



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**

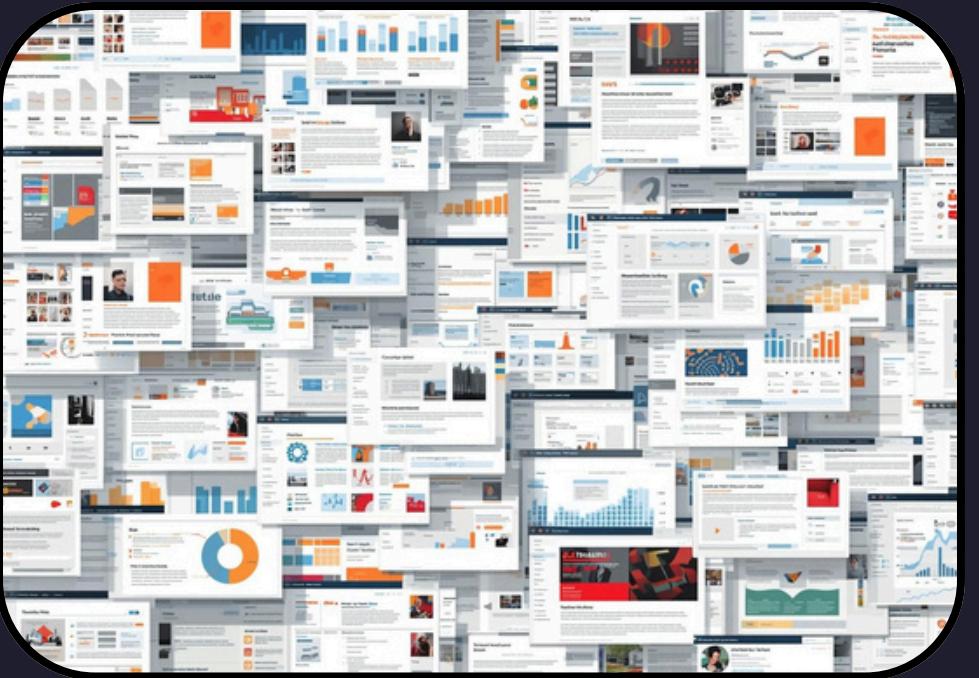
Students struggle to manage chaotic digital libraries while trying to focus on meaningful learning experiences.

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



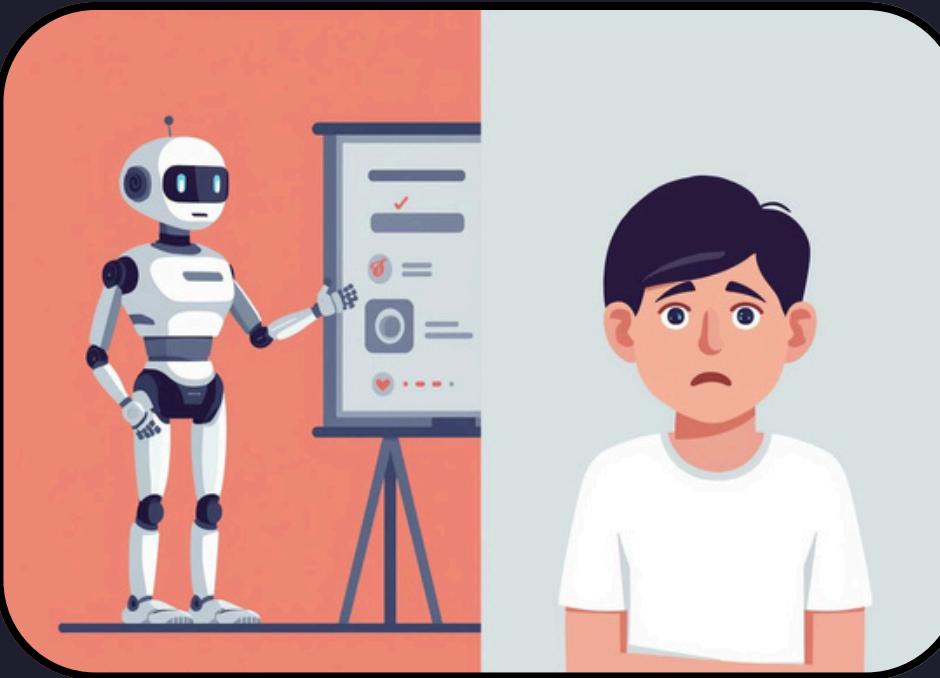
## Hallucination

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

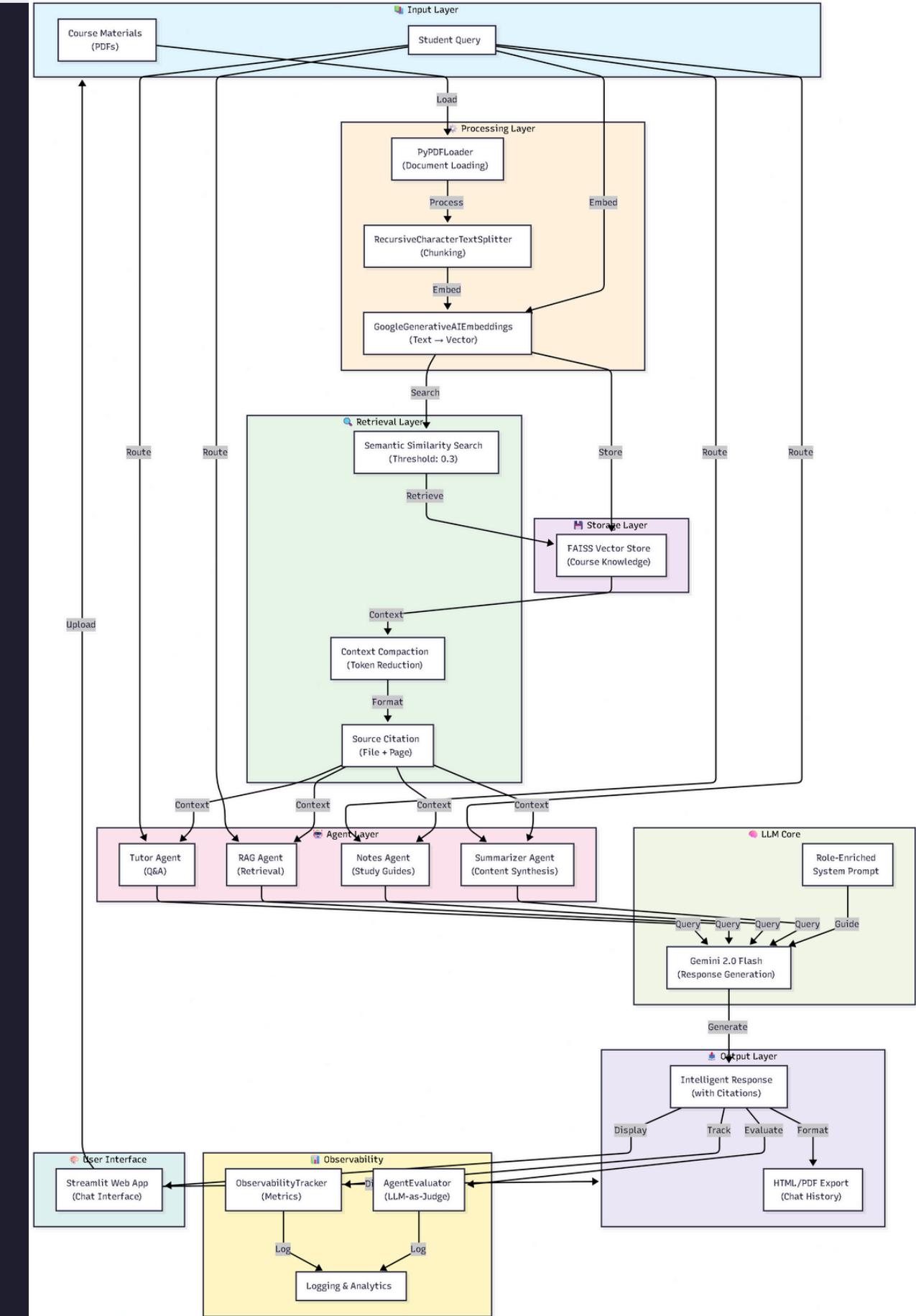
The Router Agent acts as a **manager** that interprets user intent and efficiently delegates tasks to other agents, ensuring streamlined operations.

## 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.



# StudySphere

# Thank You!

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

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