

WHEN MODELS BECOME ACTORS !

The shift from LLMs to Intelligent Agents



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The background features several stylized clouds in shades of orange and brown. Some are simple puffs, while others have more complex, swirling patterns. The overall aesthetic is clean and modern with a warm color palette.

01

A BRIEF INTRODUCTION TO LLMS

IMPORTANT TIMELINE

#1

2017

Attention is All
You Need

#2

2018

GPT-1: 117M
parameters

#3

2020

GPT-3: 175B
parameters,
Introducing In-
context learning

#4

2022

OpenAI ChatGPT:
The beginning of
a global wave of
Generative AI

HOW DO LLMS ACTUALLY WORK?

STEPS

#1

PRE-TRAINING: LEARNING HOW TO TALK!

Next token prediction, given previous tokens.

#2

POST-TRAINING: ALIGNMENT AND FINE-TUNING

Question Answering, Generating desired outputs, and doing more complex tasks.

#3

REASONING: LEARNING HOW TO THINK!

Problem-solving and Planning, e.g, doing math.

#4

MULTI-MODALITY: DIFFERENT INPUT TYPES

Understanding images, audio, etc.



02

WHY WERE LLMs NOT ENOUGH?

The background of the slide features a stylized landscape. At the bottom, there are rolling hills in a dark brown color. Scattered across the hills and the sky are several fluffy, stylized clouds in shades of light orange and yellow. The sky itself is a pale, off-white color.

“A brain without a body could
not think!”

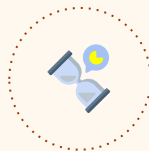
-MOSHE FELDENKRAIS

LIMITATIONS



NO MEMORY AND STATE

Models were unable to recall long-term interactions and maintain their state during multi-step tasks.



NO UP-TO-DATE DATA

ChatGPT still believed that Queen Elizabeth was the queen!



HALLUCINATION

Confidently thinking knows everything.



INACCURATE CODES

Were not able to test&debug codes.



LIMITED AUTONOMY

Could not decide what to do next!



SCALING HUMAN TASKS

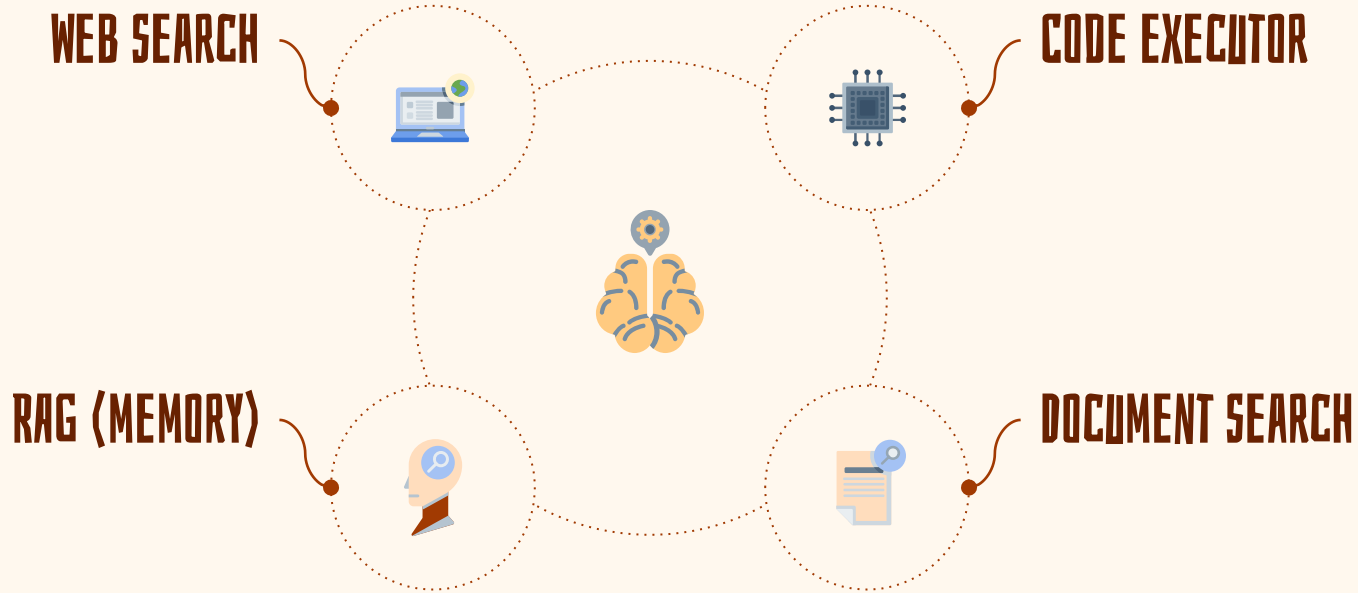
No coordination, no parallel tasks.

The background features a stylized landscape with a dark brown horizon line. Above the horizon, there are several clouds of varying sizes and shapes, rendered in shades of orange and light brown. The sky is a light cream color. The overall aesthetic is clean and modern, with a focus on warm tones.

03

SHIFT TO (LLM) AGENTS

SINGLE-AGENT: (TOOLS AND ACTUATORS)



MULTI-AGENT ARCHITECTURE

Now that we have (almost)
autonomous single agents,
they can know cooperate to
perform a task!

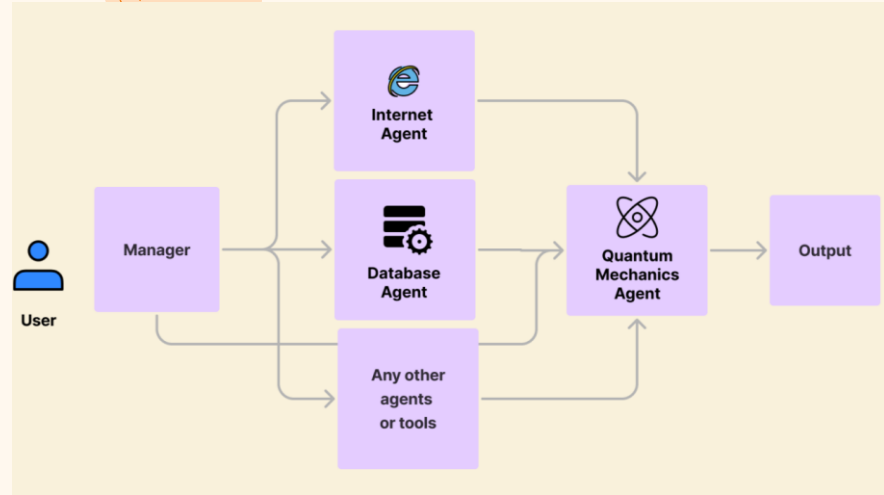


Image source

HOW DO MULTI-AGENT SYSTEMS WORK?

STEPS

#1

PLANNING: BREAKING A TASK INTO SUB-TASKS

Understanding the problem and generating a workflow.

#2

ASSIGNING TASKS TO SUB-AGENTS

Coordinating the sub-agents (orchestration).

#3

WORKFLOW EXECUTION

Executing the tasks in different paradigms:
(Loops, Sequence, Parallel)

#4

INTERPRET THE RESULTS AND GENERATE OUTPUT

Evaluate the output and deliverables of each agent, and generate the objective production.

FUTURE?

Are these agentic systems a significant step toward AGI, or merely another step in a much longer journey?



A GUESS: COMPUTER SIMULATION

The intersection of computer simulation and AI is the future of decision-making and policy optimization. To harness its full potential, we must view complex problems from fresh perspectives and resist the urge to oversimplify, because even small, neglected parameters in a model can meaningfully alter outcomes.



THANKS!

Any questions?

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