MICHIGAN STATE UNIVERSITY

Project Plan
Transaction Anomaly Detection

The Capstone Experience

Team MSUFCU

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From Students…
…to Professionals

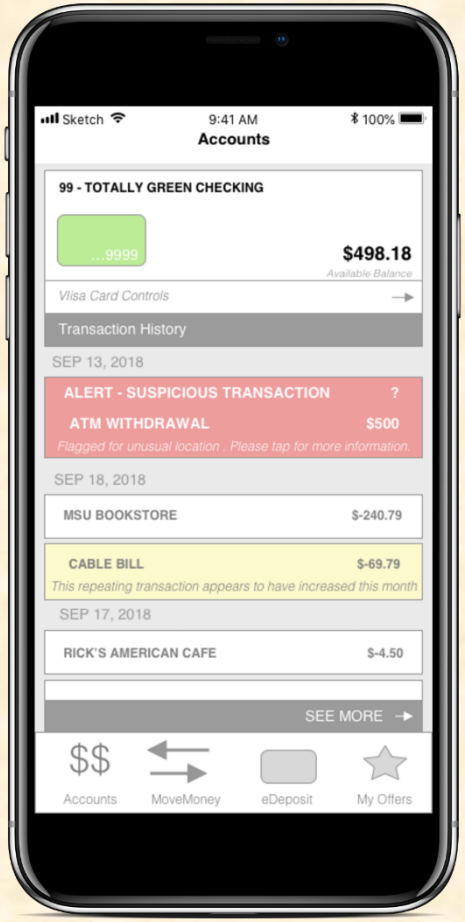
Functional Specifications

- Detect and alert users of anomalous transactions
  - Fraud / account takeover
  - Changes in recurring payments
- Provide visualization of member spending habits
- Implement anti-money laundering rules according to Bank Secrecy Act
  - Stretch goal

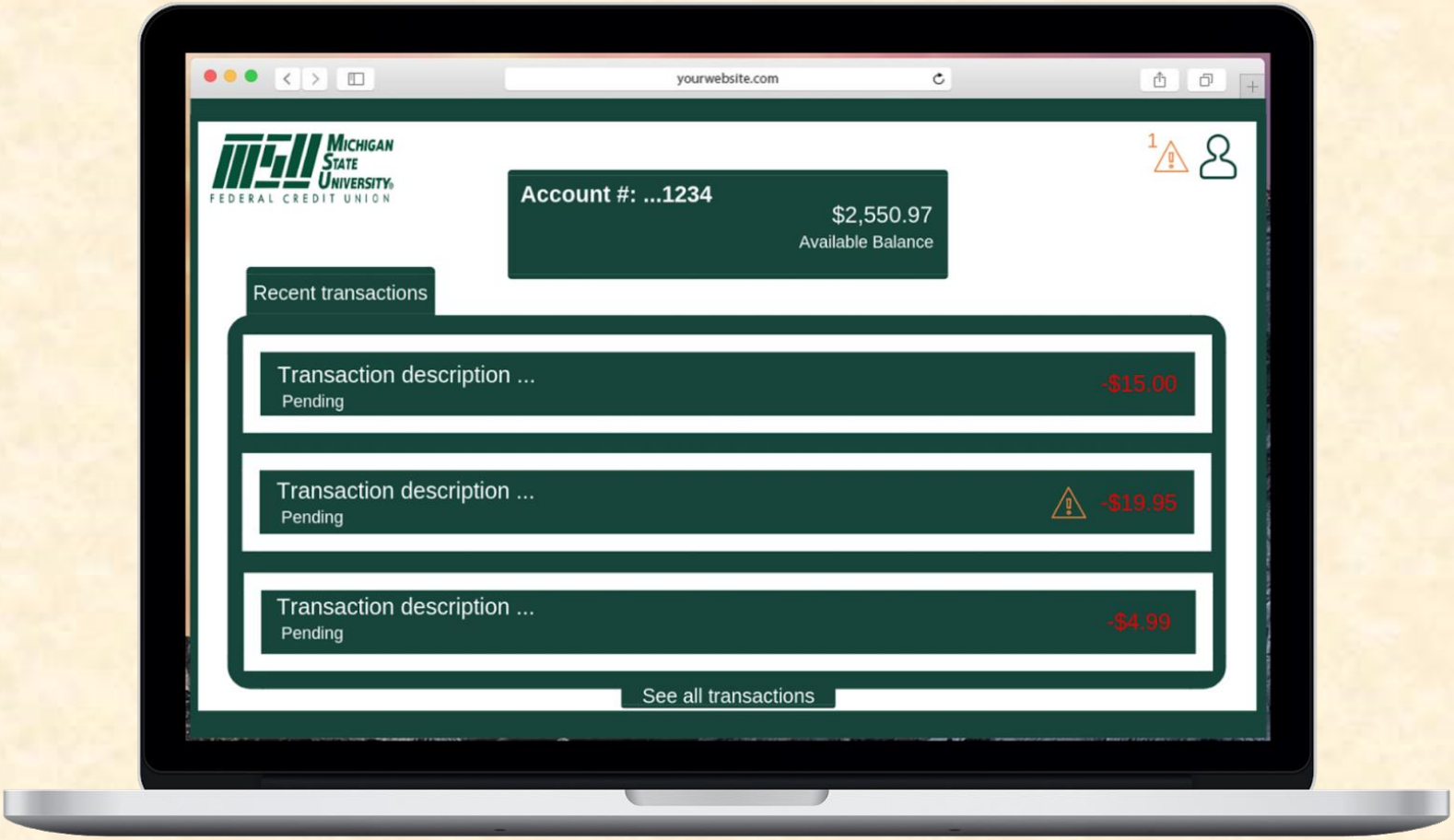
Design Specifications

- Create web, Android, and iOS applications for user interaction
- Use colors and icons to indicate severity of anomaly
- Potentially fraudulent transactions will be brought to an employee's attention for review
- Members will be alerted according to MSUFCU's notification protocol

Screen Mockup: Mobile App



Screen Mockup: Member Web Portal



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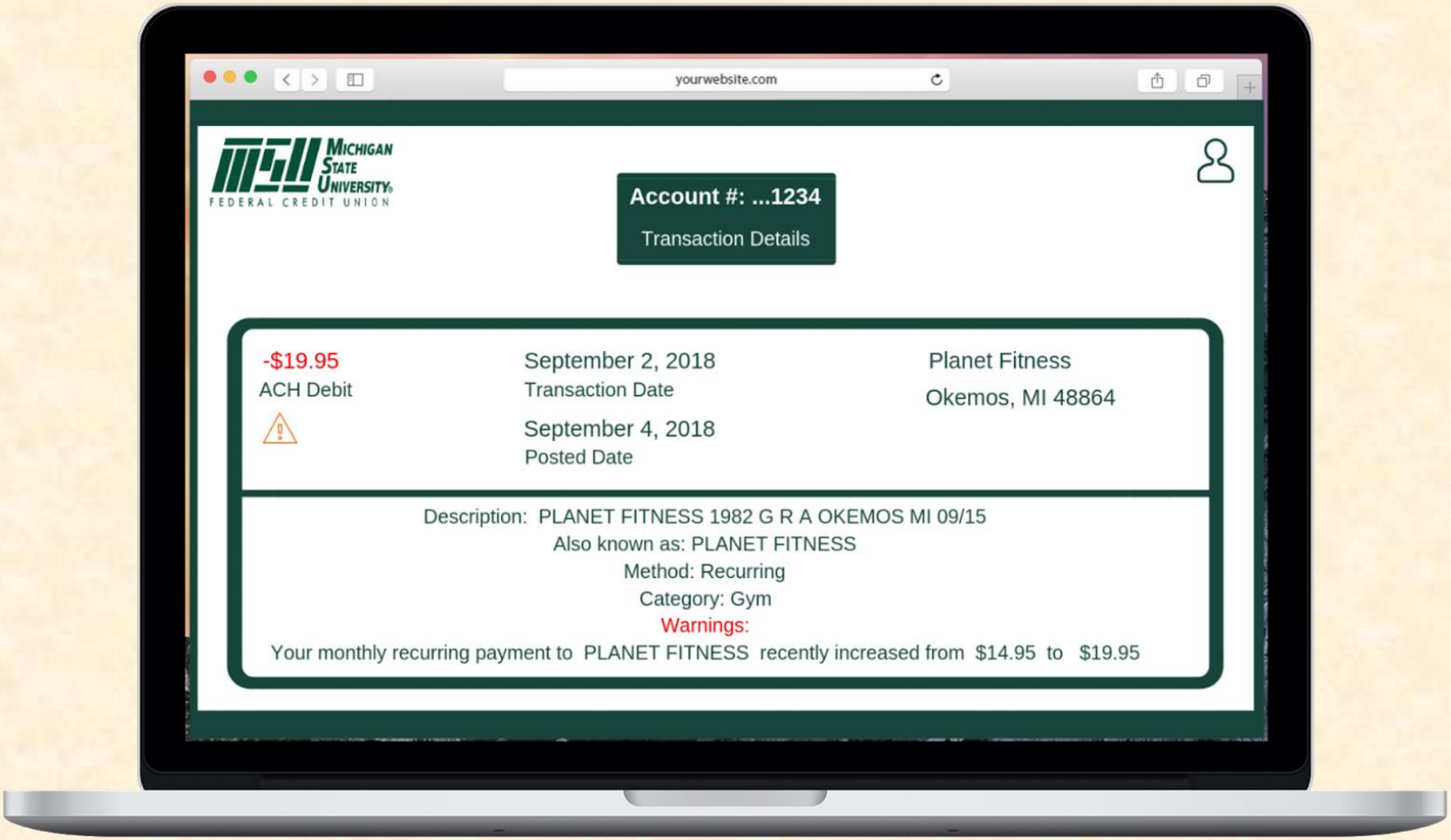
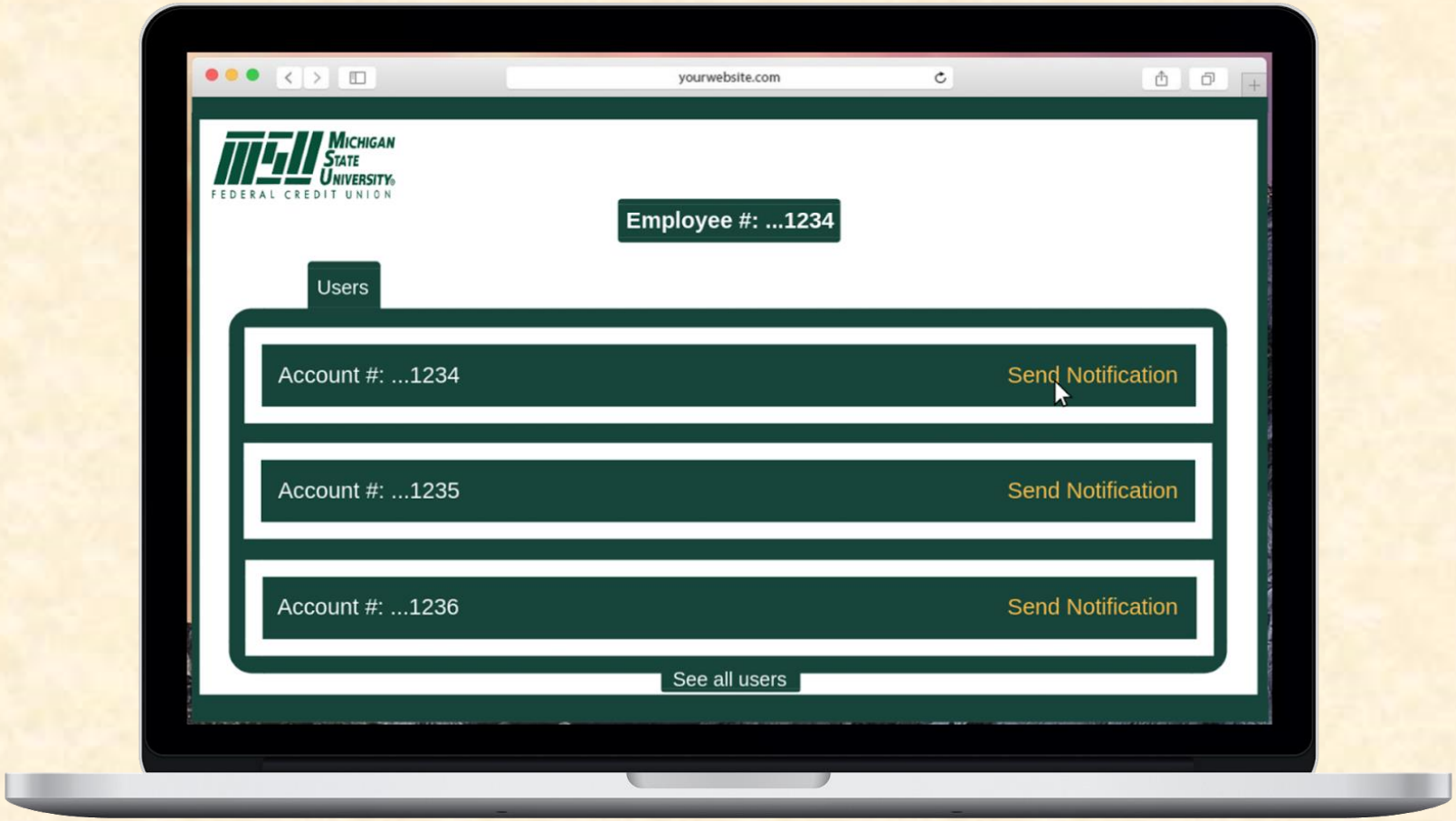


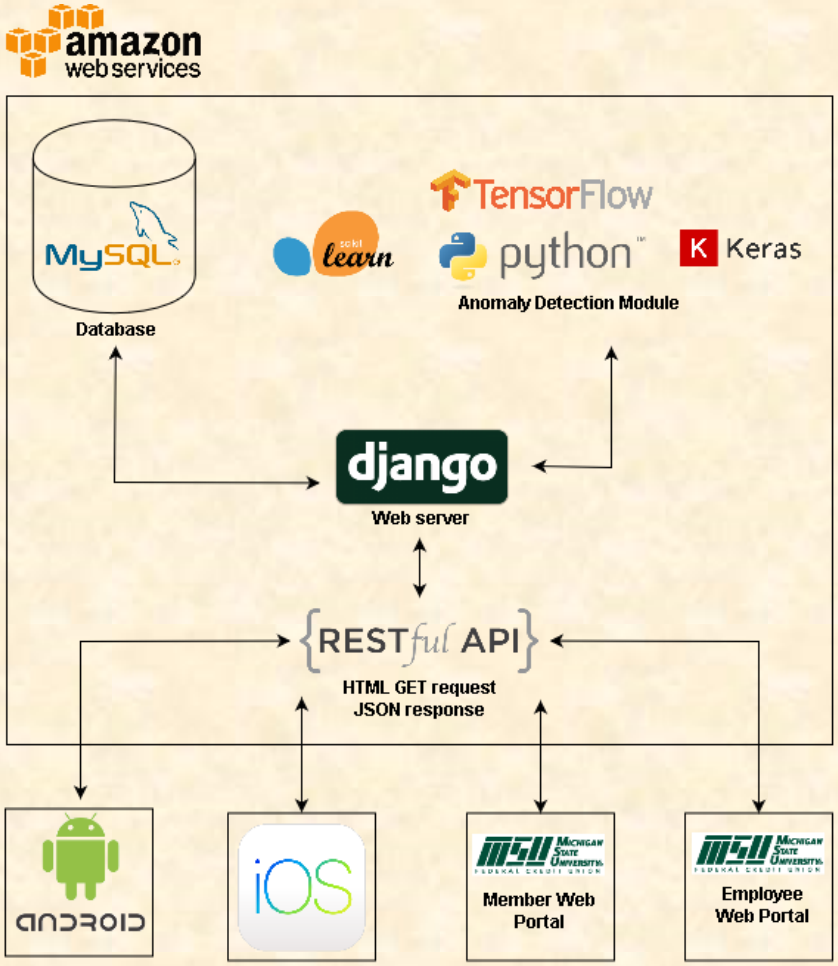
Screen Mockup: Employee Web Portal



Technical Specifications

- Server: Amazon EC2, AWS Elastic Beanstalk
- API: Django REST Framework
- Mobile Apps: iOS, Android
- Web Portals: Member-facing, employee-facing
- Database: MySQL hosted on AWS

System Architecture



System Components

- Hardware Platforms
  - All servers on Amazon Web Services
- Software Platforms
  - Member-facing iOS, Android, Web platforms
  - Employee-facing Web platform
- Technologies
  - Scikit-learn
  - TensorFlow / Keras
  - Django

Risks

- Quality of data
  - Dataset has very few instances of fraudulent transactions
  - Mitigation: Techniques such as local outlier factor and single class support vector machines are designed to deal with this issue
- Connecting all components
  - iOS and Android apps are not connected to the AWS database
  - Have identified tutorials and resources on how to connect apps to AWS
- Provide value to members
  - Don’t know how best to deliver meaningful information to members
  - Will utilize focus groups to test our apps and will implement changes based of their feedback
- Security
  - Must ensure transaction data is secure from end to end
  - Mitigation: Having no memory leaks and isolating our modules

Questions?