

MICHIGAN STATE

UNIVERSITY

08/29: Capstone Overview

The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering
Michigan State University

Fall 2018



*From Students...
...to Professionals*

CSE 498, Collaborative Design

- “The Capstone Experience”
- Instructors
 - Dr. Wayne Dyksen (“Dr. D.”)
 - James Mariani
 - Ryan Johnson
- Class Meetings
MW, 3:00-4:20pm, [1279 Anthony](#)
- [Syllabus](#)
- Web Site
 - capstone.cse.msu.edu
 - Check it often.
- Email
 - Check your email often.
 - Read my email thoroughly and carefully!



Professional Meeting Expectations

- Seated, Ready to Go by 3:00 p.m.
- No...
 - Electronic Devices
 - Hats or Hoods
 - Coats
 - Eating
 - Sleeping
 - “Breaks”

Capstone Overview

➤ Course Logistics

- Client Projects
- Course Logistics (Continued Next Meeting)



Course Goals

[1 of 3]

- Give You Experience In
 - Real World
 - Corporate Setting
- Start Your Transition
 - From Student...
 - ...To Professional



Course Goals

[2 of 3]

- Teams of Students
- Build Significant Software System
 - Design
 - Develop
 - Debug
 - Document
 - Deliver
- For Corporate Clients
- In 15 (Short) Weeks



Course Goals

[3 of 3]

- Build a Significant Software System
- Work in a Team Environment
- Learn New Tools and Environments
- Build and Administer Systems
- Develop Your Communication Skills
- Develop Interview Talking Points
- Learn to Do Stuff on Your Own
- Etc...



Project Deliverables

- Project Plan Document & Presentation
- Alpha Presentation
- Beta Presentation
- Project Software
- Project Video
- Design Day

See [Major Milestones](#).

All-Hands Meetings

Presentations By

- Dr. D.
- TAs
- Teams
 - Status Reports
 - Formal Presentations
 - Project Plan
 - Alpha
 - Beta
 - Project Videos
- Guest Speaker(s)



All-Hands Meetings Agendas

- 08/29: Capstone Overview
- 09/03: (Labor Day, No Meeting)
- 09/05: Project Plan
- 09/10: Team [Status Report Presentations](#)
- 09/12: Risks and Prototypes
- 09/17: Schedule and Teamwork
- 09/19: Resume Writing and Interviewing
- 09/24 : Team [Project Plan Presentations](#)
- 09/26: Team [Project Plan Presentations](#)
- 10/01 Team [Project Plan Presentations](#)
- 10/03: Team [Project Plan Presentations](#)
- 10/08: Creating and Giving Presentations
- 10/10: Team Status Report Presentations
- 10/15: Team [Alpha Presentations](#)
- 10/17: Team [Alpha Presentations](#)
- 10/22 Team [Alpha Presentations](#)
- 10/24: Team [Alpha Presentations](#)
- 10/29: [Design Day](#) and the [Project Videos](#)
- 10/31: Camtasia Demo
- 11/05: Intellectual Property
- 11/07: Ethics and Professionalism
- 11/12: Team [Beta Presentations](#)
- 11/14: Team [Beta Presentations](#)
- 11/19 : Team [Beta Presentations](#)
- 11/21: Team Status Reports
- 11/26: Team [Beta Presentations](#)
- 11/28: Team Status Reports
- 12/03: [Project Videos](#)
- 12/05: [Project Videos](#) and [All Deliverables](#)
- 12/06: [Design Day Setup](#)
- 12/07: [Design Day](#)
- 12/11: [Project Videos](#)



Urban Science Capstone Lab

- [3358EB](#), [3352EB](#), [3340EB](#)
- Door Lock
 - Electronic Keypad
 - Code = #####
 - Do Not Give Out to Other Students
- Systems
 - Up to Four per Team
 - Two 27" iMacs
 - One Dell Rack-Mounted Server (Optional)
 - One Mac Book Pro (Optional)
 - Team 100% Responsible
 - Building
 - Maintaining
 - Securing
 - Backing Up
- Books
- WiFi
 - SSID: CSE498, CSE498 5MHz
 - Key: ????????
- Conference Area
 - Team Meetings
 - Client Conference Calls
 - Google [Conference Calendar](#)
- Appliances
 - Water Cooler/Heater
Nota Bene: The water cooler is not connected to a drain. Do not pour things into it, like rinsing out your water container.
 - Whirlpool Refrigerator
 - Cold Water From Bottled Water
 - Ice From Bottled Water
 - Microwave
 - Keurig Coffee Maker
- Lockable Storage
 - One Drawer Per Team
 - As Needed
 - Assigned by Dr. D. and TAs
 - Obtain Keys from CSE Office



Scheduled Lab Times

- No Formal Lab Sessions
- “Credit” for Scheduled Weekly Meetings
 - Team Meetings
 - Client Conference Calls
 - Triage Meetings with TAs
- Meeting Times TBA With
 - Team
 - Client
 - TAs
- Students must be available to meet in person.
 - Team Meetings
 - Triage Meetings
 - Client Conference Calls



CSE498 Prerequisites

Must Have Successfully Completed

- Tier I Writing Requirement
- CSE335
- CSE410
- Another 400-Level CSE Course Other Than CSE491



Capstone Overview

✓ Course Logistics

➤ Client Projects

• Course Logistics (Continued)



Team / Project Generalities

[1 of 3]

- Clients
 - Vary in Size and Type
 - Client contacts/mentors are “volunteers.”
- Team Contact Person
 - Picked By Team
 - Main Point of Contact for Client

Team / Project Generalities

[2 of 3]

- Project Types
 - All Significant Software Development
 - Vary in Specifics
- Project Level of Difficulty
 - Hard Enough
 - But Not too Hard
- Deliverable
 - To the Client
 - By the Due Date



Team / Project Generalities

[3 of 3]

- Challenges
 - Very Short, Unforgiving Time Line
 - Client Contact
 - Team Dynamics
 - Project Plan (in ~3 Weeks)
 - Entirely New...
 - Languages
 - Environments
 - API's
 - SDK's
 - Processes
 - Protocols
 - Etc.
 - Project Management
 - Etc...



Project Specifics

- Vary
 - Type
 - Current State of Specificity
- Challenge
 - Connect with Client
 - “Nail Down” the Project
 - Hard Enough
 - Not too Hard
 - Avoid Feature Creep
 - Course Feature, Not Bug



Intellectual Property and Non-Disclosure Agreements

- Intellectual Property Agreement
 - You agree to assign ownership of intellectual property that may be created as a result of your project to your client.
 - Copyrightable Program Code
 - Patentable “Ideas”
 - Most clients will require an IP agreement.
- Non-Disclosure Agreement
 - You agree not to disclose client confidential information.
 - Most clients will require an NDA.
- To date...
 - Most code has not gone directly into production.
 - No patents have resulted.
- Use agreements provided by MSU.
- Always Contact Dr. D. Before Signing Anything



Project Teams

- Team Amazon
- Team Aptiv
- Team Auto-Owners
- Team Dow
- Team Ford
- Team Herman Miller
- Team Meijer
- Team Michigan State University
- Team Microsoft
- Team Mozilla
- Team MSUFCU
- Team ProofPoint
- Team Quicken Loans
- Team Spectrum Health
- Team TechSmith
- Team Union Pacific
- Team United Airlines
- Team Urban Science
- Team Volkswagen
- Team Whirlpool



Team Amazon

Project Overview

AVAST: Amazon Video And Shopping Technology

- Functionalities
 - Leverage Growing Internet Video Watching
 - Market Amazon Products in Contextual and Personalized Ways
- Features
 - Identify Items of Interest in Videos Automatically
 - People
 - Places
 - Things
 - Search for Relevant Amazon Products
 - Display Links to Amazon Product Pages
 - Provide Front-End JavaScript Framework
- Technologies
 - Amazon Web Services (AWS)
 - Rekognition / Komprehend
 - API Gateway
 - Lambda
 - Elastic Compute Cloud (EC2)
 - Command Line Interface (CLI)
 - Product Advertising API
 - JavaScript / React or Angular or Vue
 - Restful Web Services



Seattle, Washington
Detroit, Michigan



Team Aptiv

Project Overview

Autonomous Vehicle Fleet Connectivity Apps

- Functionalities
 - Provide Connectivity to Autonomous Vehicle Test Fleet
 - Via Mobile and Web Apps
- Features
 - Enable Scheduling Vehicles for Use
 - Provide Real-Time Access to Vehicle Data (Location, Speed, Current User, Etc.)
 - Handle Various Roles (Drive, Engineer and Manager)
 - Support Web, Android and Apple iOS
 - Integrate Apps Into Existing Aptiv Tool
 - Create Complete Documentation
- Technologies
 - Autonomous Vehicle Technologies
 - Aptiv AMDAS
 - CSS / HTML / PHP / JavaScript
 - Apple iOS / Swift
 - Google Android / Java



Team Auto-Owners

Project Overview

Jeffrey: Virtual Insurance Claim Advisor

- Functionalities
 - Simplify Insurance Claim Submission
 - Use Voice Recognition and Natural Language Processing
- Features
 - Provide Easy-To-Use Voice Interaction
 - Handle Various Roles (Policyholder, Agent, Auto-Owners Associate)
 - Handle Various Claims (Home and Auto)
 - Build
 - Mobile Interface for Policyholders
 - Web Interface for Agents and Auto-Owners Associates
 - Utilize GPS for Detecting Location
 - Enable Uploading of Images and Video
 - Format and Submit to Claim System
 - Send Confirmation Messages
- Technologies
 - Natural Language Processing (NLP)
 - Image and Video Processing
 - Global Positioning System (GPS)
 - CSS / HTML / PHP / JavaScript
 - Apple iOS / Swift
 - Google Android / Java



Auto-Owners
INSURANCE

LIFE • HOME • CAR • BUSINESS
Lansing, Michigan



Team Dow

Project Overview

Assist IT: Mobile IT Help Assistant

- Functionalities
 - Provide IT Assistance to Dow Employees
 - Adjust Dynamically Around Conversation
 - Via Mobile and Web Apps
- Features
 - Provide Natural Language Interface
 - Adjust Content to Maximize Accuracy
 - Apply Machine Learning (ML)
 - Leverage Crowdsourcing
 - Leverage Dow's Existing Knowledge Base
 - Scale to 80,000 Employees Worldwide
 - Support Web, Google Android and Apple iOS
- Technologies
 - Microsoft Azure
 - Language Understanding Intelligence Service (LUIS)
 - Machine Learning Services (ML)
 - Voice Assistants
 - CSS / HTML / PHP / JavaScript
 - Apple iOS / Swift
 - Google Android / Java



Team Ford

Project Overview

Ford Customer App Review Dashboard

- Functionalities
 - Summarize Customer Reviews of Ford Apps
 - Generate Sentiment Analysis Dashboard
- Features
 - Fetch Reviews from Google Play Store and iTunes
 - Categorize Reviews Using Sentiment Analysis (From Very Negative to Very Positive)
 - Visualize Sentiment Analysis via Dashboard
 - Cascade Review Summaries to Slack Channel
 - Provide Administrative Portal
 - Create Full Stack of Microservices
- Technologies
 - Java / Spring Framework
 - Python Natural Language Toolkit
 - Slack
 - HTML5
 - RESTful Web Services



Dearborn, Michigan



Team Herman Miller

Project Overview

Material Normalization Using Computer Vision

- Functionalities
 - Simplify Office Furniture Ordering
 - Standardize (Normalize) Order Material Data
 - Reduce Customer Requests
 - Offer Alternative Recommendations
- Features
 - Ingest New Materials Requests From Customer Orders
 - Apply Computer Vision
 - Inspect
 - Categorize
 - Tag
 - Approve Or Decline
 - Recommend Nearest Approved Alternative When Declined
 - Support Various Herman Miller Systems via Open Framework
 - Be Trainable, Scalable and Flexible
- Technologies
 - Machine Learning / Deep Learning
 - Python
 - TensorFlow (Image Recognition)



HermanMiller
Zeeland, Michigan



Team Meijer

Project Overview

Meijer Shrink Reduction Using Blockchain

- Functionalities
 - Reduce Product Waste and Loss
 - Track and Control High Waste and Loss Items
- Features
 - Capture Essential Product Data
 - Select and Implement Tracking Mechanism
 - Establish Trigger/Alert Mechanisms
 - Ensure Proper Movement of Products
 - Get Close-Dated Products For Sale Quickly
 - Identify Recalled Products
 - Store Data in Blockchain
- Technologies
 - Microsoft
 - .NET Framework (C#, ASP.NET)
 - Azure
 - ❖ Notification Services
 - ❖ Mobile Services (Both iOS and Windows)
 - Application Insights
 - Visual Studio Team Server
 - Microsoft Azure or IBM Blockchain Tools
 - Meijer Web Services
 - Bluebird Android Devices
 - SQL Server / MongoDB



meijer[®]

Grand Rapids, Michigan

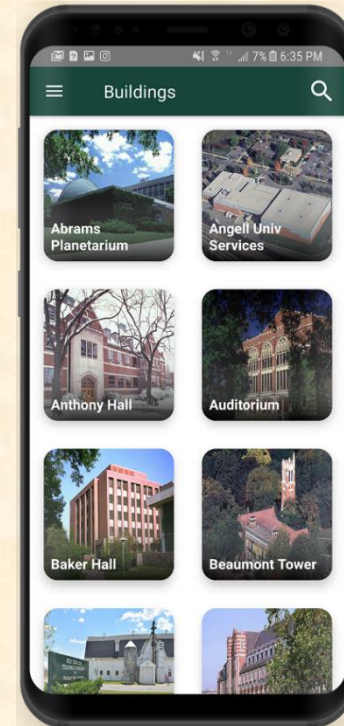


Team Michigan State University

Project Overview

Navigating MSU's Campus Using Augmented Reality

- Functionalities
 - Provide Assistance Navigating MSU's Campus
 - Leverage Augmented Reality (AR) on Mobile Devices
- Features
 - Use Mobile Device Camera
 - Overlay Information About Surroundings
 - Building Name (Engineering, Wilson Hall)
 - Points-of-Interest (Sparty, The Rock)
 - Provide 3D Wayfinding Instructions
 - Give Self-Guided Tours
 - Utilize MSU's Campus ArcGIS Instance
 - Support Google Android and Apple iOS
- Technologies
 - Apple iOS / Swift / ARKit
 - Google Android / Kotlin / ARCore
 - ArcGIS



Information Technology Services
East Lansing, Michigan

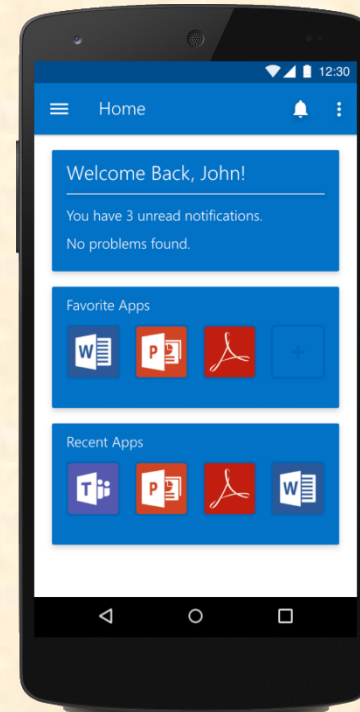


Team Microsoft

Project Overview

ITPro Company Portal

- Functionalities
 - Expand Functionality of Microsoft's Intune Portal
 - Enable IT Professionals (ITPros) to Use Intune
 - Directly
 - From Mobile Devices
- Features
 - Extend Fall 2017 Capstone Project
 - Get/Set InTune Settings by ITPros
 - Leverage Microsoft Graph
 - Apply Google Jetpack Standards
 - Scale to Support Millions of Users Worldwide
- Technologies
 - Microsoft Graph
 - Google Android
 - Java
 - RESTful Web Services



Team Mozilla

Project Overview

Asynchronize All the (Localization) Things!

- Functionalities
 - Present Messages to Firefox Users (e.g. “You are about to close 10 tabs.”)
 - “Localize” Messages to Support
 - Multiple Operating Systems
 - 98 Languages
 - Hundreds of Millions of Users Worldwide
- Features
 - Integrate into Single Firefox Download
 - Eliminate Need for Special Builds of Firefox
 - Support Restartless “Localization” (Restartless Language Switching)
 - Convert Synchronous Code to Asynchronous Code
 - Leverage Mozilla’s New Fluent System
 - Deliver Code Ready to Ship with Firefox
- Technologies
 - Firefox Code Base (~ 51M Lines)
 - CSS
 - C++ / JavaScript
 - XUL / XBL / HTML
 - Fluent
 - Document Type Definition (DTD)
 - Mercurial
 - IRCCloud
 - Bugzilla
 - Phabricator
 - Microsoft Windows, Apple macOS and Linux



Nota Bene:

- Team members are required to meet with the project sponsors for all day meetings on September 15 & 16.
- Team Members must agree to Open Source licensing.



Mountain View, California

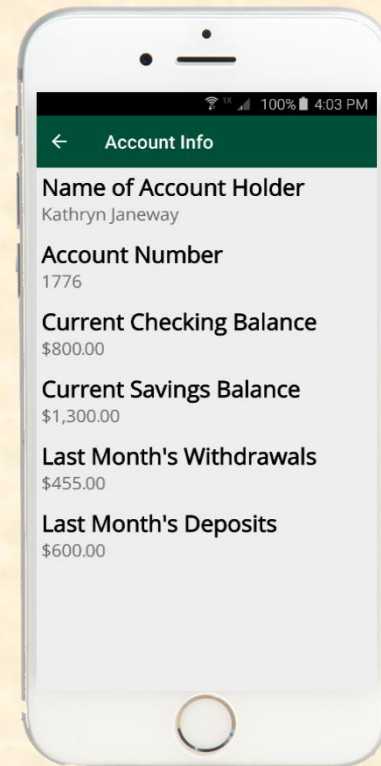


Team MSUFCU

Project Overview

Transaction Anomaly Detection

- Functionalities
 - Visualize MSUFCU Members' Spending Habits
 - Send Alerts About Unusual Account Activity
- Features
 - Identify Member Account Anomalies
 - Apply User-Created and MSUFCU-Created Rules
 - Leverage Machine Learning and Data Science
 - Send Alerts Via SMS, Push Notifications or Email
 - Build Card-Based Member-Facing Module
 - Support Web, Google Android and Apple iOS
 - Integrate with MSUFCU's Existing Systems
 - Apply Anti Money Laundering (AML) Rules
 - Provide Companion Administrative Web Portal
- Technologies
 - CSS / HTML / PHP / JavaScript
 - JSON
 - Apple iOS / Swift
 - Google Android / Java
 - SQL Database



East Lansing, Michigan

Team Proofpoint

Project Overview

Improved Detonation of Evasive Malware

- Functionalities
 - Protect Users from Malware Threats
 - Counter Evasive Malware Techniques
- Features
 - Enhance Existing Malware Technologies
 - Identify and Block Malware Evasive Behavior
 - Modify Malware Execution
 - Extract Valuable Attributes
- Technologies
 - Cuckoo (Malware Sandboxing)
 - Suricata (Intrusion Detection System)
 - Operating Systems and Compilers
 - Reverse Engineering
 - Python / JavaScript
 - MySQL



proofpoint™
Sunnyvale, California

Team Quicken Loans

Project Overview

Walter, You Gotta Go

- Functionalities
 - Integrate Legacy Apps With Modern Versions
 - Automate Legacy Apps Processes With Virtual Worker
- Features
 - Leverage Robotic Process Automation
 - Screen Scraping
 - Machine Learning / Artificial Intelligence
 - Create “Legacy” App (Walter)
 - Used for Loan Application Process
 - Receives Information and Documents
 - Write Modern Replacement App (Lindsey)
 - Implement Centralized Database (Leroy)
 - Provide Web Service (Roger)
 - Create Virtual RPA Worker (Debra)
- Technologies
 - Robotic Process Automation (RPA)
 - Microsoft
 - Azure / Azure SQL
 - C# / Visual Studio
 - .NET WinForms
 - ASP .NET Core
 - GraphQL
 - CSS / HTML / PHP / JavaScript



Walter



Lindsey



Debra



Roger



Leroy

Quicken Loans®
Engineered to **Amaze**[®]
Detroit, Michigan



Team Spectrum Health

Project Overview

Spectrum Health Virtual Reality Experience

- Functionalities
 - Visualize and Annotate Spectrum Health Facilities
 - Answer Questions for Patients and Family Members
 - Use Virtual Reality (VR)
- Features
 - Build Web-Based Virtual Reality App
 - View 360-Degree Media Using VR Googles
 - Provide Explanations via Annotations
 - Cafeterias
 - Visitor Elevators
 - Aspects of a Hospital Room
 - Tools in a Procedure Room
 - Configure Media Based on User Interaction
 - Provide Companion Administrative Web Portal
- Technologies
 - CSS / HTML / PHP / JavaScript
 - A-Frame
 - ASP.NET Core (C#)
 - Entity Framework Core
 - Microsoft Azure
 - Microsoft SQL Server



SPECTRUM HEALTH 

Grand Rapids, Michigan

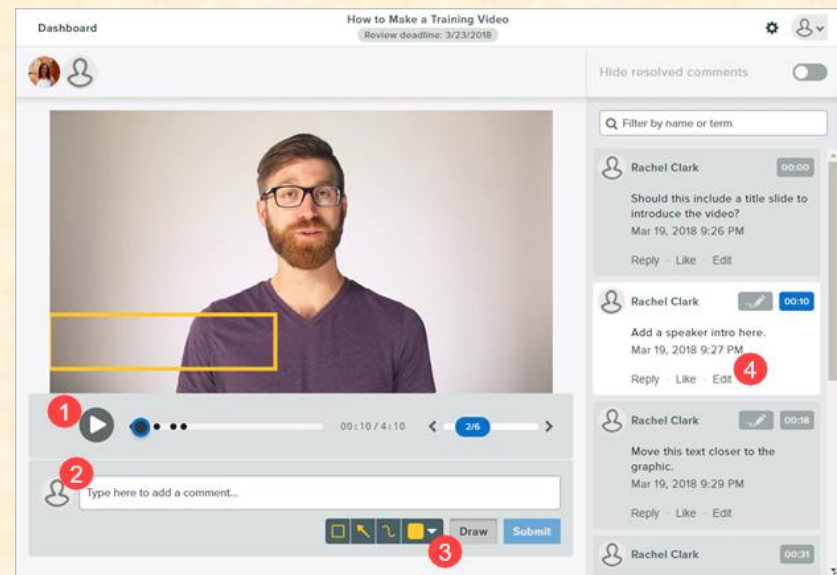


Team TechSmith

Project Overview

TechSmith Video Review and Slack Integration

- Functionalities
 - Connect Video Authors with Video Reviewers
 - Use Team Messaging Systems
- Features
 - Integrate TechSmith's Video Review with Slack
 - Provide Interface for Video Author
 - Receive Notification of New Slack Comments
 - Read Slack Comments on Video Review Site
 - Manage Reviews
 - ❖ See Existing Reviews
 - ❖ Create New Reviews
 - ❖ Assign New Slack Users to Reviews
 - Provide Interface for Video Reviewer
 - See Existing Reviews
 - Launch Video Review Site
 - Playback Video with Slack Interface
 - Provide Annotation within Slack
 - Support Other Team Messaging Systems
- Technologies
 - CSS / HTML / PHP / JavaScript
 - TechSmith Video Review API Proxy
 - Microsoft C#/.Net Core
 - Slack App / Slack SDK
 - RESTful Web Services Using Swagger



Team Union Pacific

Project Overview

Augmented Reality Mechanic Training

- Functionalities
 - Train Union Pacific Mechanics Safely
 - Use Augmented Reality (AR)
- Features
 - Show Holographic Images of Railroad Equipment
 - Demonstrate Standard Repair Operations
 - “Match” Holograms with Physical Objects
 - Use Microsoft Hololens
 - Generate Accurate Holograms from CAD Data
- Technologies
 - Microsoft Hololens
 - Unity Game Engine
 - PiXYZ Plugin
 - Vuforia Plugin



BUILDING AMERICA®

Omaha, Nebraska
Okemos, Michigan



Team United Airlines

Project Overview

Tooling Kit Content Verification System

- Functionalities
 - Verify Aircraft Tooling Kit Contents
 - Use Mobile Device Camera
- Features
 - Build Database of Complete Kits
 - List of Contents
 - Images of Contents
 - Barcodes and RFID Tags
 - Support Mobile Device Cameras
 - Apply Computer Vision
 - Compare Image Taken to Image Stored
 - Determine Kit Completeness
 - Send Notifications
 - Incomplete Kits
 - Missing Tools
 - Provide Companion Administrative Web Portal
- Technologies
 - Computer Vision
 - CSS / HTML / PHP / JavaScript
 - Apple iOS / Swift
 - Google Android / Java
 - SQL Database

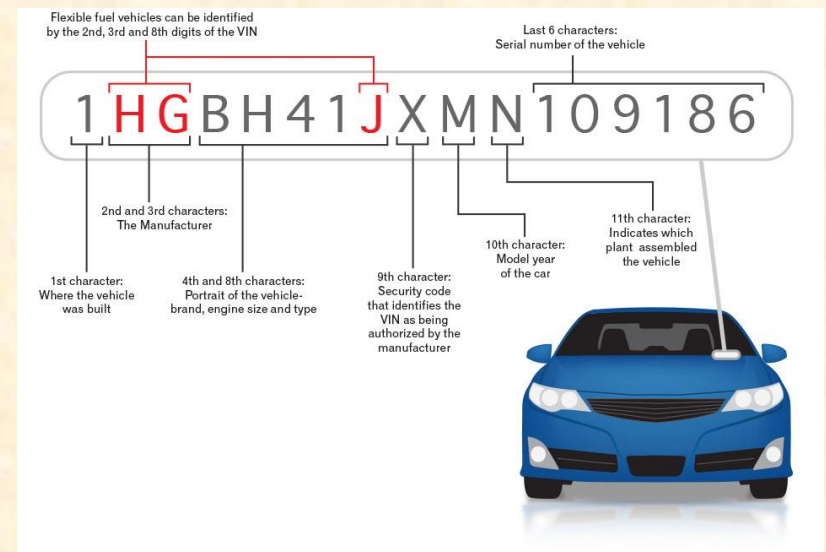


Team Urban Science

Project Overview

VIN-Verse

- Functionalities
 - Display Information About Specific Vehicle Identification Number (VIN)
 - Aggregate Data About a Class of VINs
- Features
 - Provide Web and Mobile Apps
 - Enter VIN Using Keyboard or Mobile Device Camera
 - Give Detailed History of VIN's Life
 - Build Real-Time Authorization Mechanisms
 - Dealers
 - Independent Repair Facilities (IRFs)
 - Owners
 - Protect Vehicle Owner's Privacy
 - Crawl Google Reviews or Yelp
- Technologies
 - CSS / HTML / PHP / JavaScript
 - Angular JS
 - Microsoft
 - C# / ASP.NET Core
 - SQL Server
 - Apple iOS / Swift
 - Google Android / Java
 - Firebase



URBAN SCIENCE.

Detroit, Michigan



Team Volkswagen

Project Overview

VW Car-Net Demo App

- Functionalities
 - Change the Habits of Car Dealers
 - Communicate the Value of Car-Net
- Features
 - Target VW Dealers and Customers
 - Create Car-Net Demo / Guided Tour
 - Be Easy and Fun to Use
 - Demonstrate End-to-End User Experience
 - Support Google Android and Apple iOS
 - Support Integration of Video and Product Content
- Technologies
 - Car-Net
 - Apple iOS / Swift
 - AVAudioSession and AVPlayer
 - URLSession and Codable
 - NSNotifications
 - Google Android / Java or Kotlin
 - MediaPlayer and MediaController
 - OKHttp and Retrofit
 - Event Bus



Auburn Hills, Michigan

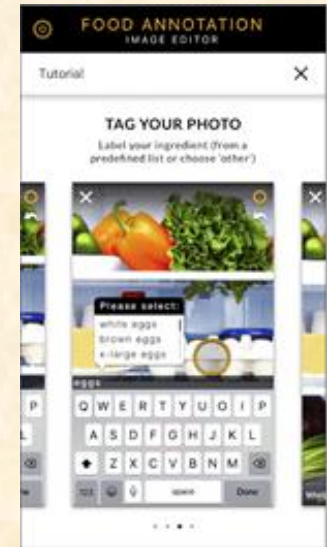


Team Whirlpool

Project Overview

Image Recognition Annotation and Validation

- Functionalities
 - Annotate and Validate Images of Recipe Ingredients
 - Apply Crowdsourcing and Gamification
 - Target Whirlpool's Yummly App
- Features
 - Ingest and Annotate Images
 - Via Mobile Apps
 - Validate Annotations as Actual Ingredients
 - Identify Bounding Boxes
 - Detect and Report Poor Lighting
 - Create Image Validation Game
 - Via Mobile Apps
 - Validate Annotations via Crowdsourcing
 - Track User Participation and Accuracy
 - Create Variety of User Experiences
 - Show Leaderboard
 - Support Google Android and Apple iOS
 - Provide Companion Administrative Dashboard
- Technologies
 - CSS / HTML / PHP / JavaScript
 - Apple iOS / Swift
 - Google Android / Java
 - TensorFlow (Image Recognition)
 - Amazon S3 or Google Cloud Datastore



Benton Harbor, Michigan



Google Form

- www.capstone.cse.msu.edu
- + Other Links
- > Downloads
- > Team Member Survey: Google Form



First Assignments

- Read the Syllabus.
- Check out the Lab (3358EB, 3352EB, 3340EB).
 - See if you can find it.
 - See if you can get in.
- Check out the Web Site.
- Research your Project.
 - Sponsor
 - Technologies



What's Next?

- Teams
 - Assignments by Email Tonight
 - Meet Initially by Tomorrow Afternoon
 - Lab Machine Assignments in Lab
 - Start Researching Technologies
 - Start Configuring Lab Machines
 - Team Photos
 - After All-Hands Meeting
 - ❖ W 09/05: Teams Amazon – Mozilla
 - ❖ M 09/10: Teams MSUFCU– Whirlpool
 - Dress Casual (But Appropriate)
 - Schedule for it.
- Client
 - Contact by Email by Tomorrow COB (Close of Business)
 - Conference Call or On-Site Meeting by Friday
 - Review Project Proposal



Capstone Overview

✓ Course Logistics

✓ Client Projects

➤ **Course Logistics (Continued)**



Urban Science Capstone Lab Machines

- Up to Four per Team
 - Two 27" iMacs
 - Dell Rack-Mounted Server (Optional)
 - Connected to Outside World
 - Keep Secure
 - Mac Book Pro (Optional)
- Operating Systems on iMacs and MBPs
 - Run macOS High Sierra
 - Install VMware Fusion (from [here](#))
 - Create Virtual Machines
 - Windows 10 VM from TAs
 - Allocate Sufficient Cores and Memory
 - Others as Needed
 - Don't use Apple Boot Camp



Capstone Lab Miscellany

[1 of 2]

- Security
 - Keep lab doors closed.
 - Do not open doors for strangers
 - Do not give out door key code to others.
 - Do not invite non-capstone students to work in the lab with you.
 - Email Dr. D. if door becomes unlocked.
- Wireless
 - SSID: CSE498
 - Key: ???????
 - Only for Mobile Devices Requiring Lab Subnet
- Coffee
 - Some Provided by Dr. D.
 - Bed, Bath & Beyond (Get 20% Off Coupon)
- Game Playing / Video Watching
 - Not On Monitors Facing Hallway
 - Not If Other Team Members Need Machine



Capstone Lab Miscellany

[2 of 2]

- Do not “maniac” the wires and cables.
- Keep the lab neat and clean.
 - Lived In, Okay.
 - Messy, Not Okay.
- Respect...
 - ...other teams’ spaces.
 - ...shared spaces.
- Garbage Containers
 - Empty the small one by the coffee maker into a larger one.
 - Put larger ones out in the hall at night if near full.
 - Put back in the lab in the morning if empty.
- Turn the lights out if you’re the last one out.
- Close the windows if you open them.
- Be careful with cabinet drawers; don’t “maniac” them.



Mobile Devices Available

- For Capstone Project Use
- By Team for the Semester
- iOS
 - iPads
 - iPhones
 - iTouch
- Android
 - Tablet
 - Phone
- Surface Pro 3



Expectations & Workload

- Extremely High For Both
- Your MSU Career Capstone
- Addition to Your Personal Portfolio
- Experience Viewed Like an Internship
- Interview Talking Points
- Leverage Into a Job Offer



Schedules

- Schedules > All-Hands Meeting

- Schedules > Major Milestones

- 09/17: Status Report Presentations
- 09/24: Project Plan Presentations
- 10/15: Alpha Presentations
- 11/12: Beta Presentations
- 12/03: Project Videos
- 12/05: All Deliverables
- 12/06: Design Day Setup
- 12/07: Design Day
- 12/11: Project Videos

- Attendance is required.
- No excuses are accepted.
- Do not schedule anything including during these times interviews, travel home, etc.
- Will coordinate with your interviews.



Meeting Attendance

- Required
 - All-Hands (Class) Meetings
 - Team Triage Meetings
 - Team Meetings
 - Team Conference Call Meetings
 - 5% of Final Grade
 - Late == Absent
 - 1% of Final Grade for Each Unexcused Absence
 - Attendance Grade Can Be Negative (See Syllabus)
 - If > 5 Absences Team Contribution Grade Will Be Affected
 - Almost No Excuses Accepted
 - One or Two Excused Possible for Interviews
 - Must Provide Information
 - Date, Company, Recruiter Name & Contact Info
 - In Advance
 - To Both Dr. D. and TAs
 - Must Attend (No Excuses Accepted)
 - Your Team Presentations
 - All Project Video Viewing
 - Design Day
- Do NOT schedule interviews.
Do NOT schedule ANYTHING.
Do NOT buy plane tickets.



Team Organization

- Up to Each Team
- Organize into Roles
 - Client Contact
 - Program Manager
 - Developer
 - Tester
 - Systems Administrator
 - Etc...
- Everyone must make technical contributions.



Team Dynamics

- Key to Success
- Significant Component of Course Grade
- Address Problems Immediately
 - Within Team
 - With Dr. D. and/or TAs
- Be Ready to Discuss During Interviews



Grading

[1 of 5]

- Team (70%)
 - Project Plan Document & Presentation 10
 - Alpha Presentation 10
 - Beta Presentation 10
 - Project Video 10
 - Project Software & Documentation 25
 - Design Day 05
 - Total 70
- Individual (30%)
 - Technical Contribution 10
 - Team Contribution 10
 - Team Evaluation 05
 - Meeting Attendance 05
 - Total 30



Grading

[2 of 5]

- Final Grade Sum Of...
 - Individual Total
 - % of Team Total Based on Team Contribution
- Grand Total =
(Individual Total)
+
(Team Total) * (Team Contribution) / 10.0
- *Nota Bene*: Your Team Contribution will have a very significant effect on your final grade.



Grading

[3 of 5]

Effect of Team Contribution					
Technical Contribution	Team Contribution	Team Evaluation	Meeting Attendance	Team Total	Grand Total
10	10	5	5	70	100
10	9	5	5	70	92
10	8	5	5	70	84
10	7	5	5	70	76
10	6	5	5	70	68
10	5	5	5	70	60
10	4	5	5	70	52
10	3	5	5	70	44
10	2	5	5	70	36
10	1	5	5	70	28
10	0	5	5	70	20

Nota Bene: Assumes Perfect Score In Every Other Category



Unacceptable Excuses for Not Contributing

- They never asked me to do anything.
- They never let me do anything.
- I wrote 1000's of lines of code but they weren't included in the project.
- My features were not included in the project.
- I work 40 hours per week at my job.
- I live 60 minutes from MSU.
- I didn't want to work on this project team.
- I ranked this project 20 out of 20.
- I did a lot of research about stuff we never used.
- I was busy interviewing.
- Etc...



Grading

[5 of 5]

- We reserve the right to make changes with sufficient notice.
- No special consideration will be given for final grades including but not limited to
 - status in any academic program including CSE,
 - financial aid,
 - rank in the armed forces,
 - job while a student at MSU,
 - job after anticipated graduation from MSU,
 - commute to MSU,
 - graduation,
 - mortgage,
 - wedding,
 - visa status,
 - ability to enroll in CSE498 next semester,
 - or anything else.



Integrity of Scholarship

- MSU's policies will be enforced.
- Individual and team work must be original.
- Violators...
 - ...will be referred to the appropriate deans.
 - ...may receive a grade of F in the course.



Using Resources

- Ok For “Help”
 - People
 - Past Capstone Teams
 - Other Capstone Teams
 - Faculty Members
 - Articles
 - Sample Code
 - Etc...
- Not Ok For “Entire” Project
- If Unsure, Ask Dr. D. and/or TAs



Using Existing Code

- Ok
 - Examples
 - Prototypes
 - Open Source Code
 - Fragments
 - Libraries
 - Utilities
- Not Ok
 - Vast Amounts of Your Project
 - Not Open Source
- Ask Client in Advance
- Document and Report All Existing Code Used
- Be Careful!
- If Unsure, Ask Dr. D. and/or TAs and/or Your Client



Design Day

- College of Engineering Event
 - Engineering Building
 - Friday, December 7, 2018
- Displays (Booths) of Design Projects
 - CSE Capstone
 - ECE Capstone
 - ME Capstone
 - Etc...
- Presentations and Awards
 - Panel of Judges
 - CSE Team Project Videos



Travel to Client

- Reimburse for Mileage for Personal Car
- Travel Within Michigan (Outside of Lansing)
 - Grand Rapids
 - Midland
 - St. Joseph
 - Metro Detroit
- From East Lansing to Client and Back
- One Car Per Team Per Trip
- See Brenda in the CSE office in advance.



VISA

- Verified Individualized Services and Accommodations
- Let us know immediately.
- We will work with you.

Office Hours

- Any Time...
 - Visit: 3149 EB
 - Call: 353-5573
 - Email: (dyksen@msu.edu)
- Make Appointment

Capstone Overview

✓ Course Logistics

✓ Client Projects

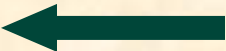
Questions?

✓ Course Logistics (Continued)



What's ahead?

[1 of 3]

- Team Photos
 - Informal
 - After Meeting Today: Teams Amazon through Mozilla
 - After Meeting Monday: Teams MSUFCU through Whirlpool
 - Formal
 - After Each Project Plan Presentation
 - Dress code for presenting teams is business casual.
 - Setup
 - Team Machines
 - Dell Server If Needed (Ask TAs)
 - Apple iMacs (with Windows 10 VM)
 - Team Software
 - Microsoft Office
 - ❖ Word and PowerPoint
 - ❖ Microsoft Windows Version
 - Web Server
 - Code Repository
 - SDK's
 - Etc.
- Required.
Use Windows 10 VM.
- 



What's ahead?

[2 of 3]

All-Hands Meetings

- ~~08/29: Capstone Overview~~
- ~~09/05: Capstone Overview~~

Project Plan

Team Photos: Teams Amazon – Mozilla

- 09/10: Risks and Prototypes
Team Photos: Teams MSUFCU- Whirlpool
- 09/12: Team Status Report Presentations
- 09/17: Resume Writing and Interviewing
- 09/19: Schedule and Teamwork
- 09/24: Team Project Plan Presentations
- 09/26: Team Project Plan Presentations
- 10/01: Team Project Plan Presentations
- 10/03: Team Project Plan Presentations



What's ahead?

[3 of 3]

- Team Status Report Presentations
 - PowerPoint Template
 - Due 12:01 a.m., Wednesday, September 12
(Think Tuesday night.)
 - < One Week ← Get on it now!
 - Email to Dr. D.
 - Subject: Team <Company Name>: Status Report Presentation
Subject: Team Auto-Owners: Status Report Presentation
 - Attachment: team-<company-name>-status-report-presentation.ppt
Attachment: team-urban-science-status-report-presentation.ppt
- Dr. D. Will Combine Into Single PowerPoint
 - To Speed Things Up During Meeting
 - Do NOT Modify Master Slide
 - Must Use Windows Version of Microsoft Office
- Each Team Presents
 - Using Dr. D.'s Laptop
 - At Most 3.5 Minutes (Rehearse Timing)
 - Single or Multiple Presenters (Your Choice)

