

CLASS

# CLASS: AI Learning

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# The Team



Kayden Vicenti

Team Lead, Customer Communicator



Sean Golez

Recorder, and Architect



Colton Leighton

Database Manager



William Barnett

Release Manager, and Architect



Scott LaRocca

CS Faculty Mentor



Dr. Lan Zhang

Client

### Pain Points

- No centralized source for class concepts
- Lack of structured, guided study materials
- Excessive dependency on direct faculty support
- GenAI is unreliable and inaccurate for niche topics

### Motivation

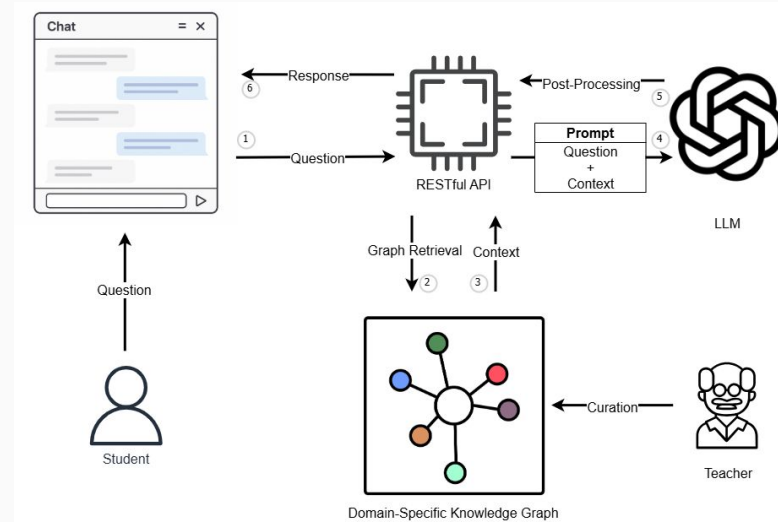
- An AI chat application that:
  - Aligns with instructor requirements
  - Has domain specific knowledge
  - Gives reliable and accurate tutoring

## SOLUTION



# KG Tutor

- A chatbot that students are encouraged to use
- Instructor curates the knowledge graph
- The “tutor” utilizes the context to teach students



# Software Design: Main Components

## Client

Interface dictated by student/instructor view.  
Student view: chat interface for tutoring  
Instructor view: knowledge graph visualization and curation

## Server

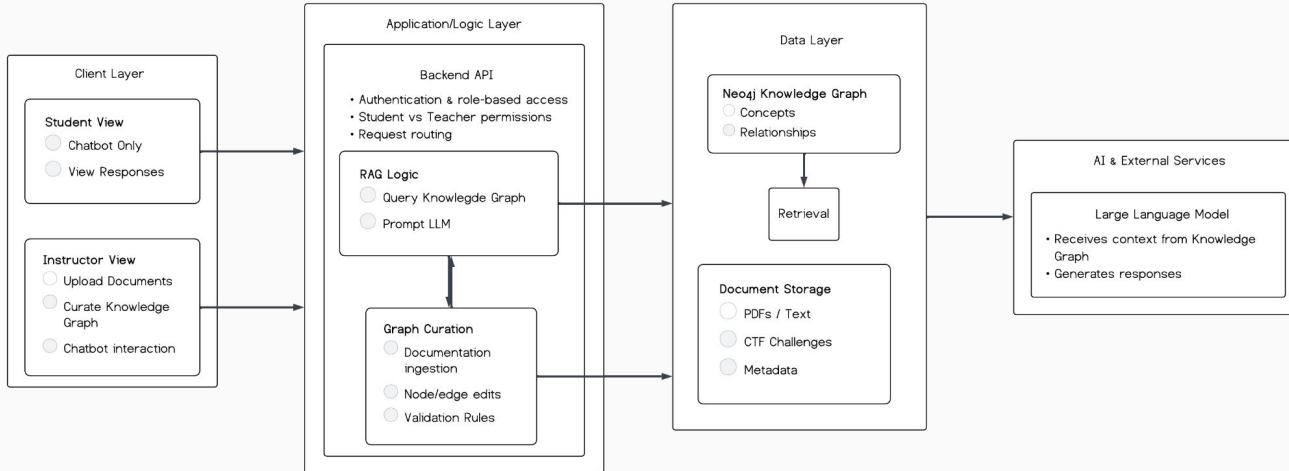
Manages role based access, and RAG pipeline

## Data

KG: stores concepts and relationships  
PostgreSQL: Stores user accounts, conversation history  
Document storage: handles test extraction to graph integration

## LLM

Receives student question, retrieves graph context and generates course aligned explanation



Team

Software Design

Demonstration

Timeline

# Demonstration...

Chat View



**KG Tutor**  
Ask anything about SE450

Signed in as: **Student**  
Role: **Student**  
[Sign Out](#)

ai:  
How can I assist you?

### KG Visualization

- Dependency on Neo4j database and wrappers
  - Security and functionality risks
- Mitigated through consistent version building and testing

### LLM Accuracy

- RAG and strategic prompt engineering
- Accuracy Evaluation

### Security

- Prompt-injection risks
- Mitigated through sanitization and validation layers

### Scalability

- LLM and database hosting is expensive
- No funding to keep up with linear cost scaling
- This product is a proof-of-concept

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# Project Plan

Week 2

Week 4

Week 7

Week 10

Week 13

Week 16

User Management  
Controller



Knowledge Graph  
Curation



Integration &  
Systems Testing



Model Evaluations &  
Refinement



Final Documentation  
& Refinement



## Values

- Guided personal tutor
- Education-oriented Chatbot
- Resource teachers feel confident in

## Key Points

- Class curated content relevant to course load
- Knowledge Graph visualisation

## Next...

- Refining UI/UX
- Integrate Testing
- Refining RAG & model pipelines
- Incorporating client feedback

Thank you!

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