fiddler AI Blog

Six strategies for getting better results

Write clear instructions	• add details, adopt persona, use delimiters, step by step instructions, provide examples, specify desired output length
Provide reference text	• ask model to use reference text, answer with citations from reference text
Split complex tasks into simpler subtasks	• use intent classification for relevant instructions, summarize long documents

https://platform.openai.com/docs/guides/prompt-engineering

Six strategies for getting better results

Give the model time to "think”	• work out its own solution before rushing to conclusion, use inner monologue
Use external tools	• use embeddings-based search, use code execution for calculations, access to specific functions
Test changes systematically	• evaluate model output with gold-standard answers,

https://platform.openai.com/docs/guides/prompt-engineering

DEMO

https://smith.langchain.com/hub

https://chatgpt.com/g/g-8qIKJ1ORT-system-prompt-generator

https://github.com/marketplace/models/azure-openai/gpt-4o/playground

Cognitive Architecture

Levels of autonomy in LLM applications

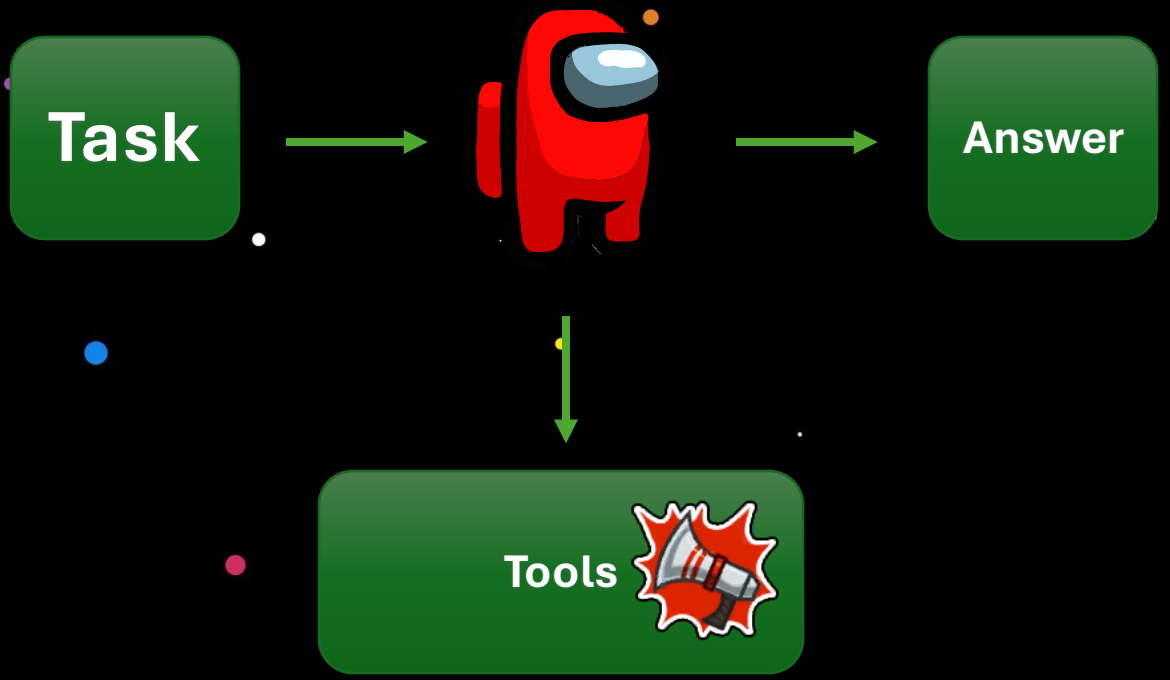
 code

 LLMs

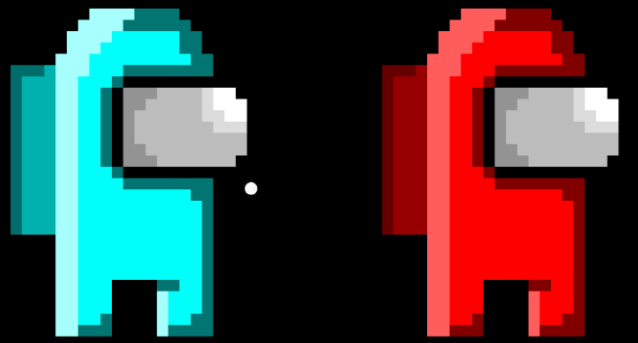
			Decide Output of Step	Decide Which Steps to Take	Decide What Steps are Available to Take
HUMAN-DRIVEN	1	Code			
	2	LLM Call	 *one step only*		
	3	Chain	 *multiple steps*		
	4	Router		 *no cycles*	
AGENT-EXECUTED	5	State Machine		 *cycles*	
	6	Autonomous			

LangChain

What are AI Agents?



Do Things vs Generate Prediction



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,
}
```

```
const { ChatOpenAI } = await import("@langchain/openai");
export const model = new ChatOpenAI({
  modelName: "gpt-4o-mini",
  apiKey: process.env.GITHUB_OPENAI_API_KEY,
  configuration: {
    baseURL: 'https://models.inference.ai.azure.com'
  }
});
```

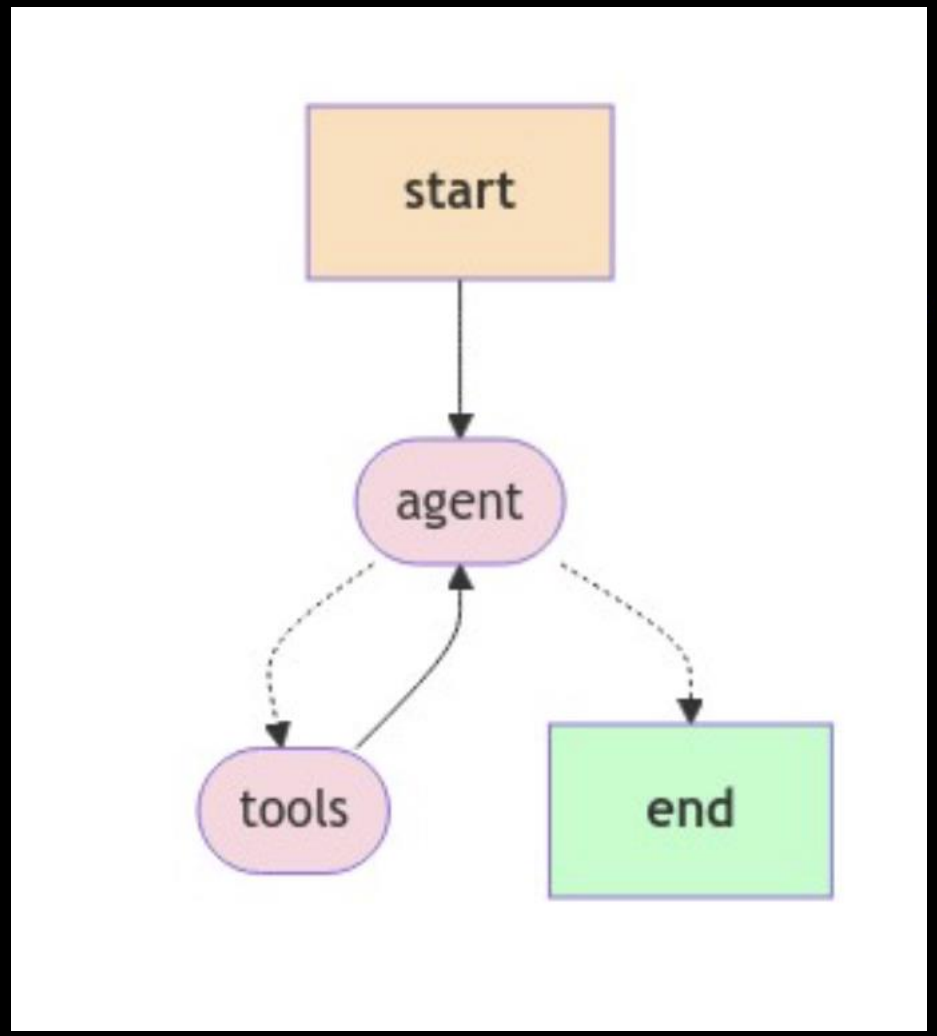
```
// code here
import { ToolNode } from "@langchain/langgraph/prebuilt";…

const webSearchTool = new TavilySearchResults({
    maxResults: 4,
  });

//#region tools
const todayDateTimeSchema = z.object({
  timeZone: z.string().describe("Time Zone Format"),
  locale: z.string().describe("Locale string")
});

function getTodayDateTime({timeZone, locale}: { timeZone: string; locale: string }) {
  //const timeZone = 'America/Chicago';
  //const locale = 'en-US';
  console.log("Getting today's date and time in " + timeZone + " timezone");
  const today = new Date();
  const formattedDate = today.toLocaleString(locale, {
      timeZone: timeZone,
      year: 'numeric',
      month: 'long',
      day: 'numeric',
      weekday: 'long',
      hour: '2-digit',
      minute: '2-digit',
      second: '2-digit',
      hour12: true
    });
  const result = {
      "formattedDate": formattedDate,
      "timezone": timeZone
  };
  console.log(result)
  return JSON.stringify(result);
}
```

```
const dateTool = tool(
  ({timeZone, locale}) => {
    return getTodayDateTime({timeZone, locale});
  },
  {
    name: "todays_date_time",
    description:
      "Useful to get current day, date and time.",
    schema: todayDateTimeSchema,
  }
);

//console.log(await dateTool.invoke({timeZone: 'America/New_York', locale: 'en-US'}));

const calculator = new Calculator();
const tools = [dateTool, calculator, webSearchTool];
const toolNode = new ToolNode(tools as any);
//#endregion
```

ts (Untracked) (~/code/good-agentic-coach-talk/src/model.ts)

```ts
const callModel = async (state: typeof MessagesAnnotation.State) => {
  const { messages } = state;
  const llmWithTools = model.bindTools(tools);
  const result = await llmWithTools.invoke(messages);
  return { messages: [result] };
};

const shouldContinue = (state: typeof MessagesAnnotation.State) => {
  const { messages } = state;
  const lastMessage = messages[messages.length - 1];
  if (
    lastMessage._getType() !== "ai" ||
    !(lastMessage as AIMessage).tool_calls?.length
  ) {
    return END;
  }
  return "tools";
};
```

```
const workflow = new StateGraph(MessagesAnnotation)
  .addNode("agent", callModel)
  .addNode("tools", toolNode)
  .addEdge(START, "agent")
  .addEdge("tools", "agent")
  .addConditionalEdges("agent", shouldContinue, ["tools", END]);
```


start
agent
tools
end

```
const agentFinalState = await graph.invoke(
    { messages: [new HumanMessage("what is the current time and weather in Dallas?")] },
    { configurable: { thread_id: "42" } },
  );

console.log(
  //agentFinalState.messages
  agentFinalState.messages[agentFinalState.messages.length - 1].content,
);
```

DEMO

Do not humanize AI Agents

Generative AI

is not:

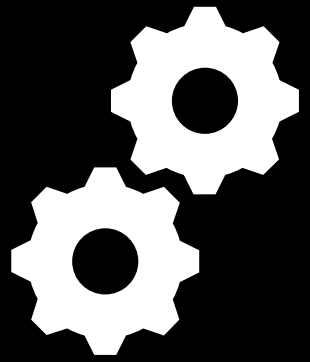
- **Intelligent**
- **Deterministic**
- **Grounded**

Generative AI

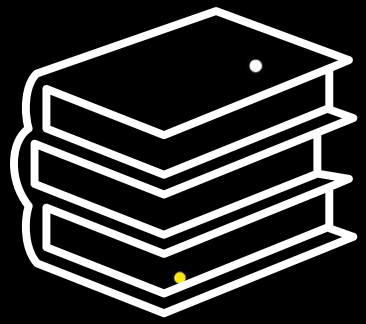
can not:

- **Understand language or maths**
- **Understand manners or emotions**
- **Know facts that are not in its training dataset**

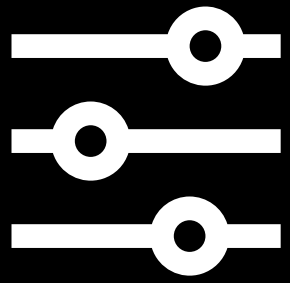
Effective Coaching



- Effective prompt engineering



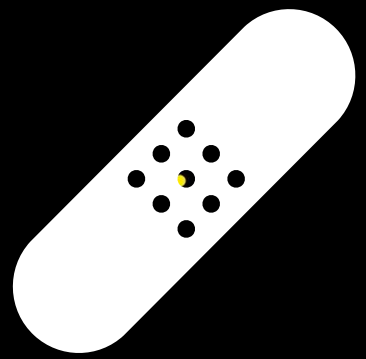
- Provide validated data sources
- Ask for citations



- Tweak parameters (temperature/max length)
- Content filtering

Why Should You Prioritize Responsible AI

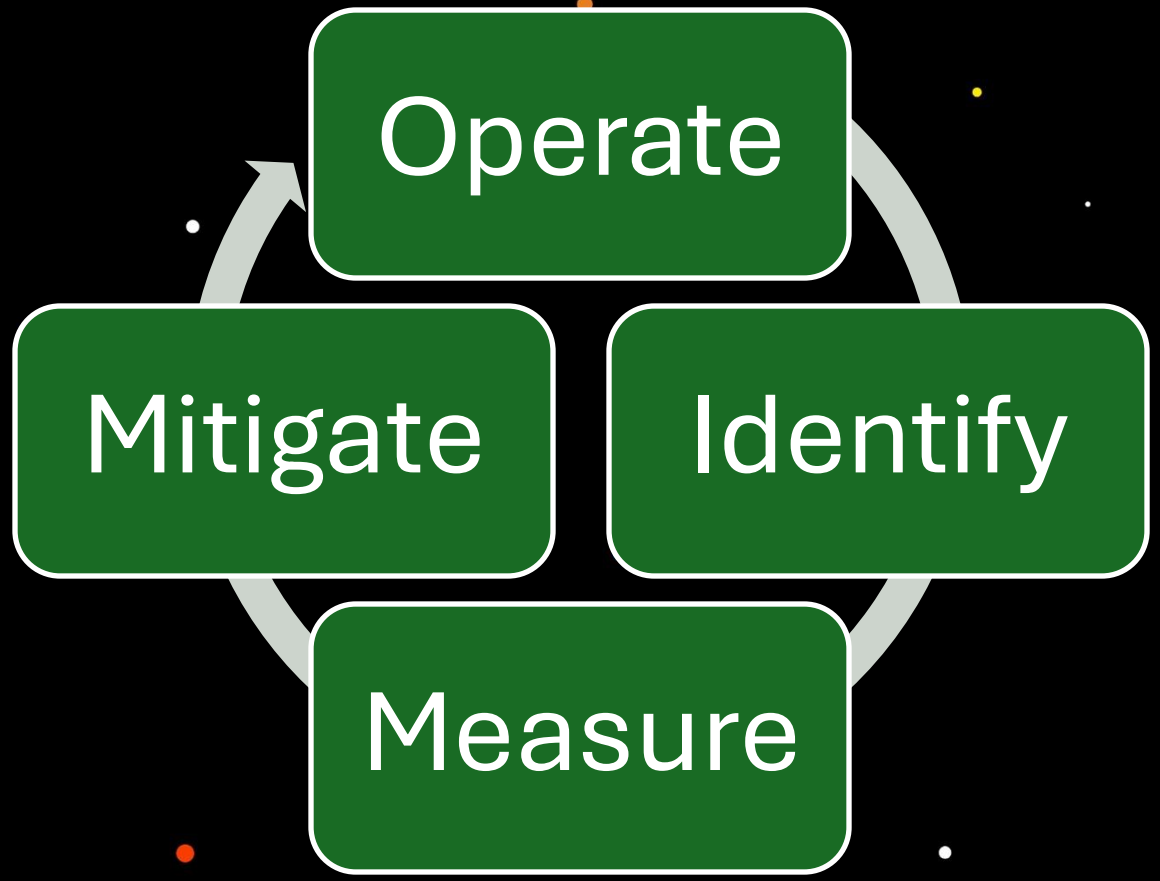
Hallucinations



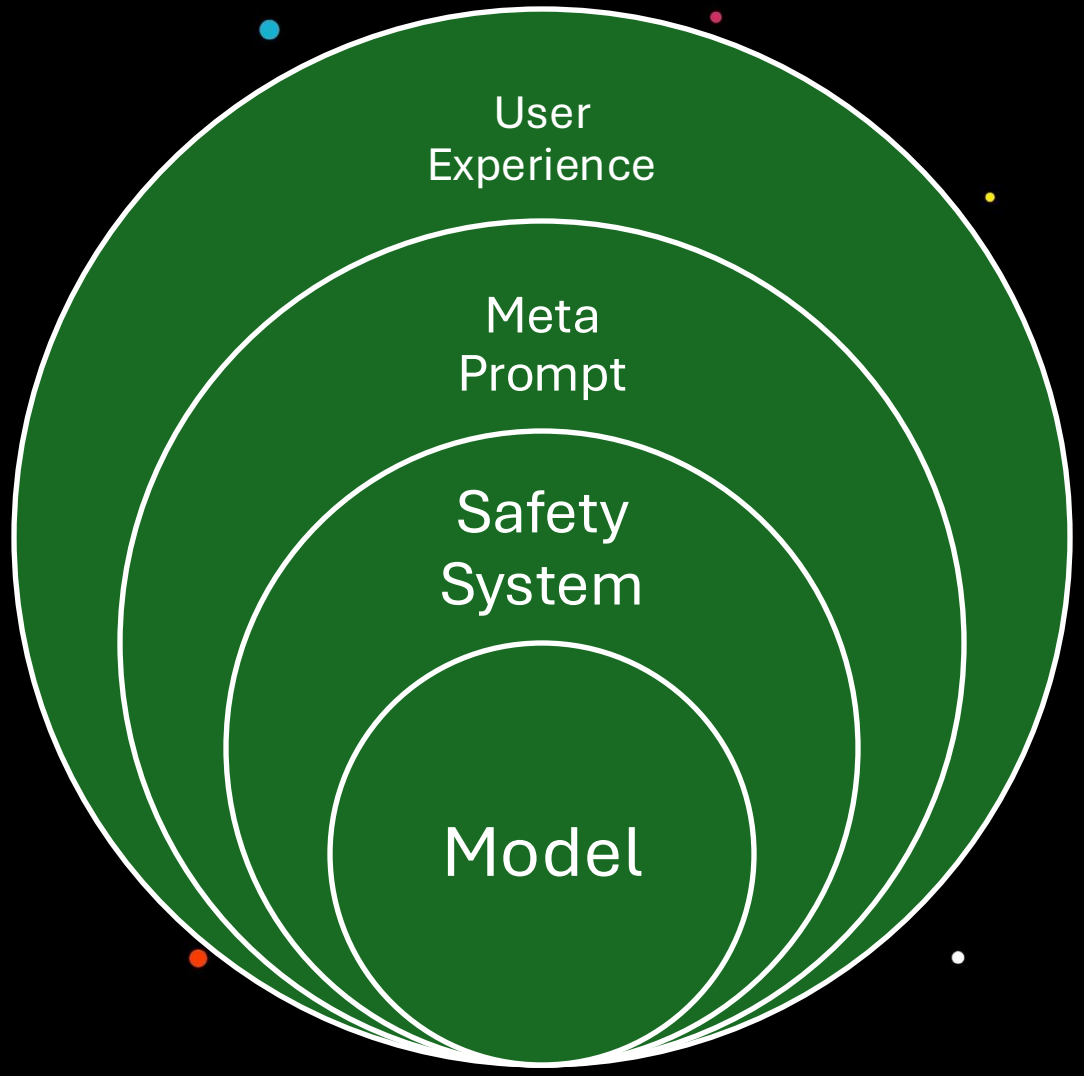
Harmful Content

- Lack of Fairness

Use Generative AI Responsibly



Mitigation Layers



Qualities of a great AI coach

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3. Shares the Knowledge / Educates Others / Set expectations
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Qualities of a great AI coach

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TAKEAWAY

	Traditional Software Development	AI Software Development
INPUTS	- Text with defined set (string) - Numeric (int, float)	Fuzzy inputs: Open ended text - Tabular data, markdown, text, math operation
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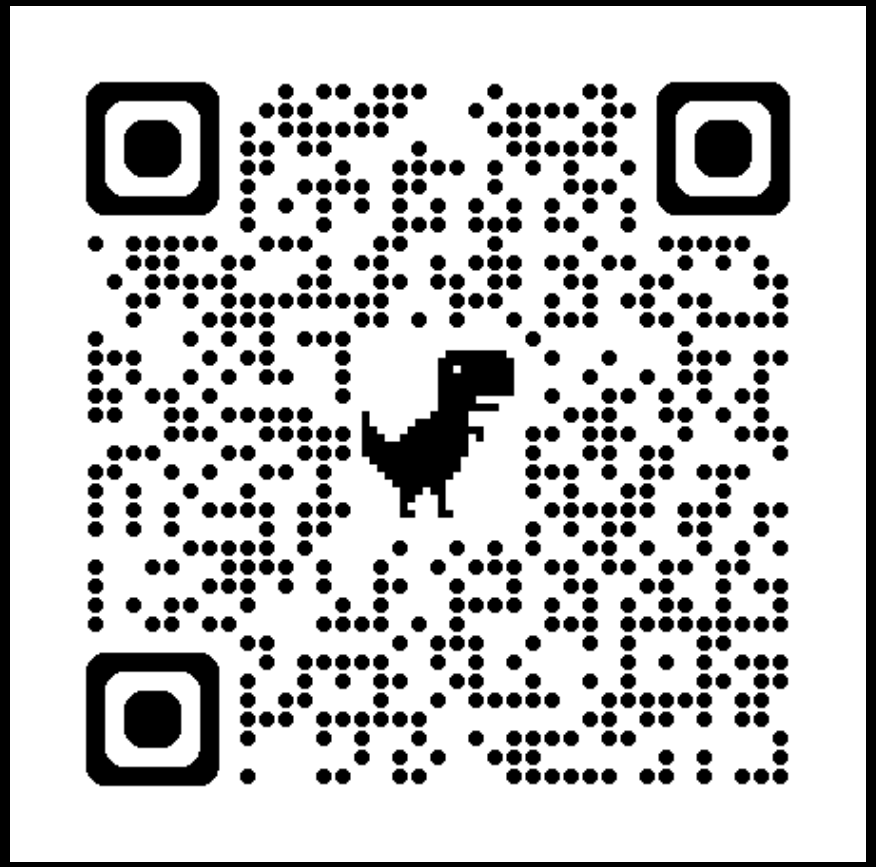
OUTPUTS	- Text with defined set - Numeric (int, float)	Fuzzy output: text - Paragraph - Number(s) - JSON / Markdown
Notes	- Can be replicated	- Probabilistic: can be different every time

Relevant Links

1. https://www.deeplearning.ai/short-courses/multi-ai-agent-systems-with-crewai/
2. https://www.deeplearning.ai/short-courses/ai-agentic-design-patterns-with-autogen/
3. https://platform.openai.com/docs/guides/prompt-engineering
4. https://microsoft.github.io/generative-ai-for-beginners/#/



https://github.com/rondagdag/good-agentic-coach-talk

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  www.linkedin.com/in/rondagdag/
- Thanks for geeking out with me about AI Agents


THANKS