MICHIGAN STATE UNIVERSITY

09/14: Team Status Reports

The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering Michigan State University

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From Students... ...to Professionals

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Amazon Shopping Assistant

- Project Description
 - A chat bot to bring Amazon shopping to messaging platforms
 - Search for and purchase items
 - Asa will learn about you and make recommendations
 - The bot can be asked for gift recommendations
 - Extendable to various messaging platforms (Slack, FB, SMS)
- Project Plan Document
 - Document has been started
 - Executive Summary, Functional & Design Specs, System Architecture
 - Approximately 40% complete

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Amazon Shopping Assistant

- Server Systems / Software
 - AWS Lambda & AWS API Gateway serverless infrastructure
 - Facebook Messenger and bot platform
 - NLP platforms (wit.ai/api.ai/LUIS)
 - Amazon Advertising API and AWS Machine Learning
- Development Systems / Software
 - GitHub for version control
 - Slack & Trello for project management
 - Apex to deploy & manage AWS Lambda functions
 - Mocha as JavaScript test framework

Amazon Shopping Assistant

- Client Contact
 - Had one conference call
 - Planned in-person meeting for 9/14
 - Set up weekly conference calls for Wednesdays at 5pm
- Team Meetings
 - Met about 6 times as a whole team
 - Team meetings after every capstone class and triage meeting
- Team Organization
 - Evan: Client Contact & Project Manager
 - Sam: DevOps & UX Lead
 - Yiming: Developer/Tester
 - Renee: NLP Developer/Tester
 - Aaron: NLP Developer/Tester

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Amazon Shopping Assistant Risks

- AWS Services (Lambda, API Gateway), Bot Platforms
 - No one on the team has extensively used AWS services
 - Read documentation and make prototype bots deployed to AWS
- Difficulty of Natural Language Processing (NLP)
 - Challenging to retrieve correct intent from a message
 - Utilize existing NLP services as much as possible & lots of research
- Gather extra information about items if needed
 - When a user is buying something like a shirt, how do we get size & color info?
 - Quick replies but still have to figure out integration into conversation
- How are we going to learn about the user?
 - No external customer data for model training
 - Depend on Amazon Advertising API and design modular plug-in architecture

Team Auto-Owners Status Report

Mobile Event App

- Project Description
 - An Event Planning App for all events hosted by Auto-Owners.
 - Manager(s) with access to statistics, attendance, survey results.
 - Attendee can RSVP, view personal itinerary, give feedback.
 - Waiting list and similar events for those past event capacity.
- Project Plan Document
 - Document Created
 - Basic info in each relevant category, rough skeleton
 - Needs expansion, roughly 15% Complete

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Team Auto-Owners Status Report

Mobile Event App

- Server Systems / Software
 - Windows Server 2012 Installed, configured for remote access
 - Microsoft Active Directory Installed
 - Microsoft SQL 2014 Web Version Installed
- Development Systems / Software
 - Xamarin Studio Android/iOS
 - Installed on both iMacs
 - Tutorials Viewed.
 - Initial Project Created
 - PHP Storm HTML/CSS
 - Installed on Laptop.

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Team Auto-Owners

Status Report

Mobile Event App

- Client Contact
 - 1 meeting on-site at client's office
 - Continuing email communication with client
 - Working on scheduling a weekly conference call
- Team Meetings
 - 3 in-person team meetings so far, will continue meeting on Wednesdays after class
 - Continuing communication over Slack
 - Project management via Trello
- Team Organization
 - Project Manager Allen Scheck
 - Communicator Eddy Maxwell
 - Web Development Team Shen Li, Eddy Maxwell
 - Mobile Development Team Matt Krease, Allen Scheck
 - Database/Systems Administrator Tyler Smith

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Team Auto-Owners Status Report

Mobile Event App

Risks

- iOS Development
 - None of us have ever developed for iOS
 - Mobile Developers are looking into Xamarin as a cross-platform development tool
- Database Development
 - Only 1 of us has (very limited) experience with SQL and Active Directory
 - Learning this one as we go
- Visual Organization
 - There are a lot of tools and features this system will have, and it will be hard to get it all to fit nicely on the screen and still be functional (especially on mobile)
 - There will be a lot of time put into prototyping design and layouts
- Feature Creep
 - There's a lot they want us to, and that we can, put into this system. Some features are straightforward, and some more complex. It will be hard to get it all done in the allotted time and to make sure all of the features are available on all devices.
 - We will be holding several planning meetings to get a nice uniform view of the features and their implementation.

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Security Analysis Suite: Dataset Merger Tool

- Project Description
 - Automatically find and merge duplicate records in database
 - For records with lower similarity confidence, present to user and ask for permission before merging.
- Project Plan Document
 - Finished first iteration of architecture design
 - Will receive UI mockups from client this week
 - Skeleton documents and table of contents laid out
 - Have not started powerpoint presentation
 - 10% complete

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Security Analysis Suite: Dataset Merger Tool

- Server Systems / Software
 - Using client hosted servers for data, using local host for web app development.
 - Waiting on keys for client server endpoint.
 - Will have keys by the end of this week.
- Development Systems / Software
 - Installed Eclipse for Java/SpringBoot backend on OSX machines. Have not tested SpringBoot.
 - Installed NodeJS and NPM for ReactJS development on both computers.
 - Created template ReactJS project.

The Capstone Experience

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Security Analysis Suite: Dataset Merger Tool Client Contact

- Weekly client meetings Monday at 5:00PM.
- Discuss internal company resources needed for project.
- No current plans to meet in person due to distance.
- Team Meetings
 - Weekly team meetings on Monday and Thursday.
- Team Organization
 - Delegated team roles: Front End Lead, Back End Lead, Engine Lead, Engine/Back End Hybrid, Engine/Front End Hybrid.
 - Delegated company contact and project manager.

Security Analysis Suite: Dataset Merger Tool Risks

- Do not know required technologies well
 - ReactJS, SpringBoot, string matching, and ElasticSearch
 - Spending time going through tutorials and reading documentation.
- Still no access to databases
 - We are waiting to receive access keys to anonymized database.
 - Should receive keys by end of this week, otherwise will contact client.
- Project plan not finished
 - Currently have an outline of project plan.
 - Further meetings to finish the project plan.

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In-Car Calendar and Task Integration

- Project Description
 - iOS and Android application that is used with Sync 3
 - Integrates with popular calendar & to-do list services
 - Uses voice commands to reduce driver distraction
 - Stores data which is viewable in an administrator dashboard
- Project Plan Document
 - Have a full skeleton and table of contents
 - Completed:
 - Executive Summary, Design Specifications
 - Notable task: mock up designs

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In-Car Calendar and Task Integration

- Server Systems / Software
 - Microsoft Sequel Server 2012
 - Have windows on server
 - Need to establish database
- Development Systems / Software
 - Xamarin versus coding native mobile applications
 Need to connect devices to test before decision is made
 - Integrated Ford's AppLink within Xcode project
 - Have Hello World programs on all platforms

In-Car Calendar and Task Integration

- Client Contact
 - Weekly Meetings with client on Thursdays
 - Emails / Text messages with client as needed
- Team Meetings
 - Meeting every Tuesday before triage meetings
 - Status meetings after class
- Team Organization
 - Point of contact: John Zaidel
 - Project management: Eric Pressey
 - Backend: Brett Durlock
 - Developers: Cameron Rooks, Yunfeng Yue

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In-Car Calendar and Task Integration Risks

- Risk 1
 - iOS not connecting to Sync 3 AppLink Emulator
 - Client investigating source within the Ford AppLink Development Team
- Risk 2
 - Android apps not displaying in Sync 3 AppLink Emulator
 - On a Ford Developer Slack working out issues
- Risk 3
 - No mobile development background on team
 - Starting with basic Hello Worlds and working up from there
- Risk 4
 - Next to no familiarity with Sync 3 or the AppLink Emulator
 - Testing out and learning with sample apps that Ford offers
- Risk 5
 - No experience with voice recognition
 - Starting small with basic commands through Ford's API

Predictive Rich Cards

- Project Description
 - Leverage Cortana and Google Now Cards to answer userinitiated queries
 - Provide mobile app utilizing multiple search sources
 - Use natural language processing to support a variety of content such as actions items, approvals, calendars, etc
 - Use technologies: Mobile (Android, iOS), Azure Cloud, Rails API, Machine Learning
- Project Plan Document
 - Executive Summary & Functional Specs done
 - Started other sections; 70% done overall

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Predictive Rich Cards

- Server Systems / Software
 - Azure Virtual Machine running, tested ssh
 - Azure SQL Database running, tested ssh and created blank DB
- Development Systems / Software
 - Github API/Mobile repos created with templated code (Rails API)
 - Xamarin installed on iMacs, "Hello World" apps created successfully
 - Rails API template with authentication tested and working

Predictive Rich Cards

- Client Contact
 - Weekly Conference Call every Friday at 12:45 pm
 - Two conference calls so far, have talked to Chelsea and Dan directly via email with specific questions

Team Meetings

- Met 5 times so far
- Schedule team meetings every week based on member availability
- Team Organization
 - 3 members on Mobile, 2 members on Back-end
 - At halfway point, will re-structure team responsibilities for machine learning and stretch goals

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Predictive Rich Cards Risks

- Reliable Sample Data
 - Creating data that is specific to GM might not be representative of actual data
 - Communicate with GM contacts regularly to ensure sample data is accurate

Correctly Drawing from Data Sources

- Correctly interfacing with the various data sources that GM uses internally
- Assess all data sources and create mockup describing how they interact
- Ensure Client-side Application is up-to-date
 - When data changes in a data-source, ensure each applicable client application receives the update
 - Create thorough system tests and test throughout the development cycle

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Intelligent Shopping List

- Project Description
 - Create an automated intelligent shopping list based on customer purchase history from mPerks
 - Customers will have the ability to add/remove items on the shopping list
 - Give customers the option to have items pre-ordered and automatically shipped to their homes
 - Implement this in an iOS app with .NET administrative back end
- Project Plan Document
 - Project Plan template is created
 - ~35% completed -- Functional specs, schedule, risks, some use cases
 - Work being shared among group members

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Intelligent Shopping List

- Server Systems / Software
 - Azure account created

Need paid subscription to access necessary tools

- Development Systems / Software
 - XCode installed on lab machine
 - Working on "Hello World" program
 - Acquiring iPad for development and testing

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Intelligent Shopping List

- Client Contact
 - Three conference calls with the client
 - Completed the IP and NDA Agreements
- Team Meetings
 - The team has met a total of 6 times
 - Weekly conference calls scheduled for 9:00 AM on Monday with available members of the Meijer team
 - Weekly team meetings on Monday and Wednesday with more to be added as needed
- Team Organization
 - Assigned roles to each group member
- Acquired employee IDs from Meijer
 The Capstone Experience
 Team Status Reports

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Intelligent Shopping List Risks

- Learning iOS
 - Group members have little experience programming iOS applications
 - Internet tutorials and smart friends
- Visual Studio Team Services (VSTS)
 - Lack of experience using VSTS for team collaboration
 - Meijer will be providing a tutorial on how they utilize VSTS
- Unclear about access to Meijer information
 - Data, API, servers, Azure, etc.
 - Plan to send our questions to the team at Meijer and set deadlines for when we need the information by

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Improvements to Firefox

- Project Description
 - Select dropdown improvements
 - Make disabled options more clear
 - Add search functionality
 - Update single-process dropdown implementation to follow the multi-process (e10s) architecture
- Project Plan Document
 - 30% complete
 - Working on ideas for system architecture mockup

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Improvements to Firefox

- Server Systems / Software
 - Not using server hardware
 - Version control hosted by Mozilla
- Development Systems / Software
 - Local builds and Mozilla build tools on lab machines
 - Builds on personal machines with Nightly debugger

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Improvements to Firefox

- Client Contact
 - Weekly video conferences with client (Wed, 5:10)
 - More frequent contact through IRC
 - Scheduling a weekend for meeting in-person soon
- Team Meetings
 - After class Mondays and Wednesdays
 - Have met 5+ times and constant communication via Slack
- Team Organization
 - Communication through Slack/IRC
 - Scrum project planning with Trello

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Improvements on Firefox Risks

- Understanding code base
 - FF is a huge product, finding and understanding relevant portions is critical
 - Mitigation: Use client contacts as a resource in development
- Using a new Version Control System (VCS)
 - Mozilla uses Mercurial for VCS, which is new to all capstone team members
 - Mitigation: following documentation and dedicating time to learning the VCS
- Implementing search in dropdowns
 - May be very complex, completely new functionality
 - Mitigation: researching possible options early and using Mozilla resources
- Code quality control, Mozilla standards
 - Mozilla has very strict coding standards that need to be followed
 - Mitigation: becoming very familiar with Mozilla coding standards and get feedback early

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Member Ratings and Reviews

- Project Description
 - Create a rating and review system for MSUFCU members
 - Write review comments and add ratings to products
 - Provide comments by user name or anonymously
 - Provide support for web, iOS, and Android
- Project Plan Document
 - We started it!
 - We have started an executive summary, functionality and design specifications
 - Around 25-30%

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Member Ratings and Reviews

- Server Systems / Software
 - Installed and setup Linux based software on server
 - Downloaded VMware and tools for project development
 - Set up MySQL database and Ubuntu on server
- Development Systems / Software
 - Server is up and running
 - Tested connection to server and database
 - Working on making connection via mobile

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Member Ratings and Reviews

- Client Contact
 - We have met and spoke with our client in-person three times.
 - Scheduled weekly in-person meetings on Tuesdays at 9am
- Team Meetings
 - Team has met several times
 - Working on meeting Mondays and Wednesdays after class
- Team Organization
 - Development Roles were assigned.
 - Using slack to communicate & organize tasks.

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Member Ratings and Reviews Risks

- Unfamiliar with mobile development software/languages
 - Minimal experience with Xcode and Android Studio + Swift/Java
 - Looking up sample code and messing with software
- How to make a database connection with mobile device
 - How to transmit data between database and mobile
 - Research on how to make a connection via iOS and Android
- How to support layouts for multiple device sizes
 - Unfamiliar with setting a universal layout for all mobile devices
 - Experimenting with constraints and Mobile IDEs

Team Quicken Loans Status Report

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Hiring Process Automation

- Engineering a computerized, objective, web-delivered test
- Avoid some of the subjectivity that goes along with the traditional interview process
- Analyze results from test to match skill set to a position in the company
- Project Plan Document
 - Functional Specifications Rough Draft Done
 - Technical Specifications Rough Draft Done
 - Design Specifications Started
 - Sending Rough Drafts to Client to Review

Team Quicken Loans Status Report

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Hiring Process Automation

- Server Systems / Software
 - Windows Server 2012 R2 Running and Tested
 - MYSQL 5.5 Database Running and Need to Test
 - IIS 8 Web Service Running and Tested
- Development Systems / Software
 - Visual Studio Community 2015 Running and Tested
 - Bonobo Git Server Running and Tested

Team Quicken Loans Status Report

Hiring Process Automation

- Client Contact
 - Talked once on phone
 - In contact with several people who have joined the team
 - In process of setting up weekly meeting
- Team Meetings
 - 2-3 times a week
 - Usually after class on Monday/Wednesday
 - Everyone has been present
- Team Organization
 - Client POC: Sonu
 - System Administrator: Dan
 - AngularJS Manager: Paul
 - C# Manager: Andrew
 - Testing Manager: Tom

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Team Quicken Loans Status Report

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Hiring Process Automation

- Risks
- Database to Application Connection
 - The team does not have much experience with getting a database connected to a application.
 - Early prototyping and testing with simple applications to connect with database.
- Initial Structure Set-Up
 - The team needs to decide which technologies will be used for the different functionalities of the application. Also, the team has been given a general description of their project.
 - Extra team meetings and client contact to quickly decide which technologies would be best for certain aspects of the web application.
- Data Analytics
 - The client has specified that they would like data analytics on the results of the personality tests. The team does not have much experience with data analytics nor do they know what specific tools the client would like them to use.
 - Early client contact and research on known data analytics tools to use.

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Enhanced Network Anomaly Detection Suite

- Project Description
 - Adding optimization for the Windows agent
 - Extending analysis engine to use machine learning
 - Creating a Linux-Based agent
 - Creating an Apple OS X agent
 - Building a web management console
- Project Plan Document
 - Started, 50% complete
 - Created architecture diagram
 - Working on rough GUI for web console
 - Need to do design and technical specifications

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Enhanced Network Anomaly Detection Suite

- Server Systems / Software
 - Set up Ubuntu servers, we have 2
 - Set up Docker on the server in progress
 - Systems tested
- Development Systems / Software
 - Set up VMs
 - Bitbucket and JIRA set up
 - Downloaded Visual Studio and Pycharm
 - Encrypted our Mac computer hard drives

[3 of 4]

Enhanced Network Anomaly Detection Suite

- Client Contact
 - Teleconference meeting
 - In-person meeting 9/8-9/9
 - Weekly conference call scheduled for Thursday
- Team Meetings
 - 10 team meetings
 - Weekly team meetings scheduled (Monday, Wednesday 4:20pm)
- Team Organization
 - Cross-functional
 - Agile/Kanban
 - Each person is a tech lead of a component

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Enhanced Network Anomaly Detection Suite Risks

- Limited knowledge of technologies
 - Django, Message Queue, Daphne, and Windows development
 - Write simple prototypes using these technologies
- Getting enough traffic to do testing
 - Software requires a high volume of traffic to gather data
 - Simulate different attacks to try and catch
- Secure code and keeping software secure
 - Writing secure code and protecting the company's software
 - Learn what secure code is, and locking our computers
- Machine learning getting baseline dataset
 - Realistic dataset for machine learning algorithms to "learn" from
 - Understand machine learning and simulate normal network traffic

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Healthier Communities Time Banking

- Project Description
 - Responsive Web Application
 - Homebound patients able to request services
 - Patients able to offer skills to others
 - Provides homebound patients with social connections
- Project Plan Document
 - Drafted Executive Summary, Functional Specifications, Risk, Timeline
 - Design and Technical specifications in progress
 - Sent project plan to Spectrum Health for review

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Healthier Communities Time Banking

- Server Systems / Software
 - Will use a Windows environment for SQL compatibility
 - Main server framework will be built with .NET Core
 - Entity framework will handle datastore
- Development Systems / Software
 - Will use Angular 2 for front end development
 - Files will be stored in private Github repositories
 - VS Code or Visual Studio 2015 will be used as IDEs

[3 of 4]

Healthier Communities Time Banking

- Client Contact
 - Called client and set up weekly status call Thursdays at 2:30
 - In Person Office Visit September 9th
- Team Meetings
 - Our team has met eight times.
 - Weekly team meeting Monday at 5:30pm
- Team Organization
 - Communication through Slack
 - Project management through Trello

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Healthier Communities Time Banking Risks

- Limited knowledge of Angular 2 and .NET Core technologies
 - No members of the team are familiar with these technologies
 - Read online documentation and, if needed, contact corporate resource
- Limited experience with creating responsive web apps
 - No members of the team have created responsive web apps
 - Google provides documentation for their progressive web app framework
- Discovering each group member's strengths and how to define roles among team
 - No members of the group have worked together before this project
 - Mitigation: As we learn new technologies we will discover who is best fit for each role.

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Web Frameworks for Multi-Factor Authentication

- Project Description
 - Design and Build SDK's for Multi-Factor Authentication
 - Using Symantec's Validation and ID Protection (VIP) Service
 - Support Leading Web Frameworks (Node.js, Python, Ruby)
- Project Plan Document
 - Writing Executive Summary, Title Page, and Table of Contents
 - Outlining Functional, Design and Technical Specifications with Client
 - Still need access to Symantec VIP SDK
 - Planning who will write which part of the document

(2 of 4)

Web Frameworks for Multi-Factor Authentication

- Server Systems / Software
 - Heroku to host sample enterprise applications
 - RubyGems.org, NPM publishing, PyPI to host libraries
- Development Systems / Software
 - VMWare and Office installed on computers in labs
 - Installed Ruby, Python, and Node on lab computers for development
 - Tested web frameworks on lab computers
 - Apiary for documentation

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Web Frameworks for Multi-Factor Authentication

- Client Contact
 - Had initial meeting to discuss brief project overview and introductions
 - Provided us with documentation for the APIs we will be using
- Team Meetings
 - Met with Spencer and have meetings scheduled Wednesday morning
 - Planned meetings twice a week
 - Scheduled weekly calls, but there are some conflicts
- Team Organization
 - Assigned client contact
 - Figuring out other roles as we learn more about the project and how to approach it

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Web Frameworks for Multi-Factor Authentication Risks

- Still no access to VIP SDK and documentation
 - Don't yet have access to the vital Symantec VIP SDKs and documentation
 - Escalation with Dr. Dyksen, will put more pressure on Symantec
- Completing SDKs for 3 frameworks
 - We will create SDKs for Node.JS, Ruby and Python with limited experience
 - Will focus on finishing the Ruby gem well then moving to the other two platforms
- Limited experience with core technologies
 - APIs are SOAP based which is an old technology
 - Spend time to learn these technologies and consult with Symantec experts
- Configuring a compatible development/testing server
 - Using the provided server equipment will require a lot of the limited time remaining to be configured properly and is prone to possible errors
 - Utilize an existing cloud environment for development/testing that supports our frameworks' needs

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Video Sentiment Analysis

- Project Description
 - Designing a custom player application and a web service to record and analyze emotion of a person viewing a video
 - Building web app and media player using C#/.NET with Azure
 - Analyzing emotional responses using Microsoft Cognitive Services
 - Storing viewer behavior and videos in a SQL database
- Project Plan Document
 - Finished table of contents
 - Divided the roles

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Video Sentiment Analysis

- Server Systems / Software
 - Microsoft Azure web servers is fully working
 - Microsoft Azure BLOB strorage
- Development Systems / Software
 - Visual Studio 2015 Enterprise installed
 - GitHub and Git Bash set-up
 - API SDKs tested

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Video Sentiment Analysis

- Client Contact
 - We have met both in person at TechSmith and over Google Hangouts
 - We have scheduled Google Hangouts meetings at 10:30am on Fridays
- Team Meetings
 - We have met as a team 7 times
 - We have scheduled meetings on Sundays and Tuesdays
- Team Organization
 - GitHub to keep track of code
 - Trello for sprints and tasks

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Video Sentiment Analysis Risks

- Risk 1
 - Limitations of API such as subscriptions and functionality
 - Subscribe to a full subscription of Emotion API
- Risk 2
 - Linking multiple Visual Studio projects
 - Communicate through Azure
- Risk 3
 - Authentication for user and viewer
 - Research and communicating with client
- Risk 4
 - Get viewers to use Custom Player
 - Stream video instead of download

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Dealership Simulator 2017

- Project Description
 - Educate Urban Science employees about the process of successfully running an automobile dealership.
 - Gamify this teaching process.
- Project Plan Document
 - Project Plan has been started
 - Approximately 25% done
 - Divided sections amongst team

[2 of 4]

Dealership Simulator 2017

- Server Systems / Software
 - Unity Asset Server up and running (Version Control)
 - PlayFab
- Development Systems / Software
 - Unity3D w/ C#
 - Maya 2017
 - Adobe Photoshop & Illustrator

[3 of 4]

Dealership Simulator 2017

- Client Contact
 - Scheduled weekly conference call with client.
 - Met on-site with client on Monday.
- Team Meetings
 - Scheduled weekly team meetings.
 - Met a few times a week so far.
- Team Organization
 - Facebook Group and Trello
 - Unity Asset Server

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Dealership Simulator 2017 Risks

- Nearest Neighbor Algorithm
 - Estimating dealership result based on similar dealerships in the data set.
 - Understand all the data to implement the algorithm.
- Data Analysis
 - Understanding what all the data means.
 - Work with client to understand the data set.
- User Experience
 - All users must understand how to play the game.
 - Create a tutorial to explain features of the game.

Mooch

- Project Description
 - Food and ingredient sharing mobile apps
 - Share your pantry within apartment or condo complexes
 - Create a social community through medium of food sharing
 - Facilitate safe and private transactions within a community
- Project Plan Document
 - Started document
 - Title page, table of contents
 - Summary, specification, risk, and schedule pages stubbed in
 - <10% done</p>

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Mooch

- Server Systems / Software
 - Hosted on Google App Engine
 - Utilizes the Ruby on Rails framework
 - Basic version of API up and running
- Development Systems / Software
 - iOS: Swift 2.2, versions 9 and 10
 - Android: Java, API 15+ (4.0.3 Ice Cream Sandwich)
 - iOS: basic views up and running, Android: "Hello World" app

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Mooch

- Client Contact
 - Two conference calls
 - Weekly meetings scheduled, site visits TBD
- Team Meetings
 - 5 times so far
 - Meeting as needed to work together and communicate
- Team Organization
 - Communication through Slack
 - Trello for project management

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Mooch Risks

- Final Design
 - Waiting on final design specifications
 - Creating design for alpha until final design is provided
- Android Development
 - No team experience with Android development
 - Laura/Caleb are looking up tutorials, coursework from CSE476
- Push Notifications
 - No team experience with push notifications
 - Learning to do basic push notifications from the apps
- API
 - First time building a full API using authentication, user transactions
 - Online resources, tutorials, peers

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- Visualizing Dynamic Data Exploration
- Project Description
 - Web app that connects to large data sets
 - Allows users to explore data sets dynamically
 - Displayed as 2D and/or 3D visualizations
 - Users able to make adjustments and explore data quickly
- Project Plan Document
 - Document started
 - Skeleton complete
 - 10% complete

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- Visualizing Dynamic Data Exploration
- Server Systems / Software
 - Ubuntu Server 16.04
 - Apache 2.4.18
 - Ruby on Rails
 - PostgreSQL
- Development Systems / Software
 - VM with Windows 10 and Office installed
 - IDE's: RubyMine, PyCharm

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- Visualizing Dynamic Data Exploration
- Client Contact
 - Have had 1 conference call with client so far
 - Day/Time of weekly calls still to be set
- Team Meetings
 - 4 team meetings so far
 - Scheduled for Mondays and Wednesdays after class
- Team Organization
 - Trello for project/time management
 - Git for backups/version control

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Visualizing Dynamic Data Exploration Risks

- Sensitive Data Access
 - User will be supplying the web app with potentially sensitive data
 - Mitigation still to be determined
- Ruby on Rails for data manipulation
 - Unfamiliar with Ruby on Rails and debating whether to use another language in conjunction
 - Small prototypes using pure Ruby on Rails and a hybrid approach
- Brining in the Data
 - How to access and manipulate data sets of varying sizes
 - Mitigation still to be determined