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Agentic AI - Introduction

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- GenAI
- AI Agents
- Agentic AI
- Agentic AI Frameworks
- Learning Path

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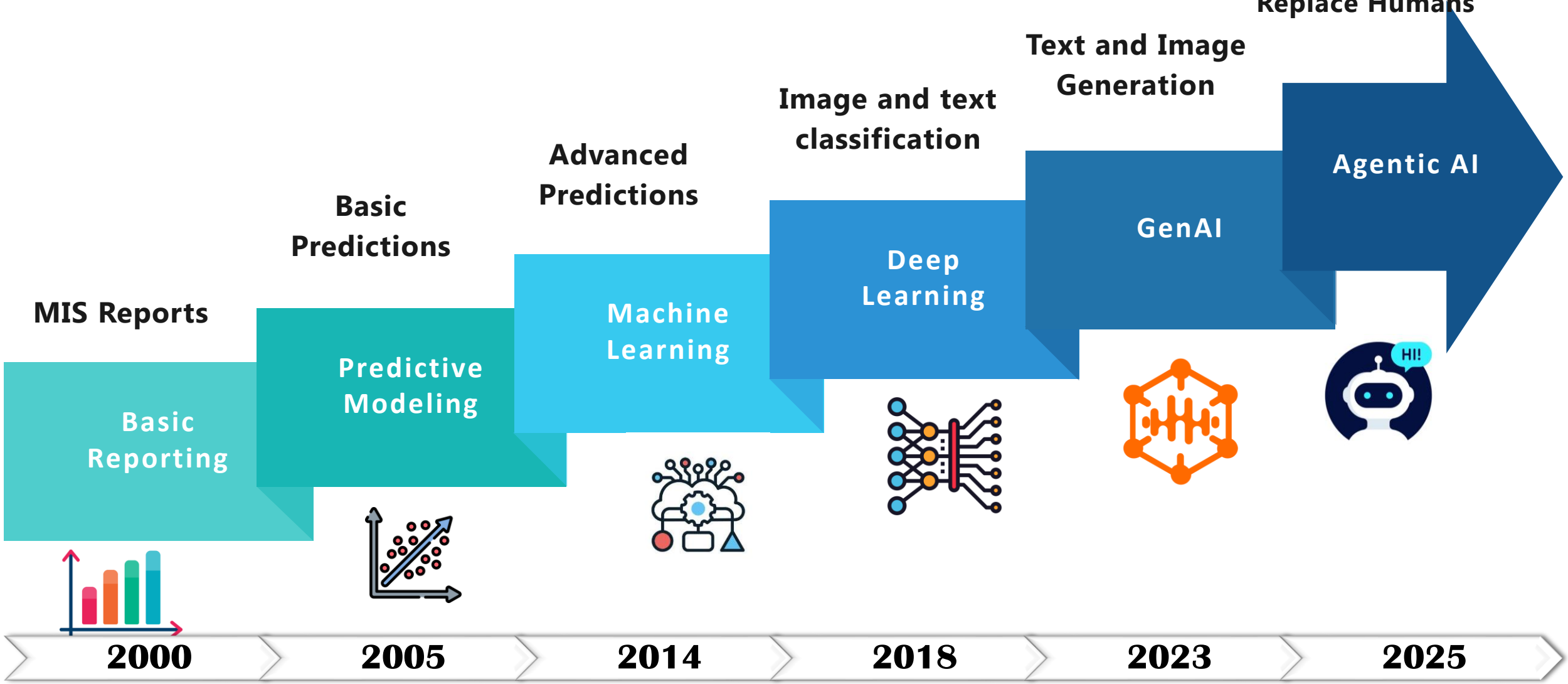
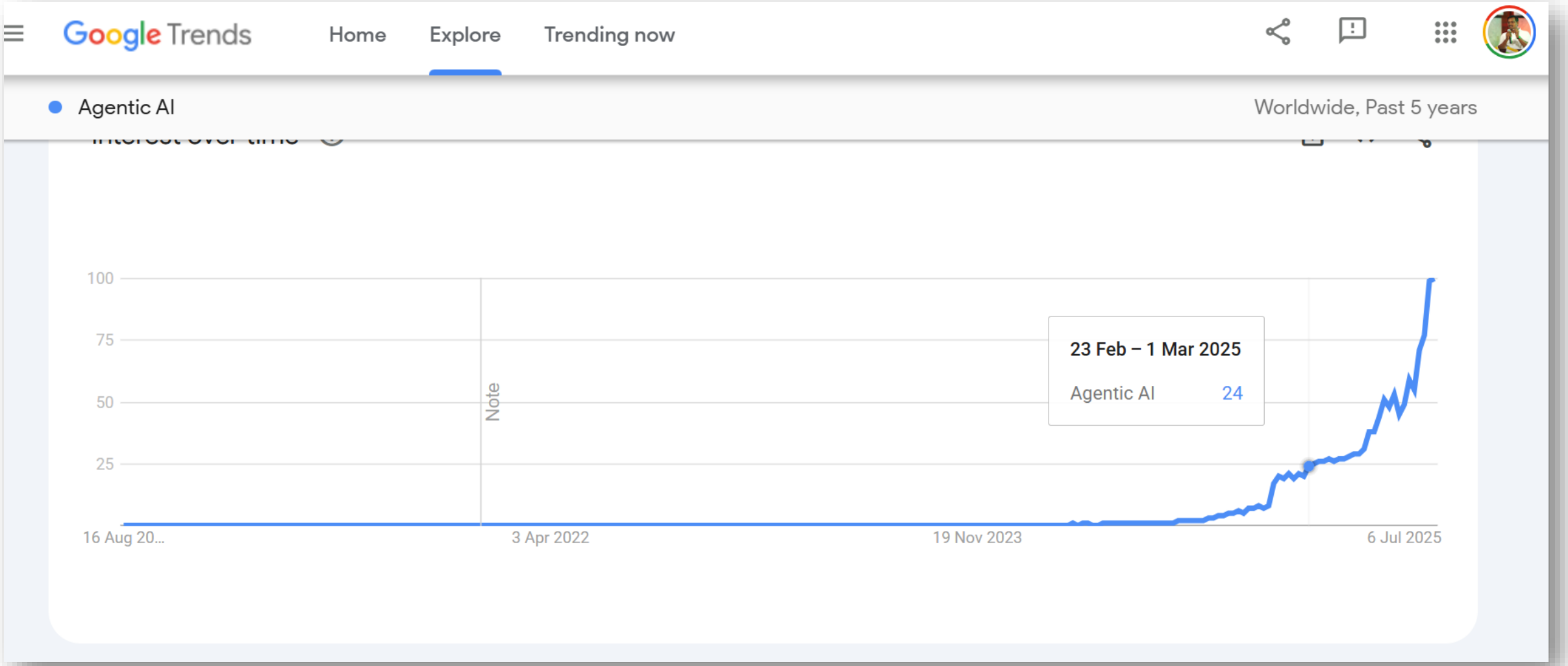
The history of Agentic AI

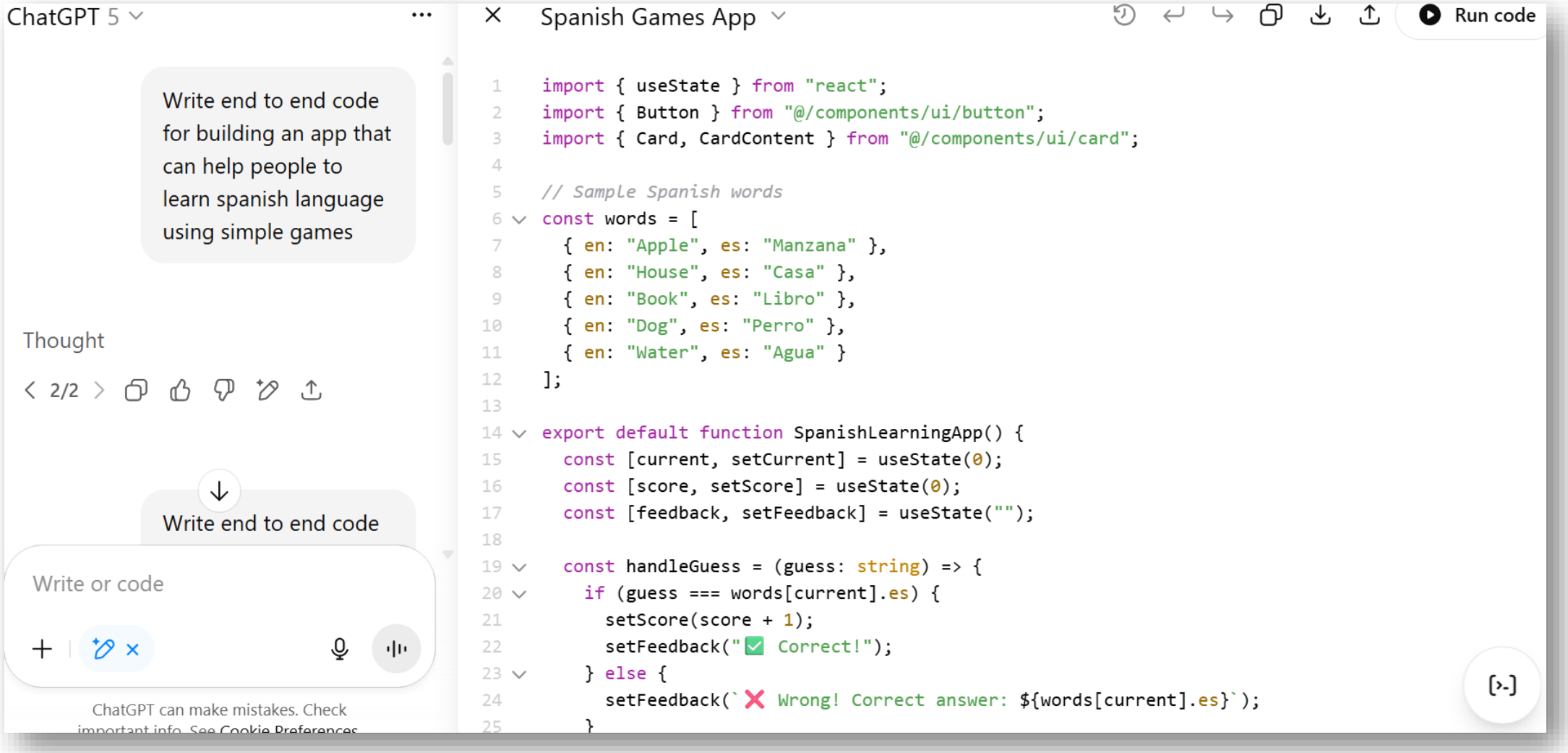


The history of Agentic AI

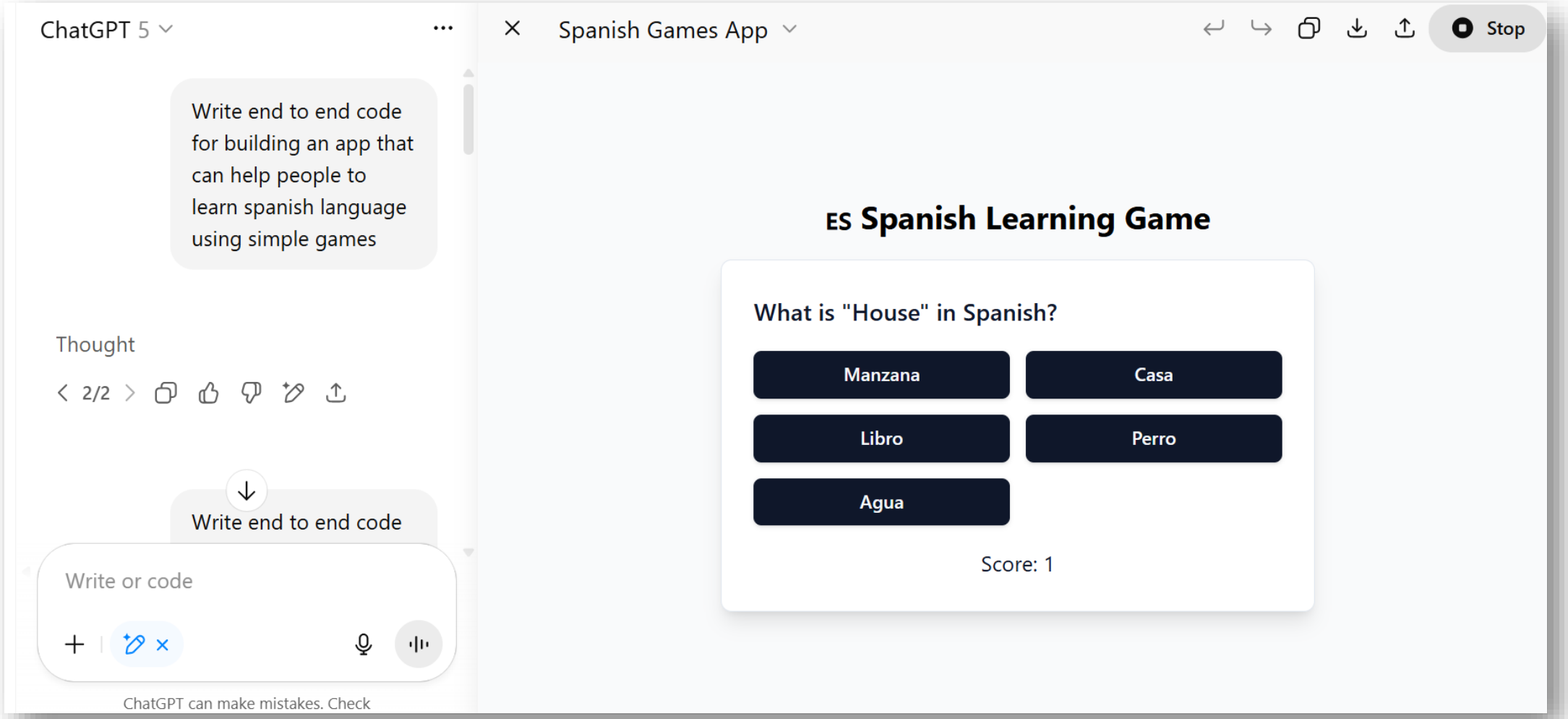


Chat GPT Agentic AI System Video

Chat GPT5 – Agentic AI System



Chat GPT5 – Agentic AI System



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Gen AI

Gen AI

Input : Direct prompt →
Output: LLM Generated

How to improve focus and utilize time effectively ? Give me the answer in bullet points

Here's a direct, bullet-point list you can use:

- **Set priorities**: Write down the top 3 tasks for the day and finish them first.
- **Break tasks down**: Divide big goals into smaller, actionable steps.
- **Time-box work**: Use Pomodoro (25–50 min work + 5–10 min break).
- **Remove distractions**: Silence notifications, keep phone away, use site blockers.
- **Create a focused environment**: Clean desk, quiet space, or noise-canceling headphones.
- **Batch activities**: Check emails/messages at fixed times instead of constantly.
- **Take care of energy**: Sleep 7–8 hours, eat light meals, stay hydrated.
- **Exercise regularly**: Even short walks or quick workouts boost concentration.

Gen AI

- LLMs that generate content (text, images, code, etc.) from prompts
- Generate outputs from input
- Direct prompt → output
- ChatGPT, DALL·E, Gemini
- Low complexity

LLM Limitations

- Standalone LLM
  - Could not do math
  - Could not search internet
  - Could not give answers related to recent facts
  - Could not access current news data
- We need an alternative option

LLM Limitations

```
llm=OpenAI(temperature=0)
print(llm.invoke("Who is the current president of India?"))
```

```
The current president of India is Ram Nath Kovind.
```

```
print(llm.invoke("Who is the IPL 2025 Winner?"))
```

```
It is impossible to predict the winner of IPL 2025 as it
```

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AI Agents

Software Acting Like Humans

- "Agents" are software programs designed to imitate how humans perform tasks.
- Take creating a PowerPoint presentation as an example.
  - Thought - You start by thinking about what needs to be done
  - Action - Then search online to gather information.
  - Observation - After reviewing the results, you decide if the content is useful.
- If it isn’t, you think of a new approach, search again, and evaluate the results.
- This cycle of thinking, acting, and observing is repeated until you achieve your goal.
- Agents mimic this same process to complete tasks effectively.

Agents

- Agents are software programs that interact with the
  - Real world (other than LLM training data)
  - External events
  - Current data
  - Beyond LLM trained data
- LangChain offers various types of these interactive agents.
- These agents are designed to automate tasks and handle real-world scenarios.
- Agents are most important and most powerful aspect of Lang chain
- Agents concept got famous because of the ease of use. For enterprise applications we need to use them with caution.

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Agentic AI Systems

Agentic AI System

- A **single AI agent** typically performs a **specific, goal-oriented task** using tools, memory, or reasoning.
  - Example- Access internet, gets the content & context then generates a marketing message
- **Agentic AI** involves multiple specialized AI agents (or components) working together collaboratively or sequentially to achieve a complex, multi-step goal — with planning, decision-making, tool use, and self-reflection.
  - Example - Researches target audience → Writes copy → Designs image → Schedules emails → Posts on social media → Monitors results

Agentic AI System

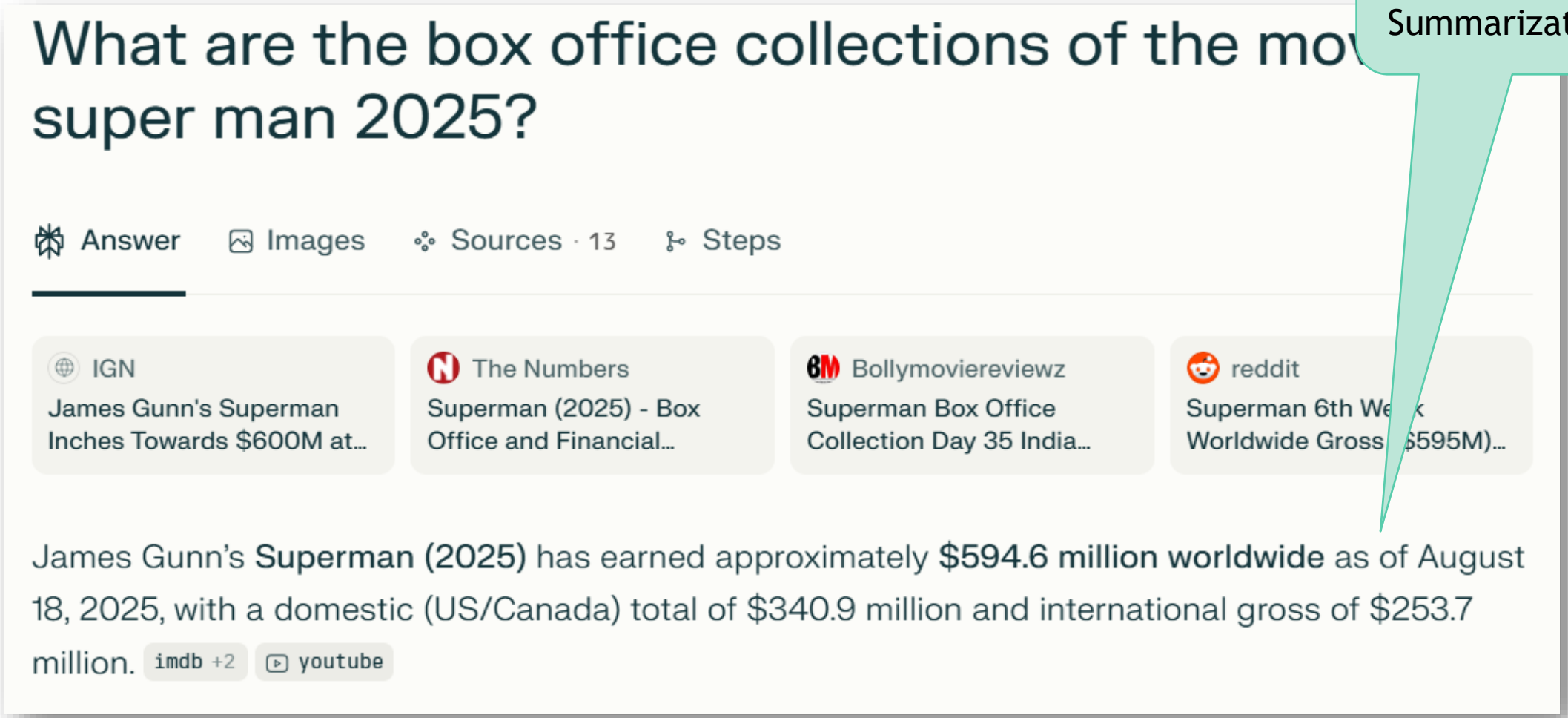
An **agentic AI system** is more than a plain LLM chatbot. It has:

1. **Autonomy** – it can decide what actions to take without step-by-step human prompting.
2. **Tools / APIs** – it can use external functions like search, code execution, or databases.
3. **Reasoning + Planning** – it can break down tasks into smaller steps and sequence them.
4. **Memory / Context** – often it keeps short- or long-term state for multi-turn tasks.

So, the "agentic" part is about the system behaving like an *agent*— taking initiative, choosing actions, and orchestrating tools.

Perplexity AI

LLM Capability +
Search tool +
Summarization Tool



Perplexity AI

Yes, **Perplexity AI** is a good example of an agentic system (though it presents itself as a search engine).

- It uses an LLM but augments it with **Search tool** integrations.
- The system decides when to call search APIs, when to summarize results, and how to cite them.
- That loop—LLM → decide action → fetch data → reason over it → respond—is agentic behavior.
- This is similar to what frameworks like LangChain or AutoGen let you build, but polished into a product.

Vibe coding

- Vibe coding refers to using natural language prompts to guide AI systems to generate working code.
- Developers shift from hand-coding to directing, reviewing, and refining via conversation.
- Karpathy's Take: He summed it up as:
  - *"I just see stuff, say stuff, run stuff, and copy paste stuff, and it mostly works."*
- Most of the vibe coding tools like Lovable, Cursor IDE, GitHub Copilot & Devin (Cognition AI) are Agentic AI Systems

Lovable

App Name: Ghar Ka Doctor ("Doctor at Home")

Concept Summary:
Ghar Ka Doctor is a mobile app designed to make basic healthcare advice and doctor consultations accessible and affordable for everyone, especially in Tier 2 and Tier 3 cities and underserved communities. By offering free or low-cost doctor consultations starting at Rs. 50, the app aims to remove the financial and geographical barriers to everyday medical guidance.

Key Objectives:

Democratize access to healthcare by making consultations affordable or free.

Offer proactive health tracking through subscription-based diagnostic services.

Build a healthcare ecosystem around primary consultations that leads to monetization via lab tests, pharmacy orders, referrals, and subscriptions.

Core Features:

a complex agentic AI system, because it exhibits planning, tool use (codegen, hosting, integrations), and autonomy in creating production-ready apps.

Lovable

- Lovable = the YC startup that lets you describe an app in natural language and then generates the whole application.
- It takes a natural language prompt → uses an LLM to generate **specs**, **frontend code**, **backend code**, and even sets up deployment.
- It doesn't just "answer your question"—it **autonomously coordinates multiple subtasks**: design, code generation, scaffolding, wiring, and refinement.
- That orchestration of multiple roles makes it a **complex agentic system**, not just an "AI code assistant."

Examples of Complex Agentic AI Systems

- **Devin (by Cognition AI)**
  - Can plan, search docs, write code, debug, test, and deploy autonomously.
- **ChatGPT with Advanced Tools (OpenAI)**
  - When ChatGPT has browsing, code interpreter, and file upload enabled, it chooses when to invoke each.
  - That makes it an agentic AI system, because the LLM itself decides: *"Should I search the web? Should I run Python? Should I summarize a file?"*
- **Copilot for Microsoft 365**
  - Goes beyond text generation. It decides when to pull data from Outlook, Teams, Excel, or Word and coordinates across them.
- **Replit's Ghostwriter / Cursor IDE Agents**
  - Not just code completion—they can run refactorings, tests, and multi-file updates by planning actions.

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Agentic AI Frameworks

Agentic AI Frameworks

- **Agentic AI frameworks = LLMs + tools + memory + planning + collaboration.**
- They help build autonomous systems that can **think, act, and work together** like digital teams.
  - AutoGen (by Microsoft)
  - **LangGraph** (by LangChain)
  - CrewAI
  - MetaGPT
  - **OpenAgents** (by OpenAI)
  - SuperAgent
  - n8n

Frameworks

If you want to...	Use this
Build multi-agent pipelines easily	**CrewAI**, **LangGraph**, **AutoGen**
Simulate teams with roles	**MetaGPT**, **ChatDev**, **AutoGen**
Focus on tools and plugin use	**LangChain**, **AutoGen**, **OpenAgents**
Have visual workflow control	**Autogen Studio**, **n8n**, **Superagent**
Build agents that code	**MetaGPT**, **Devin (AI Engineer)**

Frameworks Comparison

If you want to...	Use this
Build multi-agent pipelines easily	CrewAI, **LangGraph**, AutoGen
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Have visual workflow control	**Autogen Studio**, n8n, **Superagent**
Build agents that code	**MetaGPT**, **Devin (AI Engineer)**

We will focus on these in our course

AutoGen

- Designed for building LLM-driven agents that can collaborate through structured conversations and tool use. Strong planning + self-correction.
- Good at Multi-agent chat orchestration

CrewAI

- Lightweight and intuitive framework where agents take on different roles (e.g., researcher, writer) to complete complex tasks.
- Role-based multi-agent collaboration

n8n

- n8n (pronounced "n-eight-n") is a powerful open-source workflow automation tool that lets you connect apps, APIs, and services with no-code or low-code logic.
- Drag-and-drop workflow builderConnects to 350+ services (APIs, databases, CRMs, AI tools)

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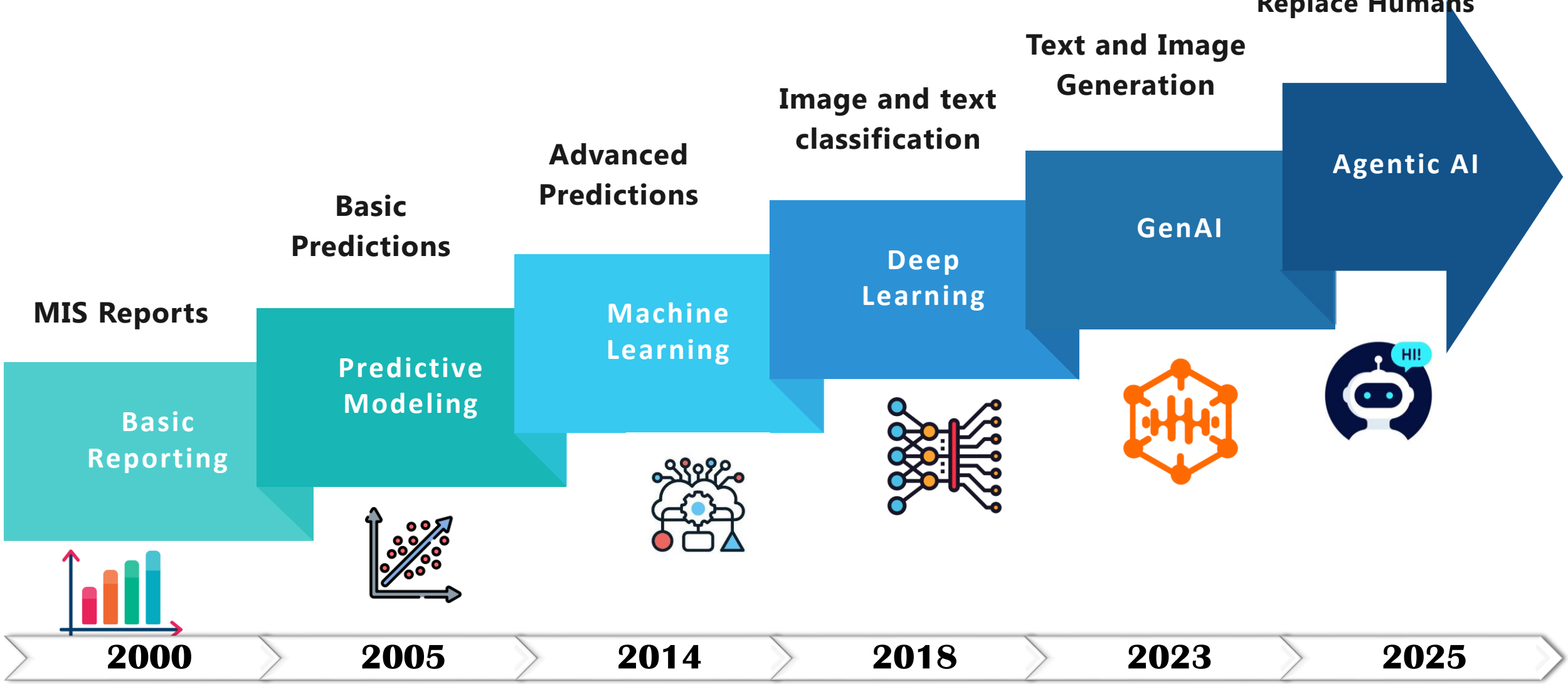
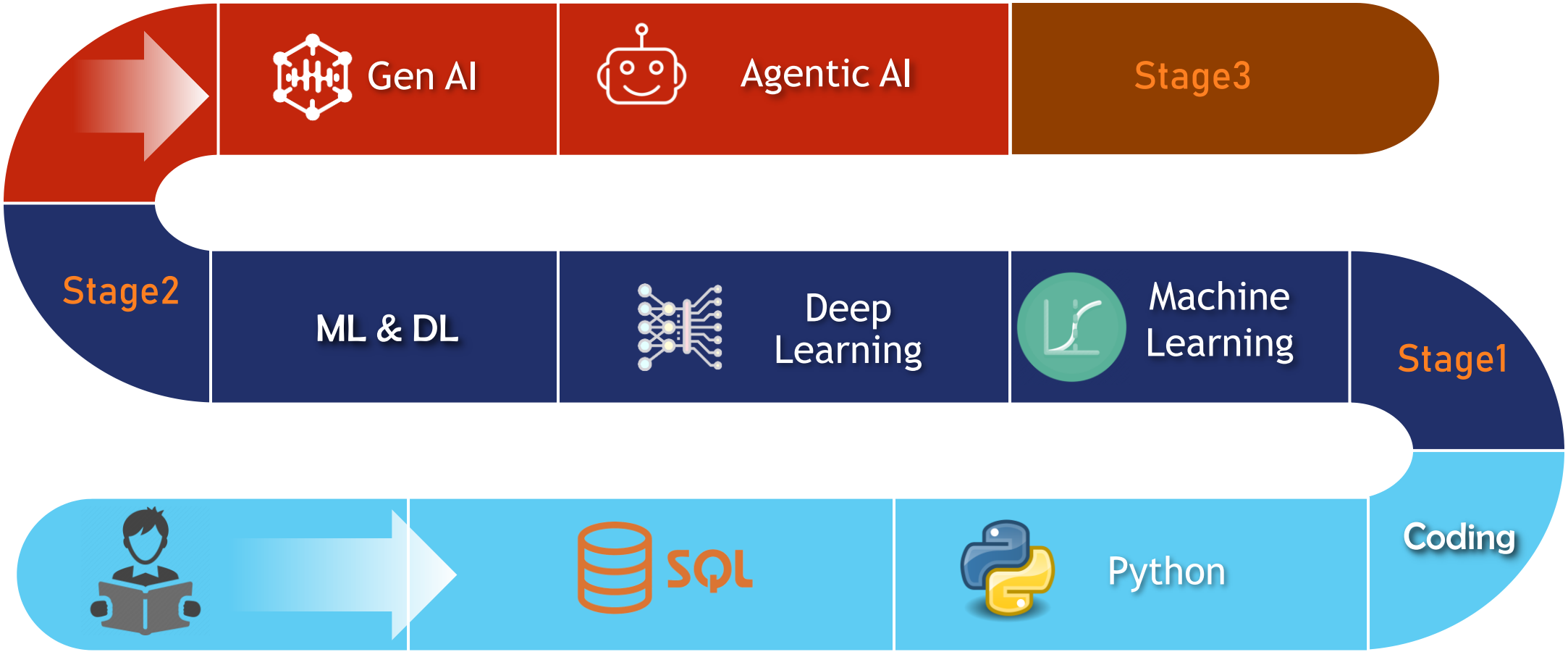
Learning Path

The history of Agentic AI



Learning Path – Full Fledged



Learning Path – The essentials

Course Contents

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- Introduction
- LangChain Agents (Acts as recap of GenAI)
- AutoGen
- n8n Agents
- Agentic AI Applications
- MCP
- CrewAI

Assignment

1. Create an App in lovable for creating a social networking app only for lawyers
2. Create an App for planning a trip by taking number of days, origin, destination, accommodation and number of travellers as input.

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Thank you