MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Governance of Expense in Kohl's Cloud Operations

The Capstone Experience

Team Kohl's

David Cody Taupo Lingan
Adhyan Negi
Meredith Heberling
Jason Lin
Aiden Dixon
Samay Achar

Department of Computer Science and Engineering
Michigan State University

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From Students…
…to Professionals

Project Sponsor Overview

- Sponsor: Kohl's
  - Established in 1962
    - Origins as a modest store in Wisconsin.
    - Now, a major retailer across the US.
  - Digital Catalog
    - Betters customer accessibility through physical stores, website, and mobile appliation
  - Cloud Services
    - Relies on GCP for IT infrastructure, facing rising expenses

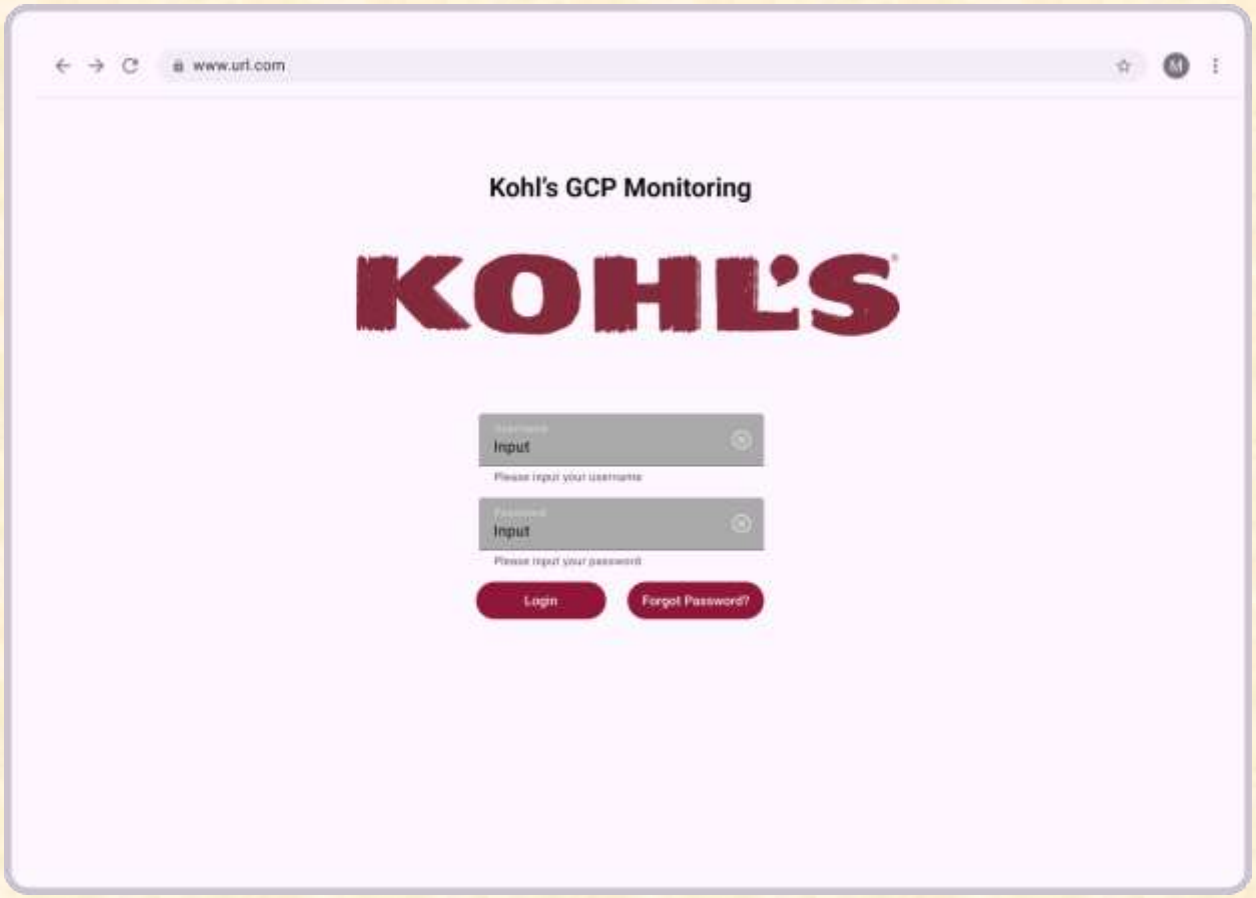
Project Functional Specifications

- Problem: GCP Dependence and Expenses
- Solution: Monitoring-Alerting Platform
  - Monitoring System
    - Monitoring cloud expenses and usage on demand across Kohl's
    - Attributing costs to teams, projects, and initiatives
  - Alerting System
    - Notifications sent via Slack or Email when costs are exceeded
    - Primarily for stakeholders, team leads, and project owners

Project Design Specifications

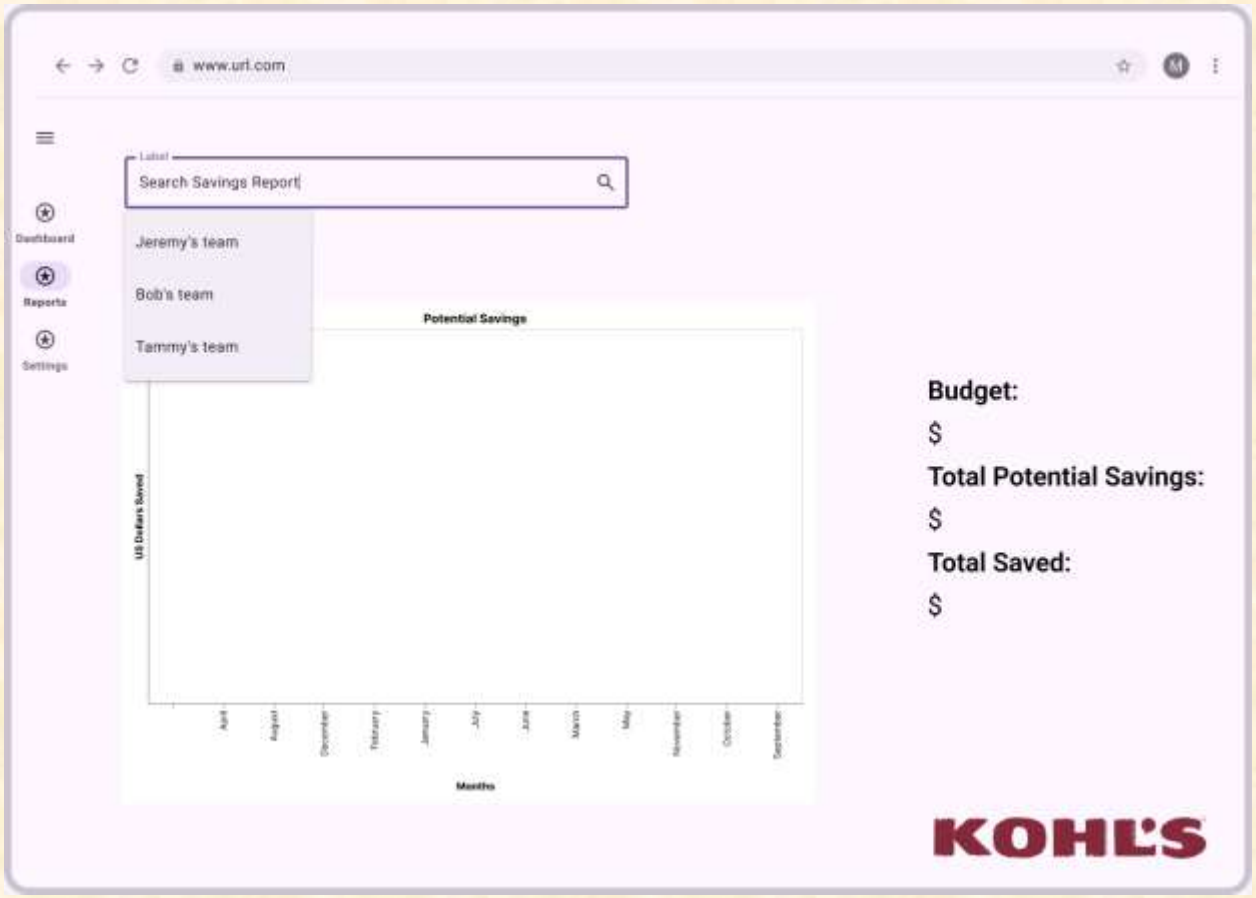
- Monitoring Platform: Web-based application
- Login Authentication
  - User Section and Admin Section
- Dashboard
  - Displays all savings for various teams and individuals
  - Navigation to more tabs
- Reports Section
  - Allows generation of detailed saving reports
  - Alerts can be sent to specific users
- Settings and Customization

Screen Mockup: Login



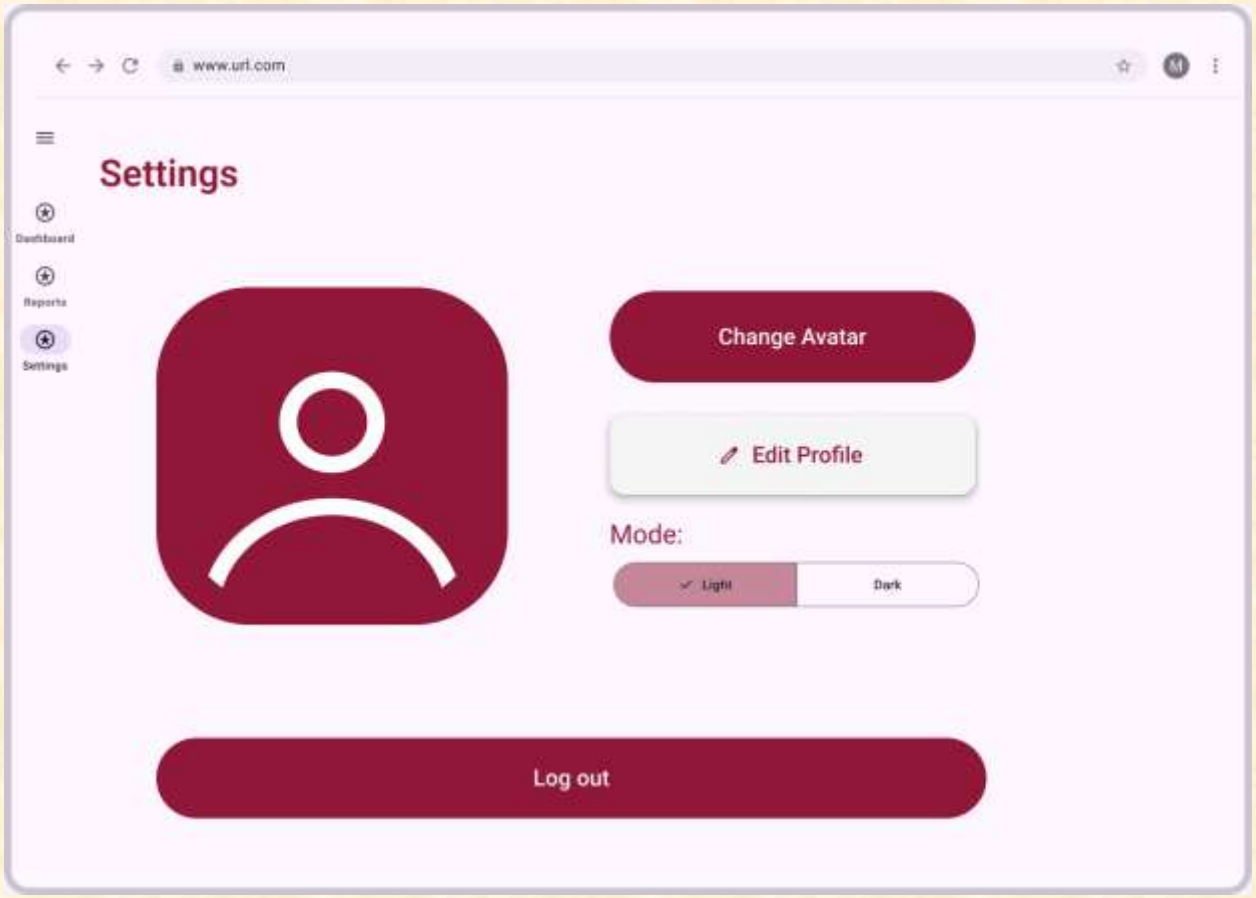
Screen Mockup: Dashboard (Savings)

Screen Mockup: Reports 1



Screen Mockup: Reports 2

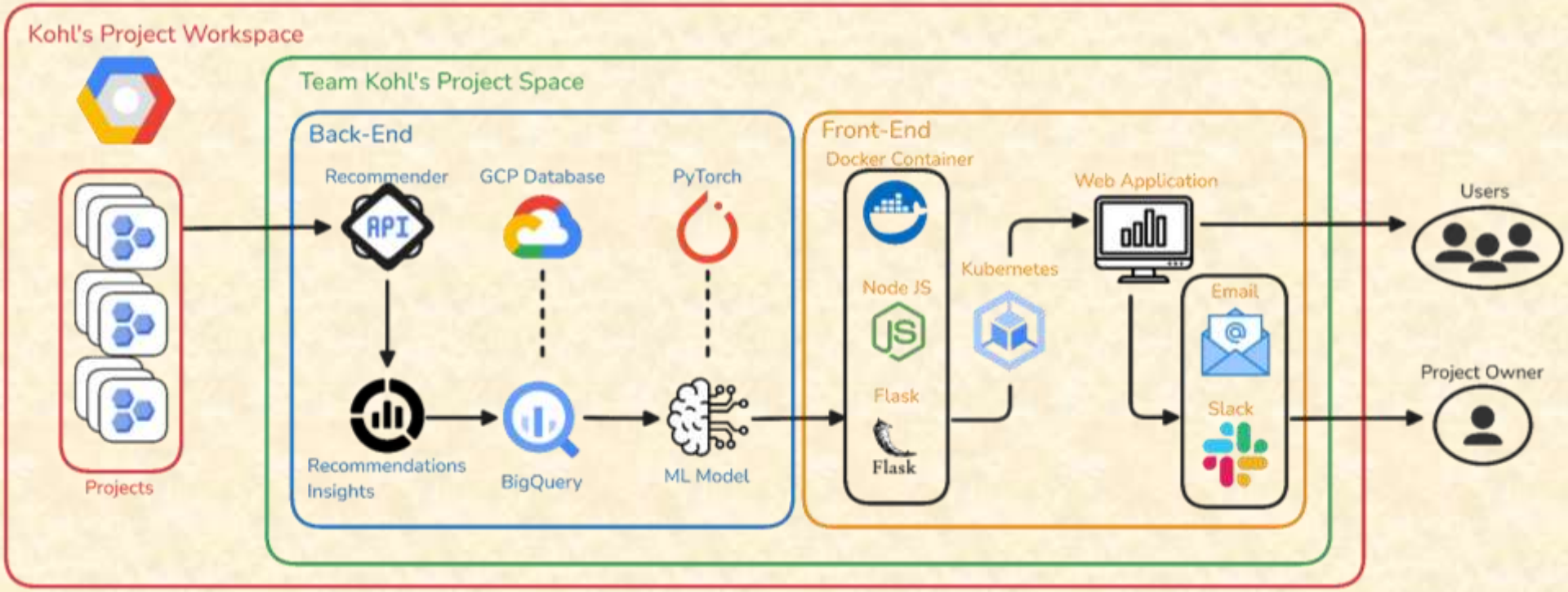
Screen Mockup: Settings



Project Technical Specifications

- Monitor-Alerting Platform
  - Insights & Recommendations Pipeline
  - Google Cloud Database
  - Google BigQuery
  - Machine Learning Model
  - Web Application
  - Email & Slack

Project System Architecture



Project System Components

- Hardware Platforms
  - Google Cloud Platform (GCP)
- Software Platforms / Technologies
  - Gcloud Console (Recommender API)
  - SQL (BigQuery)
  - Python (PyTorch)
  - Kubernetes (GKE)
  - Docker
    - Flask
    - Node JS

Project Risks

- How to collect and store numerical data to show results over time?
  - Risk - Shown sample of BigQuery database. Data from API stored in string format. In addition, data is overwritten every day to update reports.
  - Mitigation – Implement a job to collect data timestamps and store in another database.
- The data retrieved from the Recommender API is in string format and difficult to parse at scale.
  - Risk - Sample of data contains over 17,000 rows in string format with numerous branches to other tables. High data volume for each snapchat. How do we parse and display intuitively?
  - Mitigation – Collaborate with client to segment data into related sections.
- How to output warnings through communication channels?
  - Risk - Client prefers alerts to notify select groups for costs, not all project owners. How do we configure notifications that can adapt to team changes.
  - Mitigation – Develop a method with client for a generalized channel for any employee to receive updates.

Questions?