

Complete Crash Course



 **Contact : 7880113112 For Data Science with AI & Data Analytics Course by The iScale**

AI Job Market Explosion: High Demand for 2.3 Million Professionals in India!



AI investment forecast to approach \$200 billion globally by 2025



AI Agents: The Next Big Thing in AI

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Topics to be covered today

- What are AI Agents
- About LLM
- How LLM works
- Chat gpt
- AI Work Flow
- Working
- Architecture
- Agentic AI
- How it works
- Real time example
- Manus AI
- Single AI Agent
- Multi Model AI Agent
- Sequential Pattern
- Hierarchical pattern
- Parallel pattern
- Asynchronous
- Hybrid Pattern
- Reflex Agent
- Model Based Reflex Agent
- Goal based Agent
- Utility based Agent
- Learning agent
- Task Automation agents
- Coding assistant agent
- Ecommerce and research agent
- Travel agent
- Healthcare assistant agent
- Vision agent
- Real life examples
- Coding and non coding Agents
- Opportunities
- Popular AI agents

Every SaaS today = an AI agent tomorrow.

For every Software as a Service (SaaS) company that ,there will be a corresponding AI agent company

Software Developer

Data Scientist

Social Media Manager

DevOps Engineer

Product Analyst

Sales Development Representative

UI/UX Designer

Data Analyst

Account Executive

Data Engineer

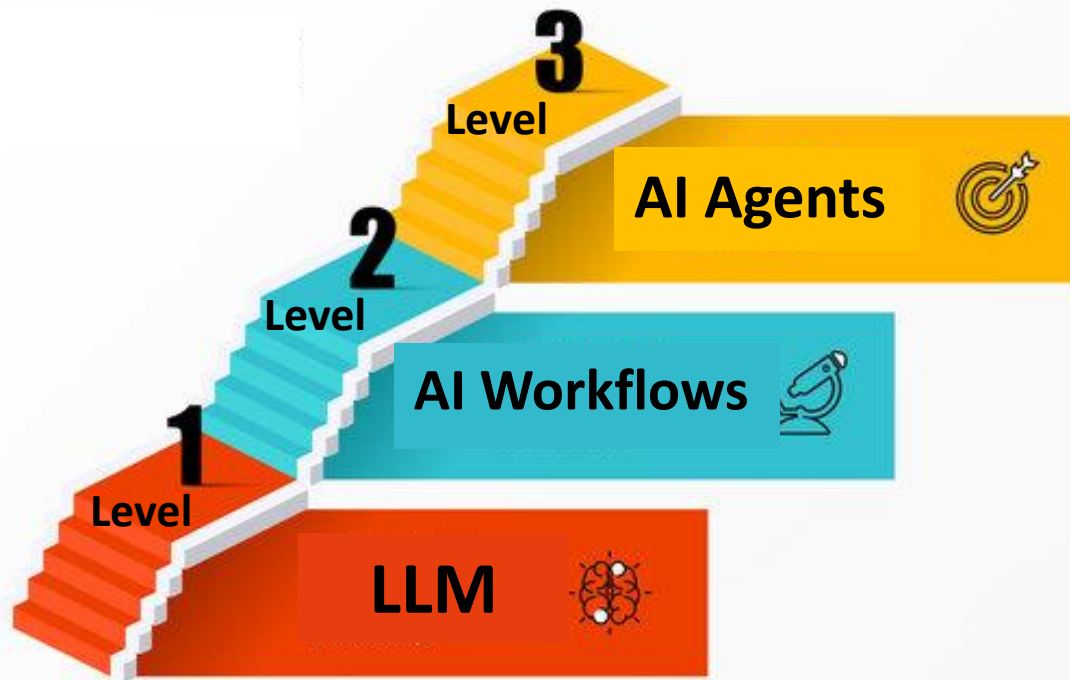
QA Engineer

Partnerships Manager

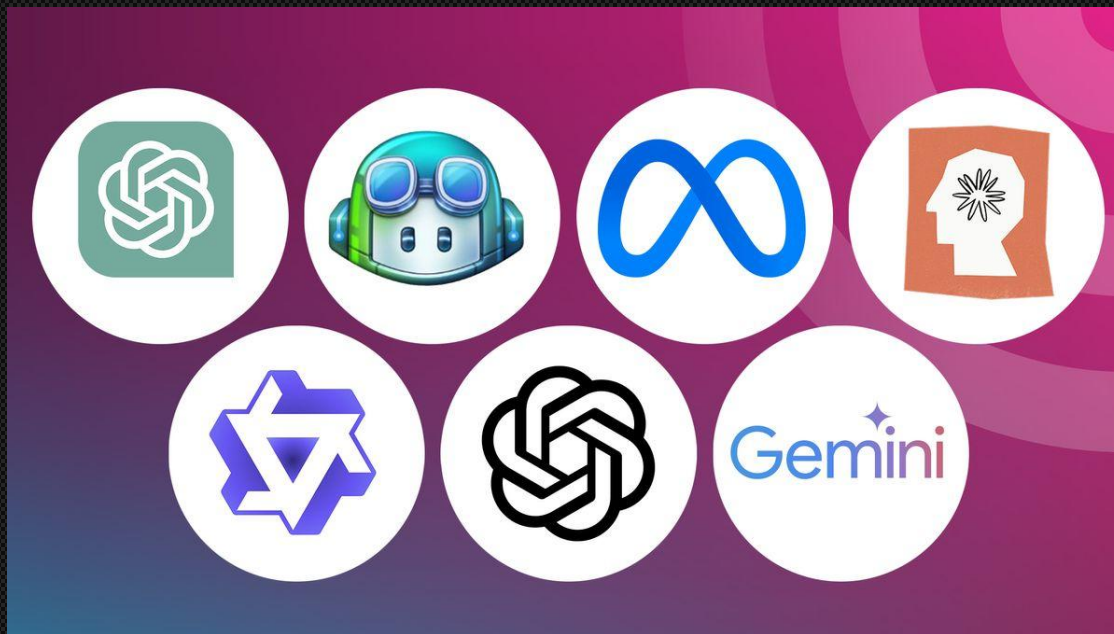
HR & Talent Acquisition

Business Analyst

Operations Manager



Large Language Models - LLM



Large Language Models - LLM



tell me when i have next meeting with Mr.. singh

I don't have access to your calendar or meeting schedule. If you've previously shared the meeting details with me or want to check it together now, feel free to provide the date or context, and I'll help you note it down or draft reminders.

Otherwise, I'd recommend checking your Google Calendar, Outlook, or wherever you usually track meetings. Would you like help setting a reminder or creating a follow-up email?



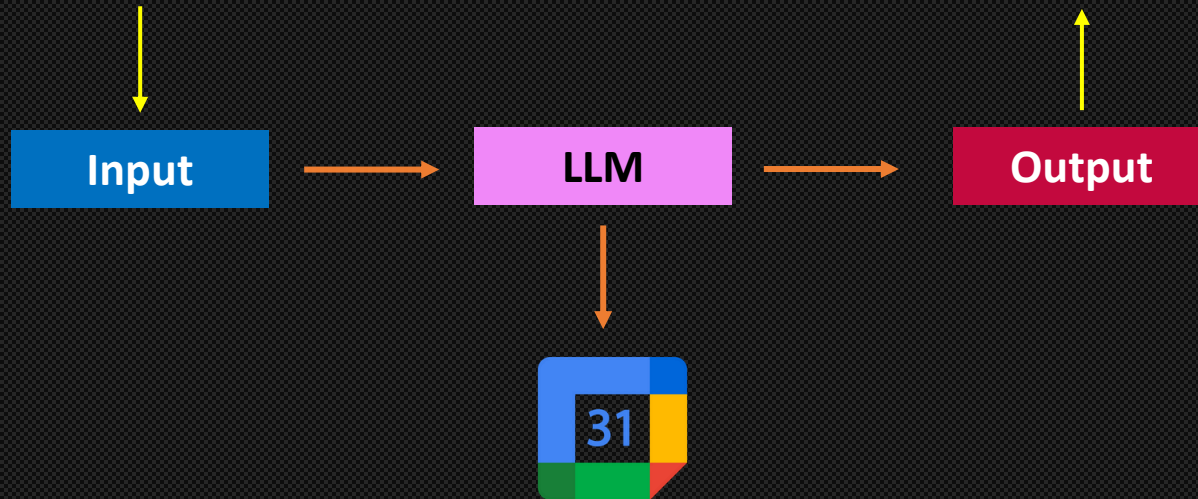
Despite being trained on large amount of data, they have limited knowledge of proprietary information like our personal information or internal company data.

LLMs are passive - they wait for our prompt and then respond

AI Workflows

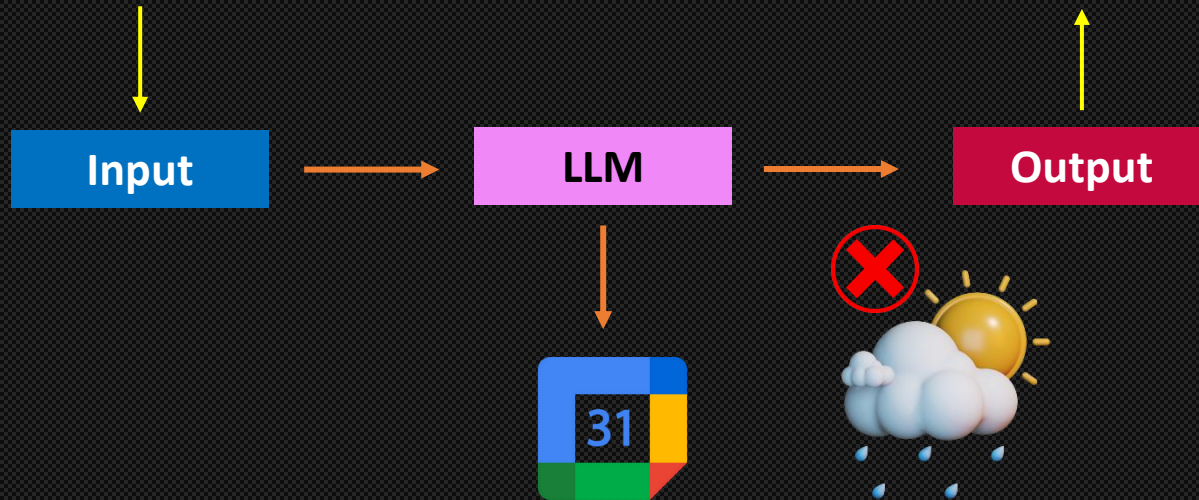
When will I have next meeting with Mr.. Singh ?

It's Tomorrow at 10 am

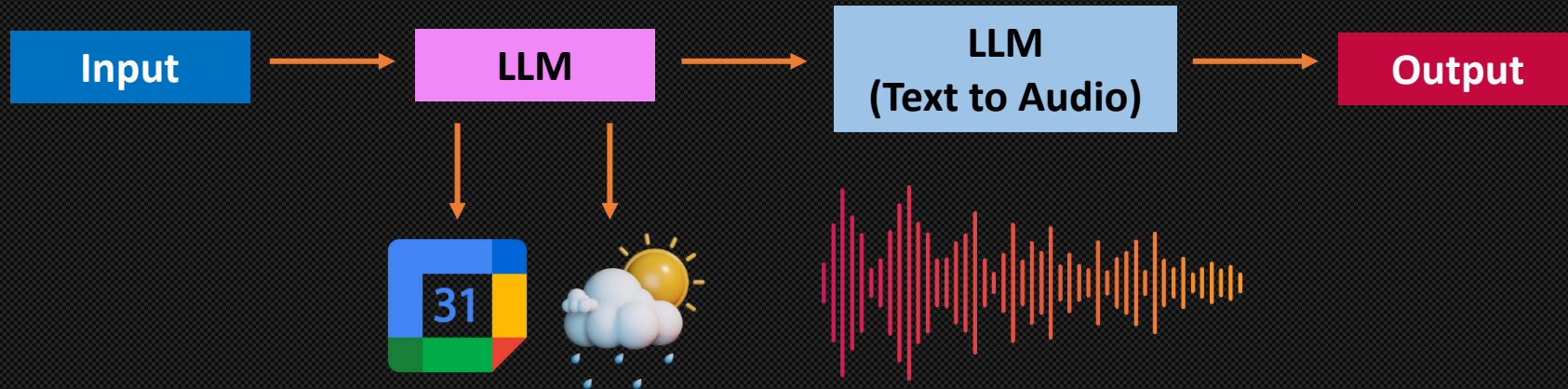


AI Workflows

What will the weather be like tomorrow?



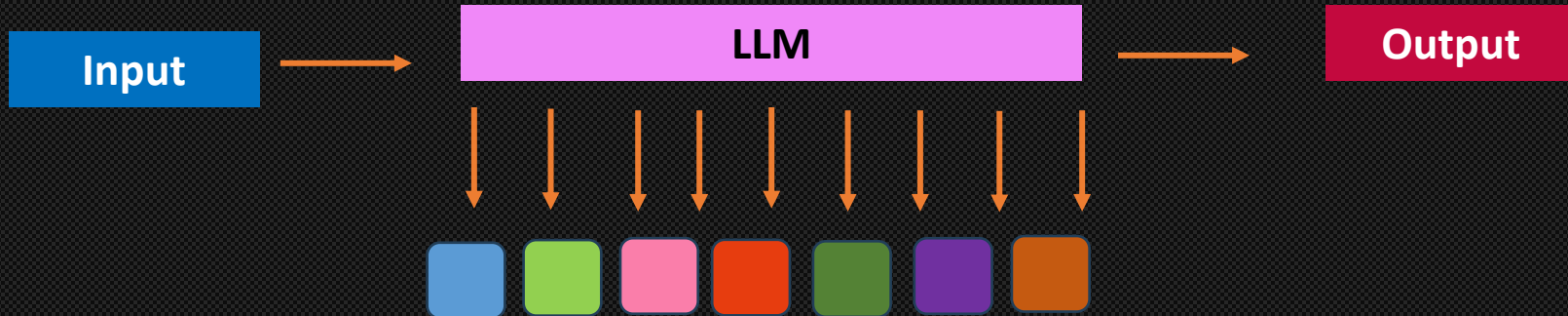
AI Workflows



AI Workflows

=

Human Decision Maker





Task - Create posts for Instagram and LinkedIn based on news articles, and publish them every day at 8 PM

Reason

Step - 1

Compile Links

Step - 2

Summarize Articles

Step - 3

Write Posts

Task - Create posts for Instagram and LinkedIn based on news articles, and publish them every day at 8 PM



Reasoning

- What is the most effective way to compile News Articles?
- Should I copy and Paste word Article into a word document ?

No, its Probably easier to compile links to those articles, and use another Tool to fetch the data.

Yes it makes More sense

Task - Create posts for Instagram and LinkedIn based on news articles, and publish them every day at 8 PM

Reason	Step - 1	Step - 2	Step - 3
	Compile Links	Summarize Articles	Write Posts

Act via
Tools



Task - Create posts for Instagram and LinkedIn based on news articles, and publish them every day at 8 PM

Reason

Step - 1

Compile Links

Step - 2

Summarize Articles

Step - 3

Write Posts

Act via
Tools



AI Workflow



Iteration

Step - 1

Compile Links

Step - 2

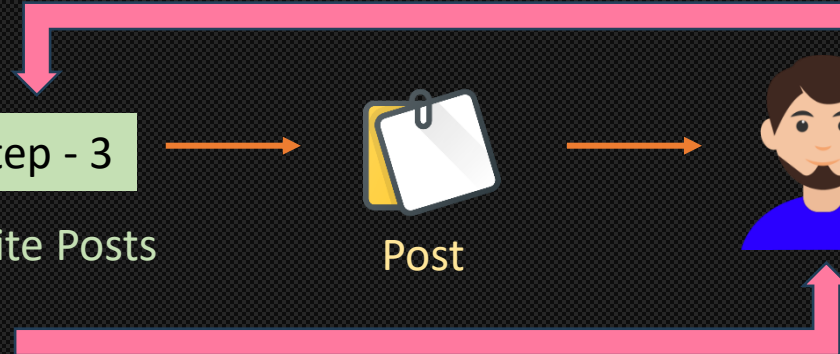
Summarize Articles

Step - 3

Write Posts



Post





AI Agent

- How do I make sure Its good?
- All the requirements of the post has been fulfilled?
- I will ask another LLM to check the post
- Let's repeat this until the best criteria are met



Iteration

Step - 1

Step - 2

Step - 3

Compile Links

Summarize Articles

Write Posts



Post



Critique Bot

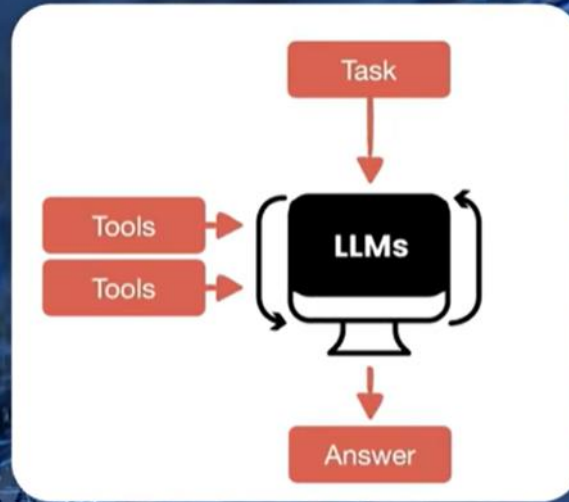


Final Post





Task: plan a 3 day trip to Tokyo on a budget 🗺️

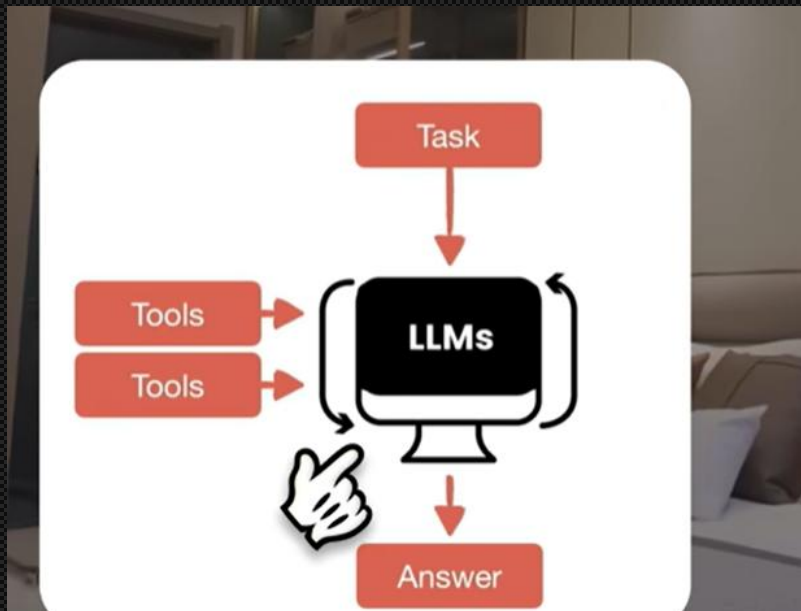


Single AI Agent

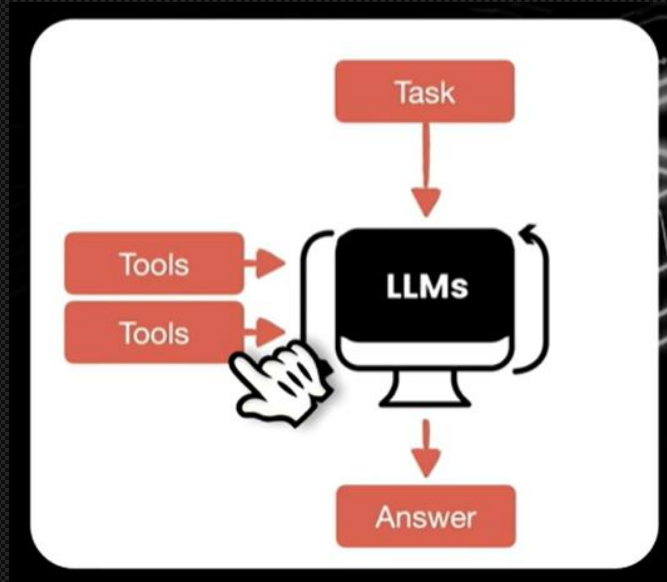
Answer: Detailed itinerary with locations, costs, hotels, and tickets ✈️ 🏠 💰



Model: Anthropic Claude or any preferred model 🤖



Tools: Google Maps  Skyscanner  Booking.com 
Saved credit card 



Simple 2 Agent Model

Multi AI Agent

Writer Agent



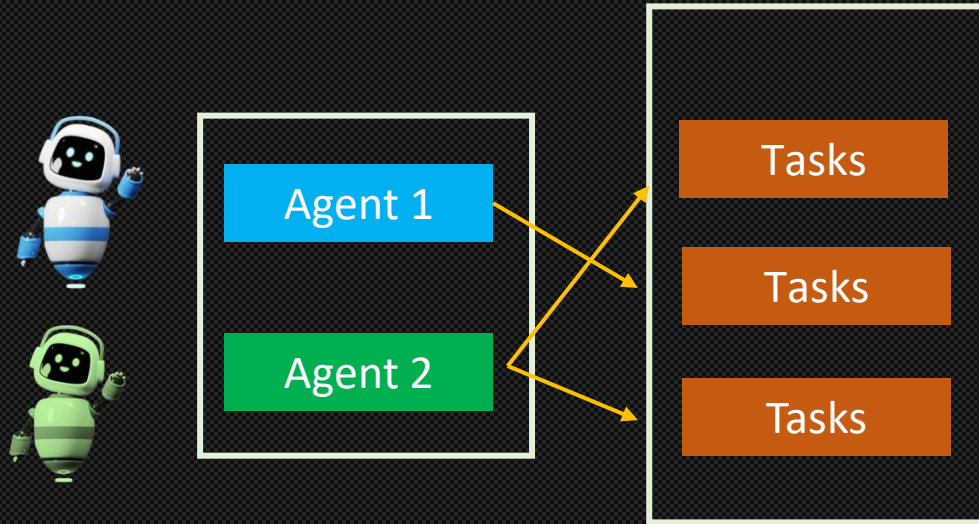
```
...c=Name.GetAt(a);
temp=transinit;
temp0= (temp0 < ( a & 0x7)
poli0 = (poli0 ^ temp0);
transmit=llame.GetAt (len-
temp1=transmit;
temp1=(temp1 < (a & 0xF))
poli1= (poli1 " temp1);
}
TRACEC'lx polyl = %x \n",F
)
class Dispatch {
public:
```



Editor Agent

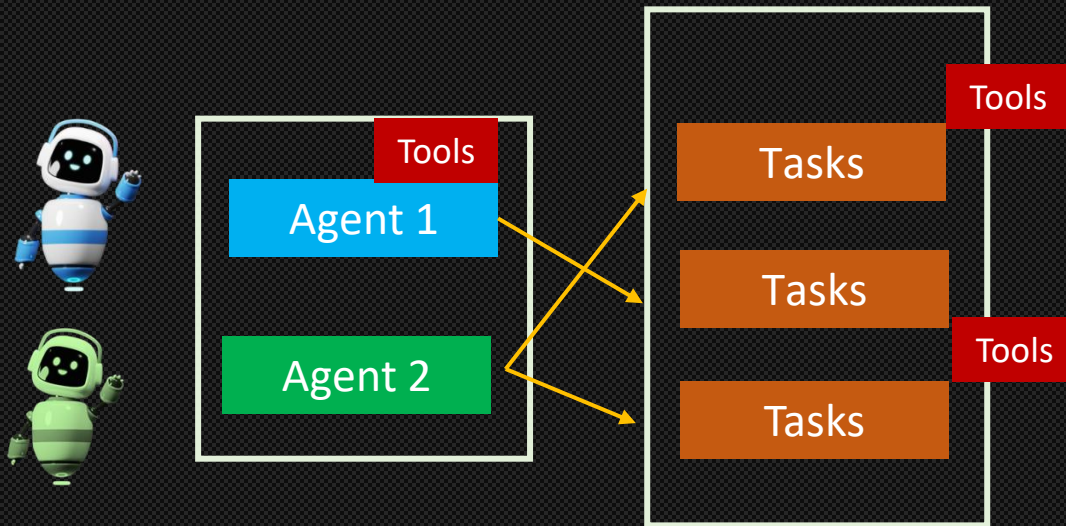
```
..._param
< 7, 1 } , { (1 << 7)
< 8, 1 } , { (1 << 8)
< 9, 1 } , { (1 << 9)
< 10, 1 } , { (1 << 10)
< 11, 1 } , { (1 << 11)
< 12, 0 } , { (1 << 12)
< 13, 1 } , { (1 << 13)
< 14, 1 } , { (1 << 14)
< 15, 1 } , { (1 << 15)
```

Simple 2 Agent Model



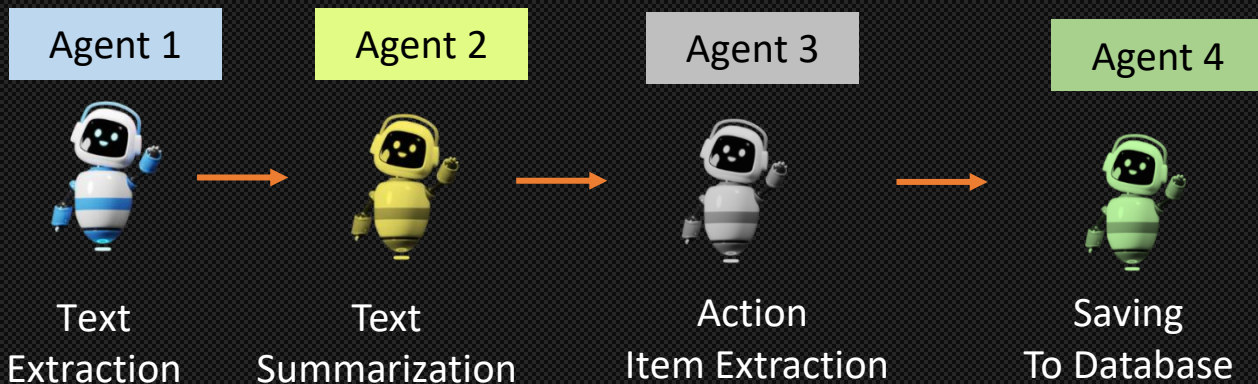
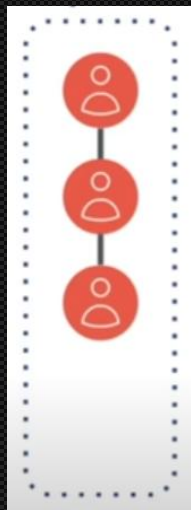
Simple 2 Agent Model

Multi AI Agent



Sequential Pattern

Example – AI Powered Document Processing



Hierarchical Pattern

Example – Writing a report for business decision making

Manager AI Agent

Task

Sub Agent 1

Sub Agent 2

Sub Agent 3

Sub Agent 4



Monitor
Market Trends



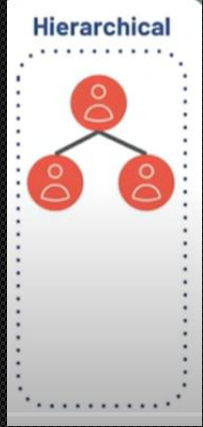
Analyses
Customer Sentiment



Tracks Internal
Performance Metrics

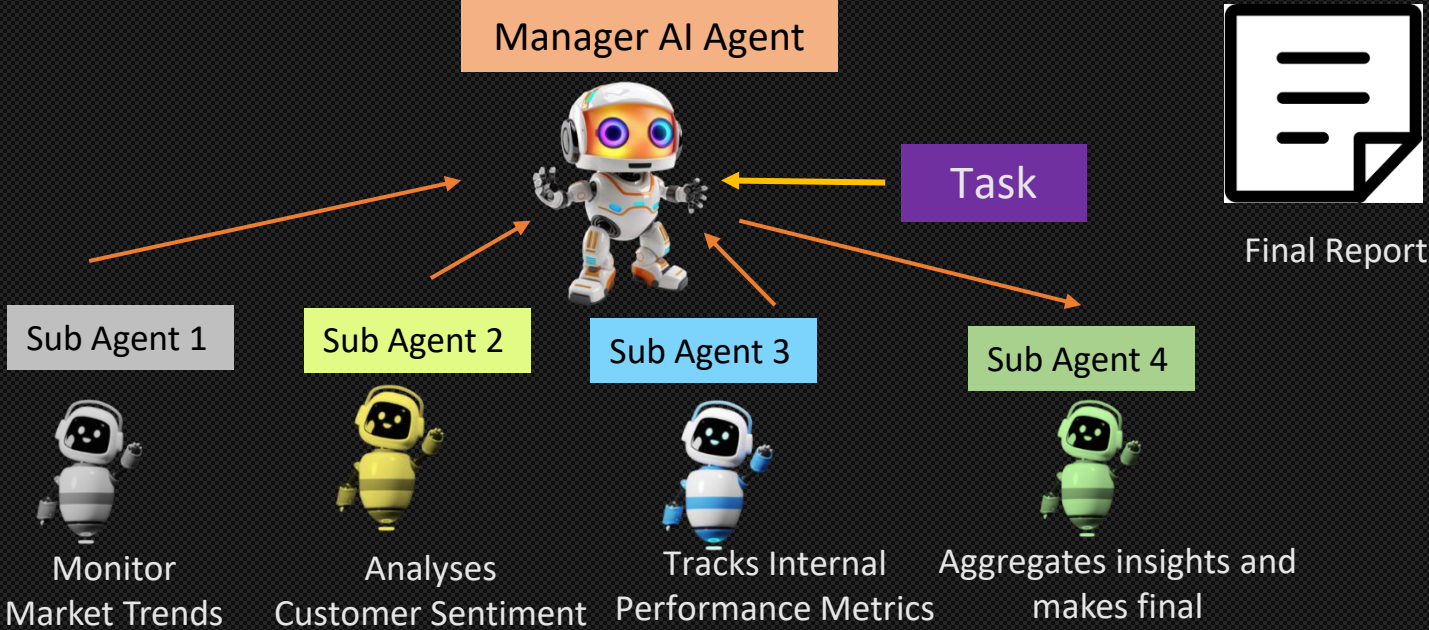
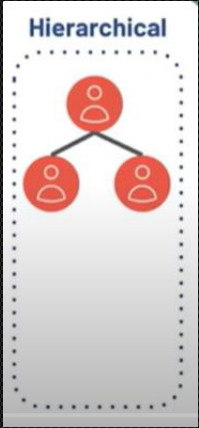


Aggregates insights and
makes final



Hierarchical Pattern

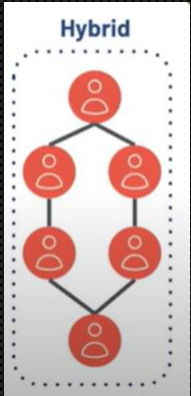
Example – Writing a report for business decision making



Hybrid Pattern

Example – An Autonomous Vehicle

Handles real time sensor fusion, collision avoidance, and road condition analysis



Top level AI Agent



Plans the overall route and traffic strategy



Feedback Loop

Sub Agents

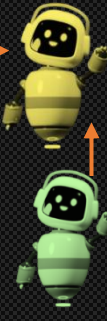
Sub Agent 1



Sub Agent 3



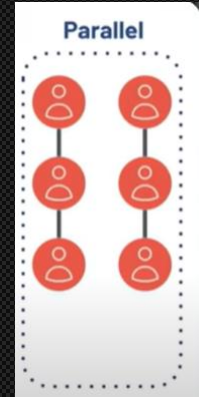
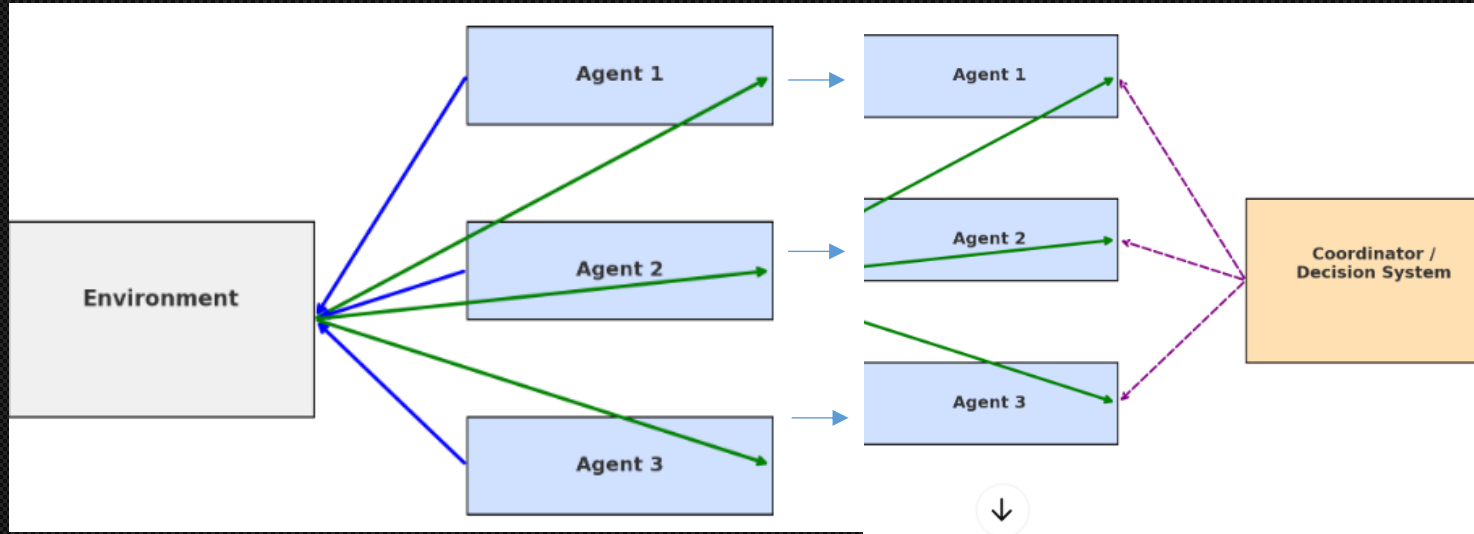
Sub Agent 2



Sub Agent 4

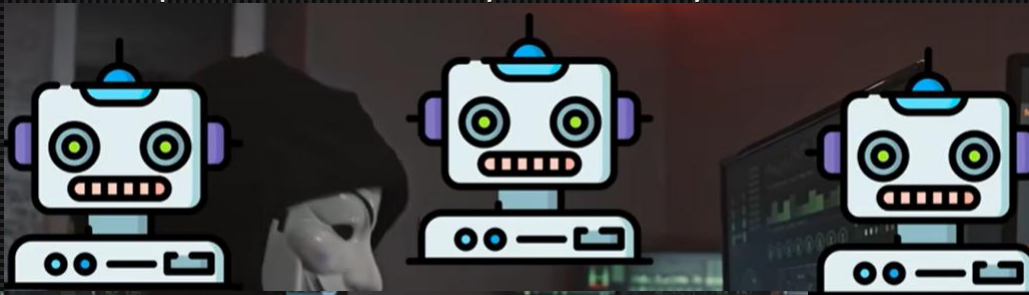


Example – Large Scale Data Analysis



Asynchronous Multi Agent System

Example – AI Powered Cyber Security Threat Detection



Agent 1:

Agent 2:

Agent 3:

Monitoring network traffic

Monitoring suspicious patterns

Randomly sampling/testing use cases

Async



Types of AI Agents



```
graph TD; A[Types of AI Agents] --> B[Simple Reflex Agent]; A --> C[Model-Based Reflex Agent]; A --> D[Goal-Based Agent]; A --> E[Utility-Based Agent]; A --> F[Learning Agent]
```

Simple
Reflex Agent

Model-
Based Reflex Agent

Goal-
Based Agent

Utility-
Based Agent

Learning
Agent

Simple Reflex Agent

Ye agent **current situation** ke basis pe kaam karta hai. Agar condition milti hai, toh action leta hai. **No memory**, no learning.

[Sensor] → [Condition-Action Rule] → [Actuator]

Example: A vacuum robot that turns left when it hits a wall.

- Robot sees "wall" → turns left
- No memory or learning bubble

💡 Think of it like: *"If this happens → do that."*

Model-Based Reflex Agent

Ye agent **current + previous knowledge (internal state)** ka use karta hai. Thoda intelligent hota hai, thoda memory use karta hai.

[Sensor] → [Update Internal State] → [Condition-Action Rule] → [Actuator]

Example: A smart vacuum remembers room layout and adjusts its route.

- Agent sees obstacle
- Checks “map” in memory
- Decides path
- 🧠 Now it has *some memory* to improve its actions.

Goal-Based Agent

Ye agent **goal oriented** hota hai. Har action se pehle sochta hai, kya ye action mujhe goal ke paas le jaayega?

[Sensor] → [Internal State + Goal] → [Search/Planning] → [Action]

Example: An AI agent given the goal “book a flight to Goa under ₹5000”

Task: "Book flight under ₹5000"

Path A: ₹6000 ❌

Path B: ₹4800 ✅

🧠 *It reasons before acting.*

Utility-Based Agent

Ye agent **sirf goal tak nahi** rukta, balki har possible outcome ka **utility (success level)** calculate karta hai. Best possible result choose karta hai.

[Sensor] → [Internal State + Goal + Utility Function] → [Best Action] → [Actuator]

Example: It chooses the flight with best timing, price, and airline rating.

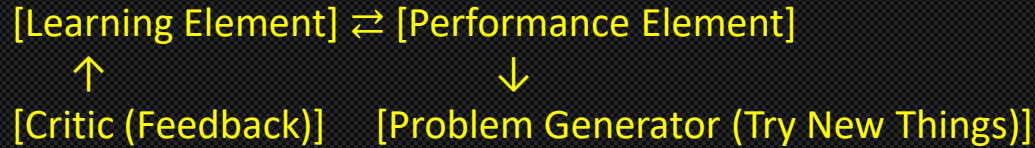
Options A, B, C with scores

Agent chooses highest utility

🧠 It ranks and chooses the most useful option.

Learning Agent

Ye agent **apne experiences se seekhta hai**, aur time ke sath improve karta hai. Isme ek **learning component** hota hai.



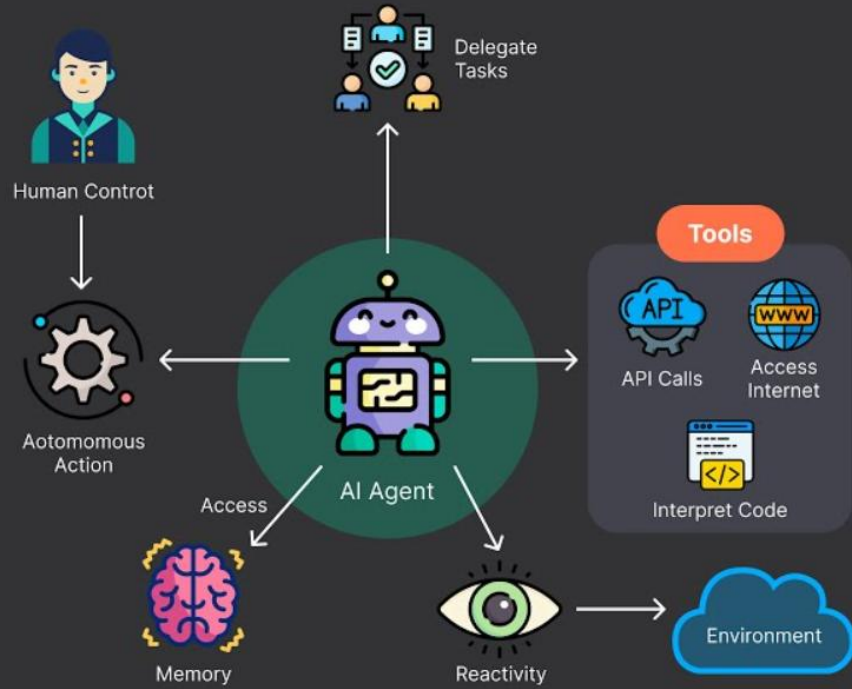
Example: Agent fine-tuned with feedback. Or an AI assistant that gets better at booking trips for you.

Brain icon + memory book + graph showing improvement

Learns from feedback

🧠 It evolves with experience!

How AI Agents Work?



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Real-World Use Cases of AI Agents

Task Automation Agents

Let's say you're a busy founder or freelancer juggling emails, meetings, and research.

💡 An AI agent can:

- Check your inbox
- Summarize important mails
- Schedule meetings on your calendar
- Even reply to emails on your behalf!

Tools like **SuperAGI** and **AutoGPT** can automate such workflows using multiple tools in sequence."

Agent → reads Gmail → checks Google Calendar → sends email → done 

Real-World Use Cases of AI Agents



Coding Assistant Agent

AI agents can also help developers by:

- Understanding what you want to build
- Breaking the task into steps
- Writing code
- Testing it
- Debugging errors — automatically!

Example:

Build a weather app” → agent generates frontend, backend, API call, and deploys it!

- Text prompt → Agent writes HTML + CSS + JS
- Small browser showing output app

Real-World Use Cases of AI Agents




E-commerce & Product Research

'Find me a smartwatch under ₹3000 with great reviews and 7-day battery.'

The agent will:

- Search different e-commerce sites
 - Compare ratings
 - Pick the best product

 - Even send you a link to buy!
-  This is next-gen shopping."
- Agent surfing Amazon + Flipkart
 - Final card showing best product + "Buy Now" button

Real-World Use Cases of AI Agents



Healthcare Assistant Agent

In healthcare, agents are helping:

- Doctors summarize patient histories
- Suggest diagnoses based on symptoms
- Monitor patient health data

They're like AI nurses or assistants, improving efficiency without replacing humans.

- Patient record → AI agent → Diagnosis suggestion + report summary
- Label: *Your AI Co-Doctor*

Real-World Use Cases of AI Agents



Personal Travel Agent

"Planning a trip?

You can ask your agent:

✈️ 'Plan a 5-day trip to Japan with a daily itinerary, budget under ₹80,000.'

The agent:

- Checks flights, hotels, experiences
- Plans your days
- Books everything if integrated with APIs!"

- Text prompt → AI → Day-wise itinerary + total cost
- Option: "Download PDF / Book Now"

Request: Please generate an image where a girl is reading a book, and her pose is the same as the boy in the image example.jpg, then please describe the new image with your voice.



example.jpg



*"A girl is sitting
on a bed reading
a book."*



Pose Determination

openpose model

Pose-to-Image

google/vit model

Image-to-text

vit-gpt2 modle

Text-to-Speech

fastspeech model

Popular AI Agents

BabyAGI



crewai



SuperAGI



zapier

JARVIS

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Instagram Handle



 **theiscale**

The iScale Organization Handle

 **theiscale.founders**

Siblings - Nishant Dhote & Swati Dhote

