



 StudySphere

StudySphere: The AI TA

Drowning in PDFs? There's an Agent
for That.

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The Challenge of Information Overload for Students

Students struggle to manage chaotic digital libraries while trying to focus on meaningful learning experiences.

The Student's Dilemma: Info Overload, Context-Poor AI



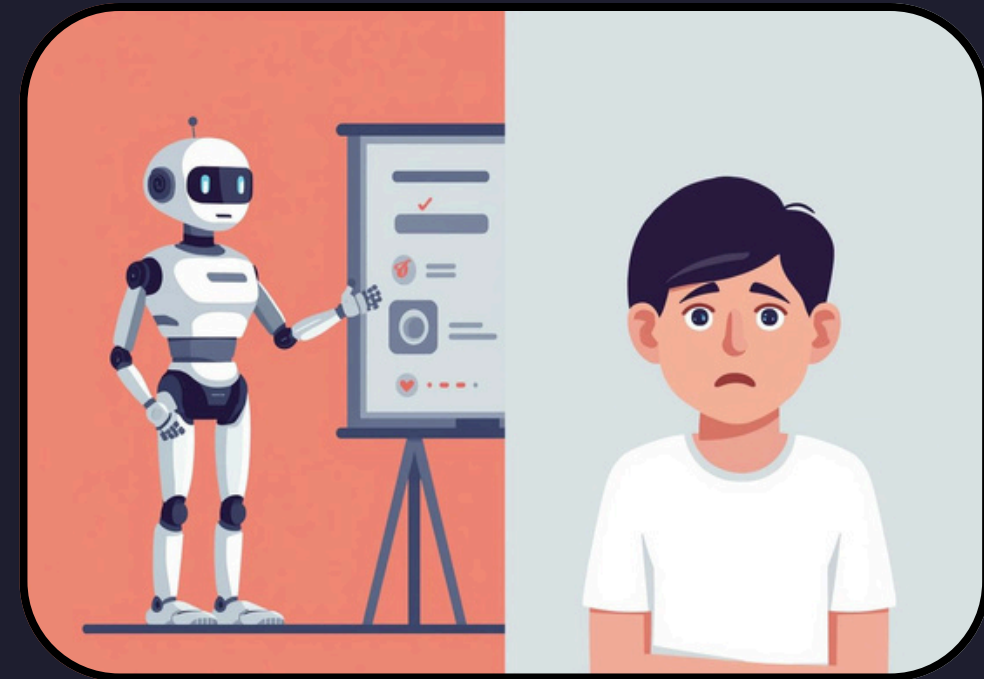
Hallucination

AI often invents false information confidently.



Academic Risk

Misinformation can mislead students significantly.



Clear Goal

Build AI focused solely on course content.

The Solution: Why Agents?



Confusion

Juggling multiple tasks creates stress and inefficiency.



Inefficiency

Single large prompts lead to slow, costly outcomes.



Specialization

Dedicated agents improve performance through focused expertise.

The Solution: Multi-Agent System Roles

Router Agent

The Router Agent acts as a **manager** that interprets user intent and efficiently delegates tasks to other agents, ensuring streamlined operations.

Retrieval Agent

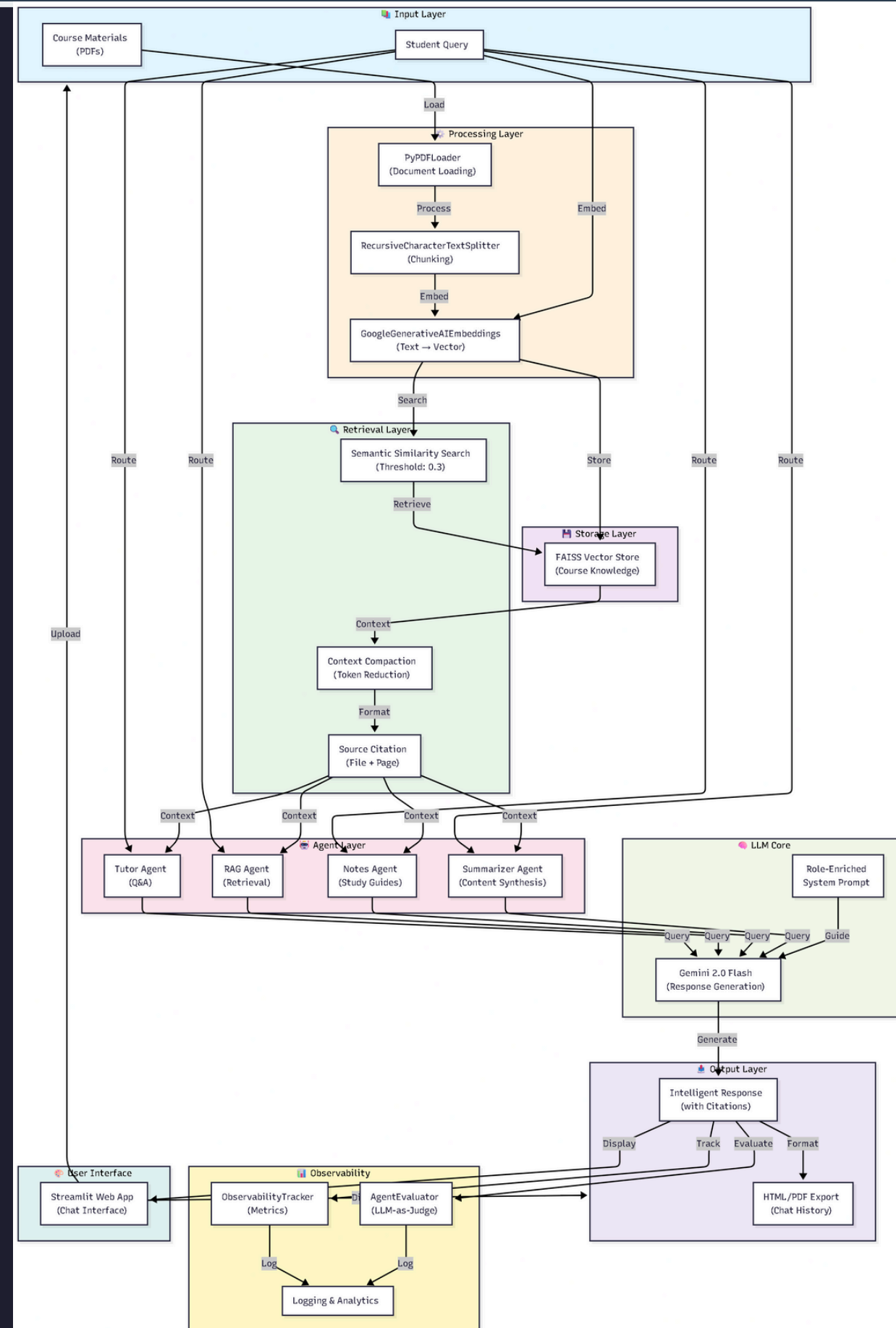
The Retrieval Agent functions like a **librarian**, expertly locating relevant texts and providing precise page numbers, enhancing the user's research experience.

Tutor Agent

The Tutor Agent serves as an **explainer**, synthesizing complex information into clear, understandable explanations tailored to the user's specific course content.

Understanding the Query Flow and Agent Interaction

The architecture facilitates seamless communication between agents, ensuring efficient query processing and accurate information retrieval for users.



Architecture and Tech Stack

The brain of our system utilizes **Google Gemini 2.0 Flash**, a powerful language model designed for speed and cost-effectiveness, ensuring reliable performance for academic tasks.

LangChain serves as the orchestration framework, facilitating seamless communication among agents, allowing for efficient task delegation and enhanced interaction while maintaining clarity across the multi-agent system.

To manage course materials effectively, we employ **FAISS**, a local vector database that indexes PDFs, enabling swift retrieval of relevant information and ensuring personalized academic support.

Conclusion and Next Steps

Information Overload

Students face a **daunting challenge** of managing excessive information, leading to confusion and inefficiency in their learning processes. This hinders academic performance and overall comprehension.

Personalized Support

By leveraging this technology, we can offer **factually grounded** academic support that resonates with students, enhancing their engagement and understanding through targeted assistance in their specific courses.

Multi-Agent System

The proposed **Multi-Agent System** provides a tailored approach, ensuring that each student's unique course content is accurately integrated into their learning experience, mitigating the effects of information overload.



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Thank You!

**I appreciate your attention and support !
(Pls give job google ;)**

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