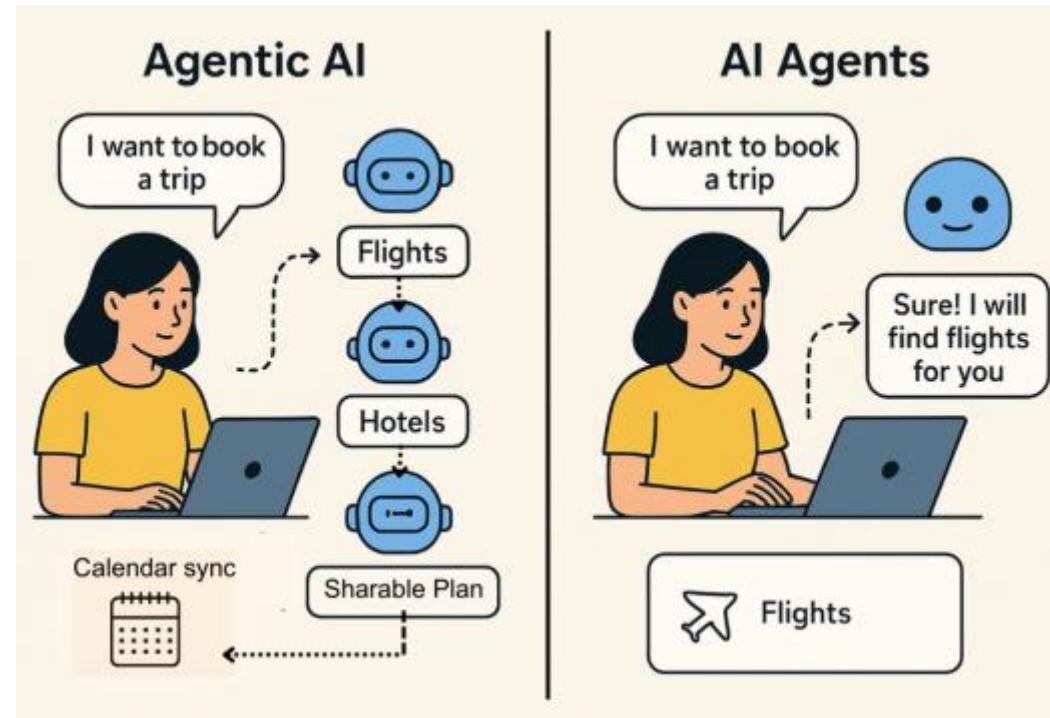


AI agent vs Agentic AI

AI agent vs Agentic AI



AI agent

- LangChain & LangGraph 등을 활용한 AI workflow
- LLM들이 유기적으로 연결되어 하나의 TASK를 해결하기 위한 매니저

Agentic AI

- AI agent of AI agents
- 여러가지 AI agent 를 구성요소로 가지며 , AI agent는 각각 부여받은 역할을 수행한다.

Agentic AI

Agentic AI 의 구조를 살펴보도록 하자.

Agentic AI

cieties of agents based on large language models (LLMs). Existing LLM-based multi-agent systems can already solve simple dialogue tasks. Solutions to more complex tasks, however, are complicated through logic inconsistencies due to cascading hallucinations caused by naively chaining LLMs. Here we introduce

<https://arxiv.org/pdf/2308.00352.pdf> METAGPT: META
PROGRAMMING FOR A MULTI-AGENT COLLABORATIVE
FRAMEWORK

MetaGPT 모델은 LLM 을 기반으로한
AI agent 의 협업으로 문제를 해결한다.
→ Agent 간의 협업 방식을
인간이 협업할때와 동일하게 설정하였음.

LLM 도 problem solving 을 할 수 있지만 ,
대화의 길이가 길어질수록 증가하는 환각현
상과 논리의 불명확성에 의해 성능이 좋지
못하다.

MetaGPT, an innovative meta-programming framework incorporating efficient
human workflows into LLM-based multi-agent collaborations. MetaGPT en-
codes Standardized Operating Procedures (SOPs) into prompt sequences for more
streamlined workflows, thus allowing agents with human-like domain expertise
to verify intermediate results and reduce errors. MetaGPT utilizes an assembly

Agentic AI

논문에서 제시하는 기존 LLM 의 problem solving 문제점

1. Hallucination 현상의 지속적인 발현
2. 순수 문제해결 피지컬이 부족하다

Agentic AI WorkFlow

Product Manager , Architect 등 세분화가 된 모습이다.

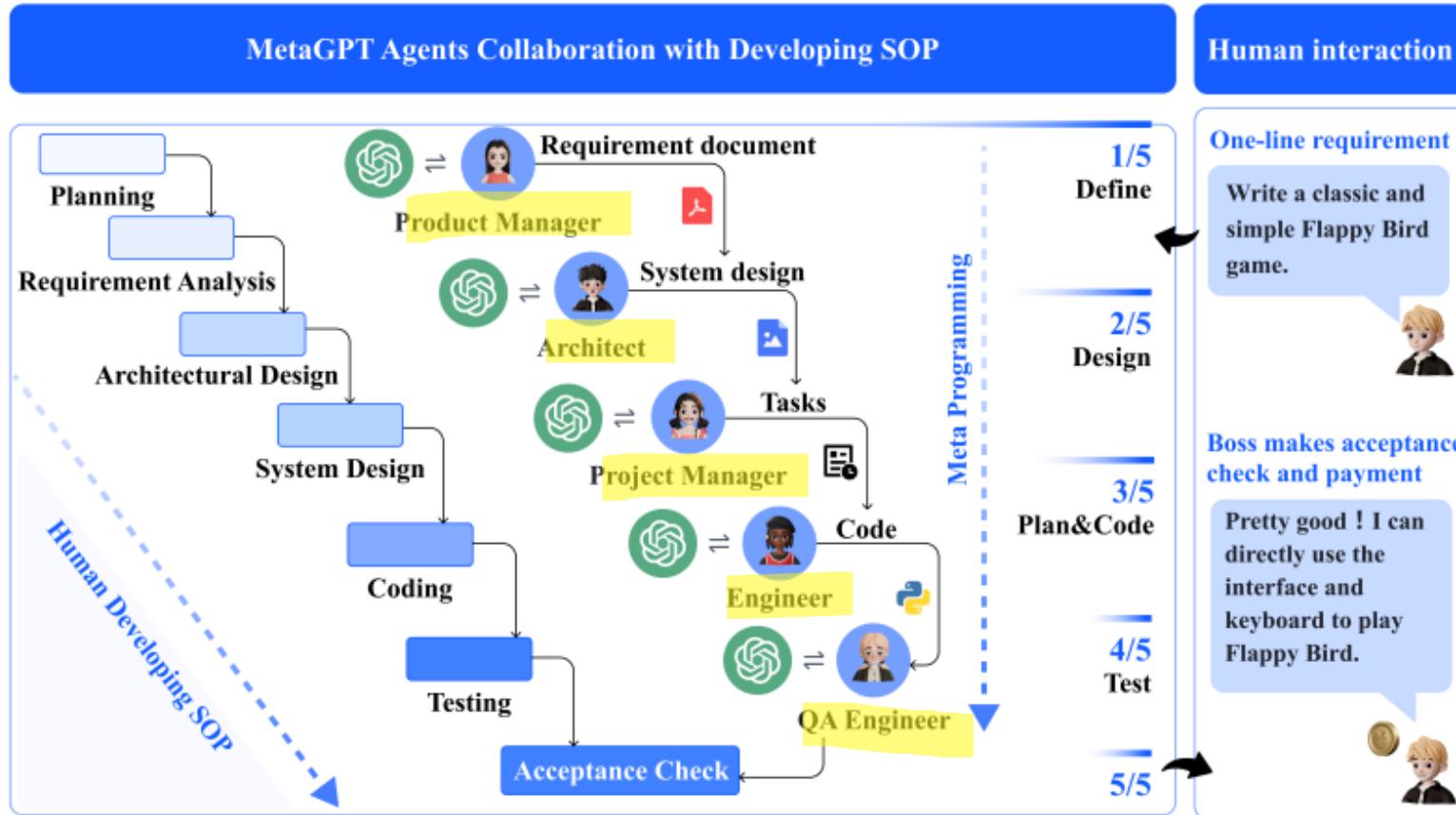


Figure 1: The software development SOPs between MetaGPT and real-world human teams. In software engineering, SOPs promote collaboration among various roles. MetaGPT showcases its ability to decompose complex tasks into specific actionable procedures assigned to various roles (e.g., Product Manager, Architect, Engineer, etc.).

위 논문은 Chatgpt 를 기반으로 SOP workflow 체계를 따르는 Ai agent 여러 개가 협업하여 코드를 생성해내는 Target 을 성취하는 모델이다

Agentic AI – solution of Hallucination

documents, design artifacts, flowcharts, and interface specifications. The use of intermediate structured outputs significantly increases the success rate of target code generation. Because it helps maintain consistency in communication, minimizing ambiguities and errors during collaboration. More graphically, in a company simulated by MetaGPT, all employees follow a strict and streamlined workflow, and all their handovers must comply with certain established standards. This reduces the risk of hallucinations caused by idle chatter between LLMs, particularly in role-playing frame-

논문에서 제시하는 Hallucination 의 해결법 :

각각의 employee (개별 AI agent) 의 output 은 특정한 기준에 맞아야 한다.

SOP 모델에선 AI agent 가 실제 사람처럼 대화하므로 , 정보에 대한 맥락이나 표현이 불확실 할 수 있다.

→ 의도치 않은 맥락 누락이나 의미 왜곡으로 이어짐.

Other Examples

LLM-Based Multi-Agent Frameworks Recently, LLM-based autonomous agents have gained tremendous interest in both industry and academia (Wang et al., 2023b; Zhou et al., 2023b; Zhang et al., 2023b). Many works (Chen et al., 2024; Wang et al., 2023c; Du et al., 2023; Zhuge et al., 2023; Hao et al., 2023; Akata et al., 2023; Tang et al., 2023b) have improved the problem-solving abilities of LLMs by integrating discussions among multiple agents. Stable-Alignment (Liu et al., 2023a) creates instruction datasets by deriving consensus on value judgments through interactions across a sandbox with LLM agents. Other works focus on sociological phenomena. For example, Generative Agents (Park et al., 2023) creates a “town” of 25 agents to study language interaction, social understanding, and collective memory. In the Natural Language-Based Society of Mind (NL-SOM) (Zhuge et al., 2023), agents with different functions interact to solve complex tasks through multiple rounds of “mindstorms.” Cai et al. (2023) propose a model for cost reduction by combining large models as tool makers and small models as tool users.

Some works emphasize cooperation and competition related to planning and strategy (Bakhtin et al., 2022); others propose LLM-based economies (Zhuge et al., 2023). These works focus on open-world human behavior simulation, while MetaGPT aims to introduce human practice into multi-agents frameworks. Besides, LLM-based agents face the challenges of “assistant repeated instruction” or “infinite loop of message” (Talebirad & Nadiri, 2023; Li et al., 2023). These challenges become more urgent in task-oriented collaborations, which require consistent and mutually beneficial interactions (Elazar et al., 2021; Wang et al., 2022; Jiang et al., 2023). This motivates our focus on applying advanced concepts such as Standard Operating Procedures in software development to multi-agent frameworks.

What is main focus?

Agentic AI 는 LLM 이 가진 환각현상이나 문제처리능력을 보완하기 위해서 다른 Agent 와 협업하여 단점을 보완하는 형태.

→ Task 의 세분화를 통해 영역별로 필요한 Agent 를 배치하여 문제를 효과적으로 해결.

Agentic AI – solution of Perfomance

개별 LLM / AI agent 는 다양한 task 를 수행하기 위해 설계되어 특정 분야에 대한 구조적인 기획이 부족하다.

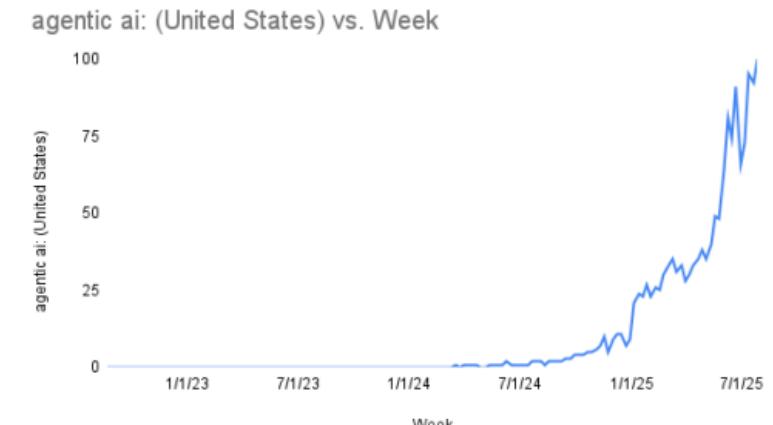
-> Agentic AI 는 위의 예시와 같이 SOP framework 를 토대로 다양한 Agent 들이 협업하여 하나의 Task 를 세분화하여 정복 한다.

Prospect of Agentic AI

Interest in agentic AI is rising quickly as organizations look for automation that impacts real work, not just content generation. Industry analysts now track "AI agents" as a distinct market, estimating ~USD 5.3–5.4B in 2024 and projecting ~USD 50–52 B by 2030 (\approx 41–46% CAGR), reflecting strong enterprise demand for agents that can reason, use tools, and execute workflows [3,4]. Scholarly research suggests the same movement.

<file:///C:/Users/PC/Downloads/futureinternet-17-00404-v2.pdf>

The Rise of Agentic AI: A Review of Definitions, Frameworks, Architectures, Applications, Evaluation Metrics, and Challenges



limited rules; agentic AI connect these steps, track progress, recover from errors, and they are able to automate any end-to-end process, month-end close, claims adjudication, outreach in sales, and even research workflows, previously limited to human effort. Early