MICHIGAN STATE UNIVERSITY

Project Plan Presentation

AI System Testing Framework

The Capstone Experience

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From Students…
…to Professionals

Project Sponsor Overview

- Ally is an online bank and financial services company
- Top 25 U.S. financial holding company
- Seeking to utilize AI and ML to automate business processes

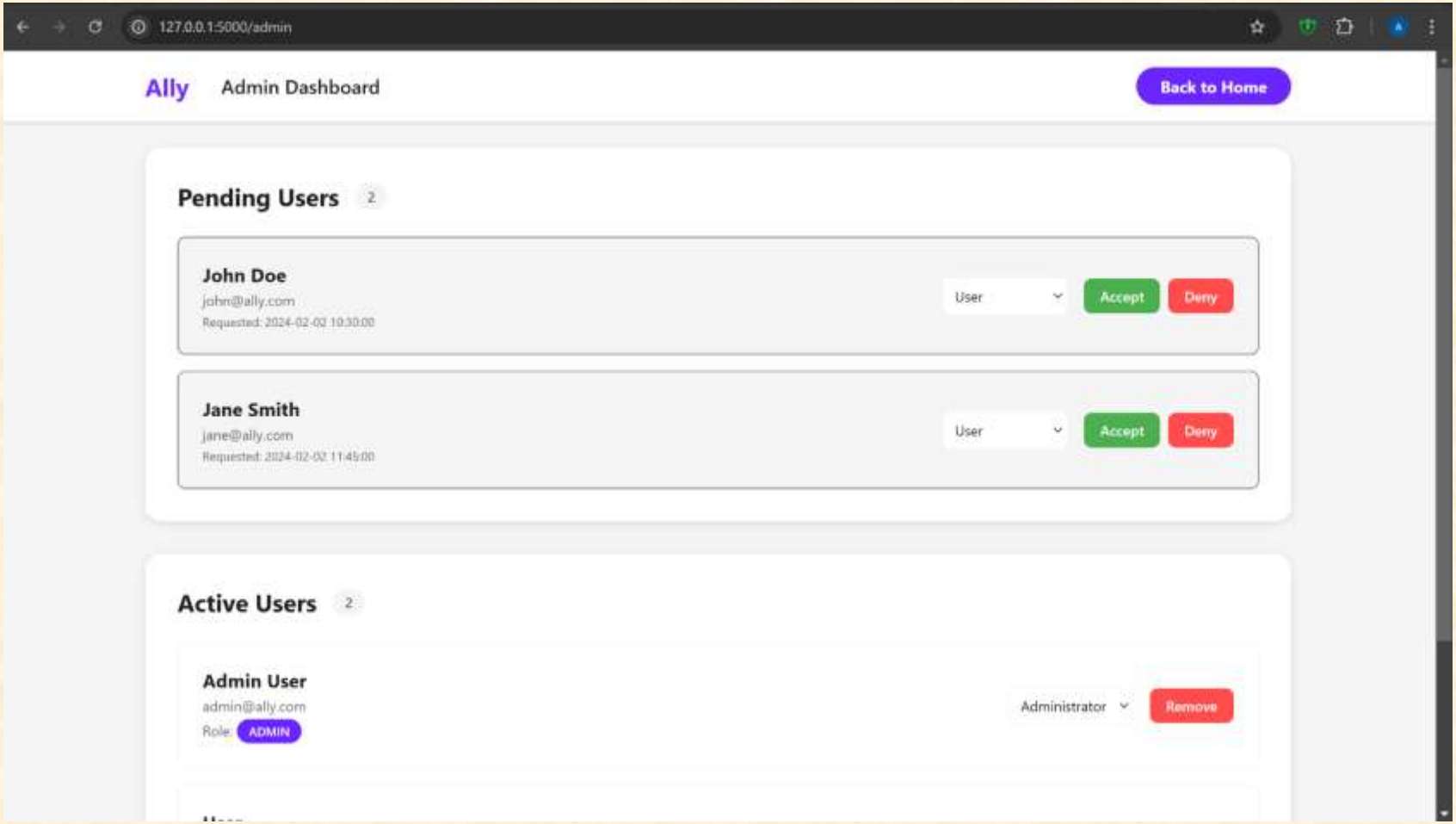
Project Functional Specifications

- How reliable is generative AI?
- Build a testing framework
- Evaluate the performance of generative AI in specific business use cases
- Provide users evaluation metrics to determine if generative AI excels in a particular area

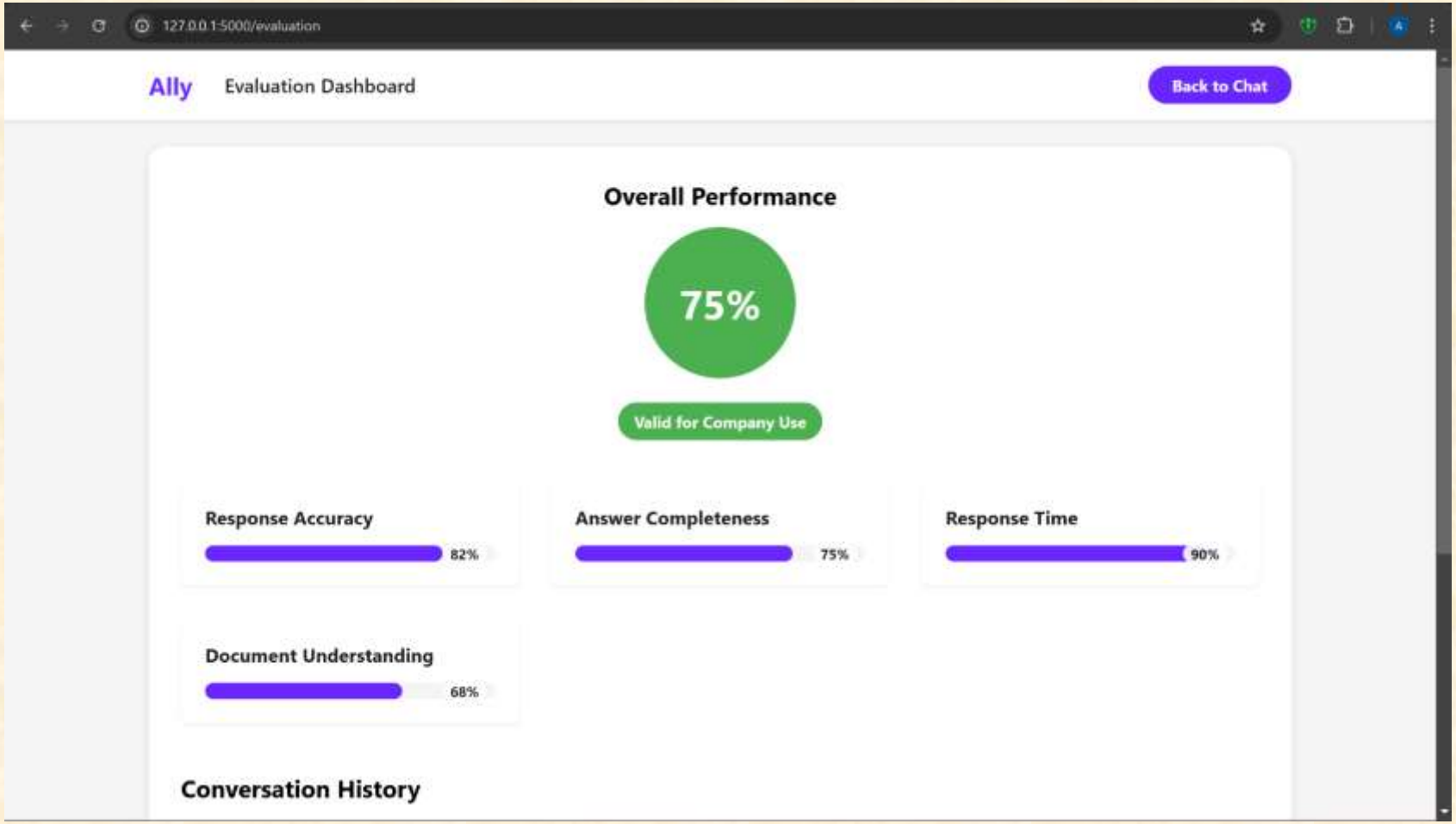
Project Design Specifications

- Homepage includes a conversation box, text input field, send button, and a file upload button
- Evaluation page includes a confidence score, and evaluation metrics (Response Accuracy, Answer Completeness, Response Time, Document Understanding)
- Conversation history displays previous responses and assessments
- Administrative page allows admins to manage accounts

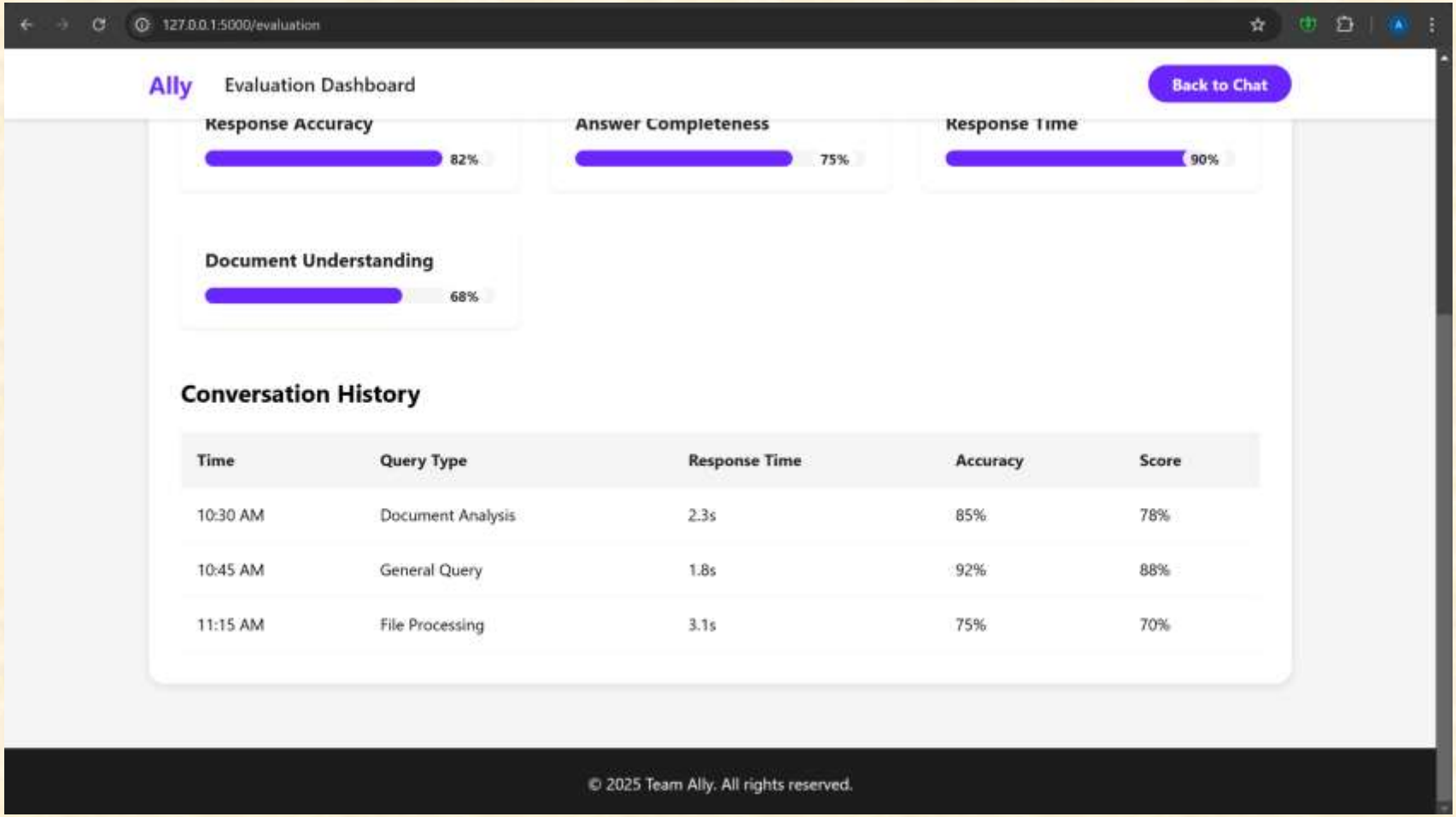
Screen Mockup: Admin Dashboard



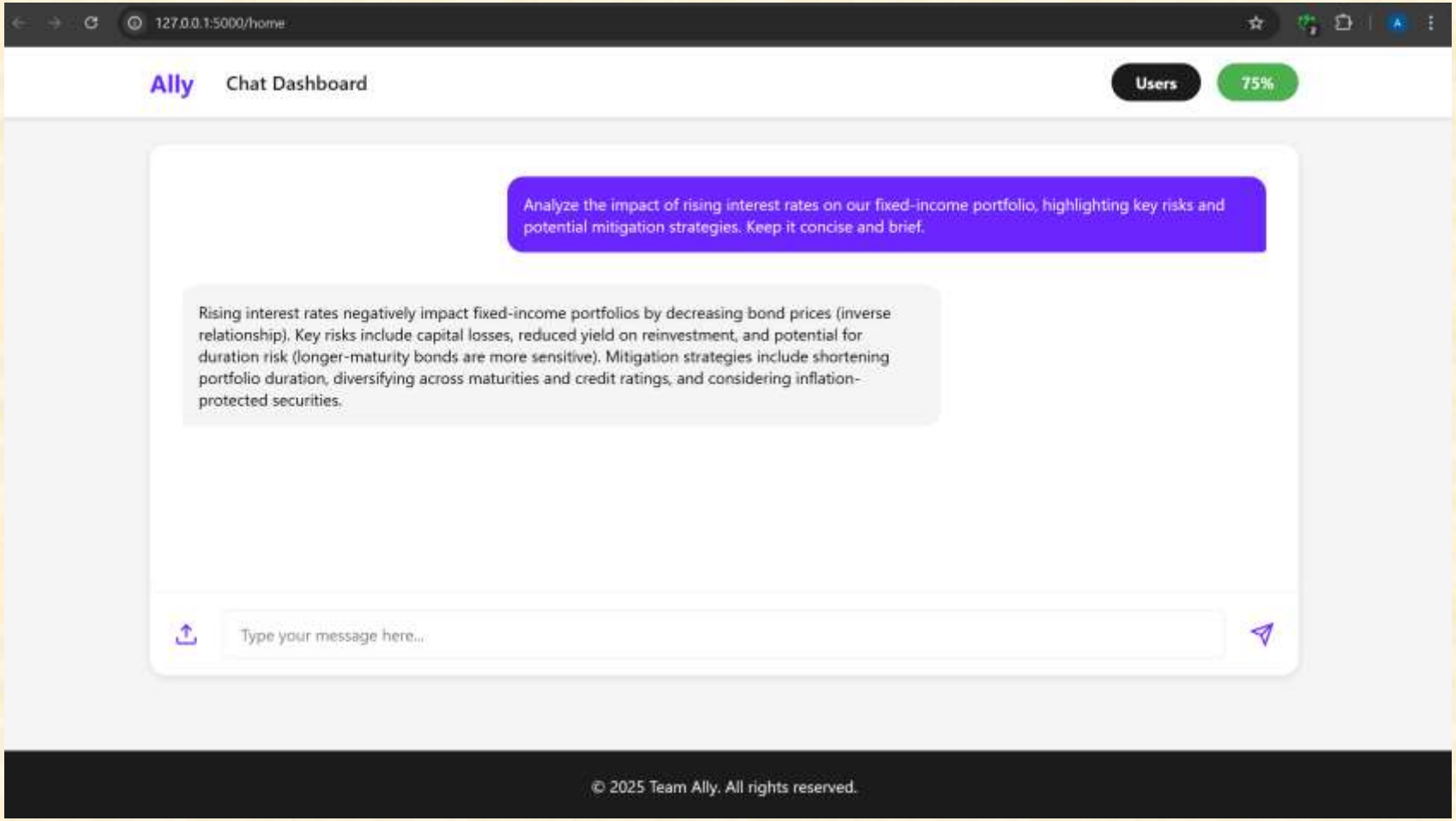
Screen Mockup: Evaluation Dashboard (Performance)



Screen Mockup: Evaluation Dashboard (Conversation History)



Screen Mockup: Chat Dashboard

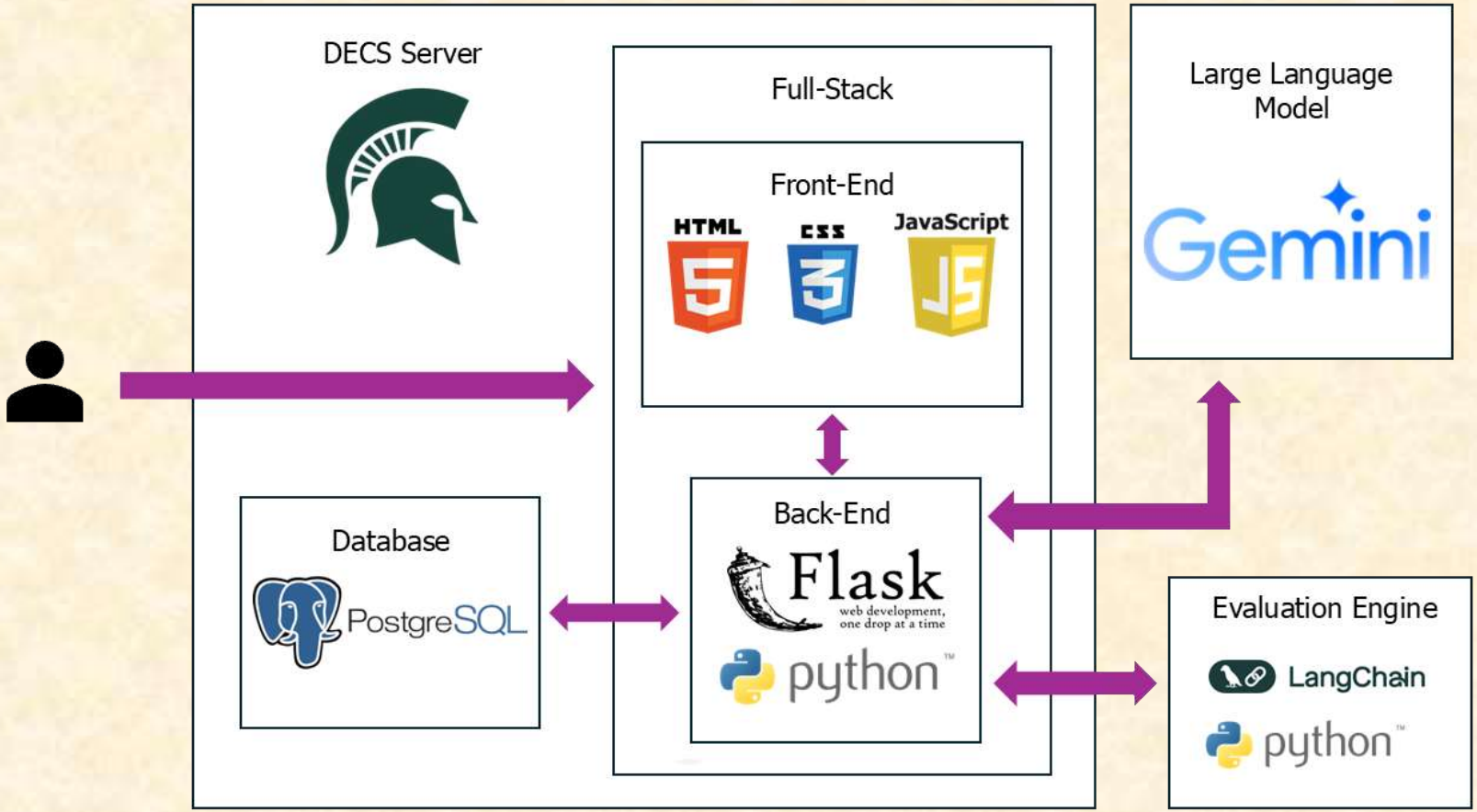


Project Technical Specifications

Development Environment: VSCode

- Hosting: MSU DECS
- Back-End: Python, Flask
- Database: PostgreSQL
- Front-End: HTML, CSS, JS
- Large Language Model: Google Gemini API
- Evaluation Engine: LangChain

Project System Architecture



Project System Components

- Hardware Platforms
  - Michigan State DECS
- Software Platforms / Technologies
  - Linux
  - Python
  - Flask
  - PostgreSQL
  - HTML, CSS, JS
  - Google Gemini API
  - LangChain

Project Risks

- Integration Issues
  - Integrating the front-end, back-end, and database may be difficult
  - Develop full-stack application with limited functionality to test for integration issues
- Noise Handling
  - The user may provide input or files that are unclear, invalid, or irrelevant. The application needs to be resilient to these inputs and not provide the user incorrect information
  - Develop a system to notify the user when their input is problematic
- Evaluation Criteria Implementation
  - A useful evaluation method must correspond to the usefulness of AI in particular use cases
  - Experiment with a variety of evaluation methods and use synthetic data to verify accuracy
- File Handling
  - Files could be provided along with user input for a use case. The files must correctly uploaded, stored, and parsed
  - Identify file types which will need to be supported and test relevant features

Questions?