MICHIGAN STATE UNIVERSITY Project Plan Presentation Shareholder Engagement Chatbot

The Capstone Experience

Team Ally

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From Students... ...to Professionals

Project Sponsor Overview

- Financial services company
- Nation's largest all-digital bank
- HQ in Detroit, MI





Project Functional Specifications

- Context-aware chatbot
- Based on Ally's investor-focused materials
- Answer shareholder questions
- Provide source citations
- Refuse to disclose private information
- Designed to improve investor engagement

Project Design Specifications

- Ally themed UI
- Example questions section
- Typing status
- Clear chat feature
- Admin section/panel

Screen Mockup: Initial Chatbot Screen

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Checking & Savings	Credit Cards Investing & Retirement Mortgage Auto Personal Loans	
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	Hello, what can I help you out with today?	
	When and where can I lister to the test Aty earnings call?	
	What are the current interest rates on Ally CDs?	
	Enter a question here	

Screen Mockup: Example Question Response

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Screen Mockup: Generating Response

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Screen Mockup: User Question Reponse



Screen Mockup: Information Refusal

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Project Technical Specifications

- Powered by Azure OpenAI & AWS
- React frontend & Flask backend
- Amazon Cognito & ACM for authentication
- Amazon RDS & S3 for data storage
- Amazon ELB & ingress-nginx for traffic handling
- Amazon ECR & GitLab for CI/CD
- Amazon EKS for deployment

Project System Architecture



Project System Components

- Software Platforms / Technologies
 - React & Flask
 - WebStorm & PyCharm
 - LangChain & Azure OpenAl
 - GitLab
 - Amazon Web Services

 ELB, Route 53, Cognito, ACM, EKS, S3, RDS, ECR

 Nginx & Ingress-nginx

Project Risks

- Data Extraction/Processing
 - Converting diverse data sources into common format
 - Python libraries and LangChain tooling for PostgreSQL
- Source Citing to Prevent LLM Hallucination
 - LLM must provide factual info only, esp. in investor relations
 - LangChain tooling and advanced prompting methods
- Keeping the LLM on Topic
 - Chatbot should be limited to topics relevant to Ally
 - Fine-tuning or second LLM to evaluate responses
- Scalability and Minimizing Costs
 - Ensuring efficient handling of large # of requests
 - Robust AWS cloud infrastructure and monitoring token usage

Questions?

