From Students…
…to Professionals

Project Plan
AutoBudget Chatbot

The Capstone Experience

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Functional Specifications

• Users need an easy way to get financial advice
• Use Amazon Alexa and Google Home as personal assistants to advise users on reaching their goals
• Create mobile application to allow users to view visual data about their accounts from anywhere
Design Specifications

• Simple, bright, and easy to understand
• Shared components for consistency
• Budget analysis via charts
• User can select preferred chart type
• Provides budgeting tips for user
Screen Mockup: Mobile Devices
Screen Mockup: Website
Screen Mockup: Alexa

Hey MSUFCU, what's my checking account balance?

Your checking account balance is $800.00.

Could you make a budget analysis for me?

According to your spending habits in the last six months, here is your budget forecasting analysis.
Screen Mockup: Smart Display

Chat

Hey MSUFCU, what’s my checking account balance?

Your checking account balance is $800.00.

Could you make a budget analysis for me?

Sure.

According to your spending habits in the last six months, here is your budget forecasting analysis:

Statistics Analysis

- Transportation
- Clothes
- Sports&Health
- Others

By Month December, 2018

Graph showing budget analysis for different categories.
Technical Specifications

• Native Android and iOS Apps
  ▪ iOS app written in Swift using Xcode (no min SDK version)
  ▪ Android app written in Java using Android Studio (SDK versions 22-28)

• Native Alexa Skill and Google Action
  ▪ Alexa Skill written using Alexa Skills Kit
  ▪ Google Action written using DialogFlow and Actions on Google

• Web Portal
  ▪ Written with HTML5, CSS/Bootstrap and PHP in JetBrains PHPStorm

• API Layer
  ▪ Written in Node.js using Visual Studio Code

• Machine Learning Program
  ▪ Written in Python with libraries from Scikit-learn using Jupyter Notebook
System Architecture

Android and Apple Smart Devices

Web Portal

Amazon Alexa and Google Home Hub

Middleware API

Dialogflow

Node.js + Express

TensorFlow

AWS Lambda

SQL Database
System Components

• Hardware Platforms
  ▪ CentOS server version 6.5
  ▪ Amazon Echo and Echo Show
  ▪ Google Home and Home Hub

• Software Platforms / Technologies
  ▪ Android Studio with Java
  ▪ Xcode with Swift
  ▪ JetBrains PHPStorm for HTML5, CSS/Bootstrap, PHP
  ▪ Visual Studio Code with Node.js
  ▪ Jupyter Notebook with Python and Scikit-learn libraries
Risks

• Unfamiliarity with Hardware
  ▪ Little experience using Alexa Show and Google Home
  ▪ Mitigation: Consult customers that use these devices for feedback

• Consistent Interface Across Many Platforms
  ▪ We want same look and feel no matter which platform is used
  ▪ Mitigation: Use existing MSUFCU color and font scheme

• Two Different Natural Language Processors
  ▪ No single natural language processor supports all platforms
  ▪ Mitigation: Backend will be able to interface with both DialogFlow and AWS

• Data Not Labelled for Classification
  ▪ No demographic identifiers in provided anonymized data
  ▪ Mitigation: We will generate mock demographic data for proof of concept
Questions?