MICHIGAN STATE UNIVERSITY

08/27,08/29: Capstone Overview

The Capstone Experience

Dr. Wayne Dyksen
James Mariani

Department of Computer Science and Engineering
Michigan State University

Fall 2024

From Students…
…to Professionals

CSE498, Collaborative Design

- "The Capstone Experience"
- Professors
  - Dr. Wayne Dyksen ("Dr. D.")
  - Prof. James Mariani
- Team Managers (TMs)
  - Samantha (Sam) Kissel
  - Griffin Klevering
  - Luke Sperling
- Class Meetings
  - Tu, Thu 3:00 – 4:20 p.m. Eastern Time
  - All-Hands:
    - 1130 STEM
    - Microsoft Teams General Channel
  - Split-Hands:
    - Sam: 1130 STEM
    - Griffin: 1281 Anthony Hall
    - Luke: 115 International Center
- Website
  - capstone.cse.msu.edu
  - Check it often.
- Syllabus
  - www.capstone.cse.msu.edu/other-links/syllabus
  - Read it thoroughly and carefully.
- Email
  - Check your email often.
  - Read your email immediately, thoroughly and carefully.

Meeting Goals for 08/27 and 08/29

- 08/27
  - Introduction to Capstone Logistics
  - Overview of Projects
  - Team Member Survey
- 08/29
  - Capstone Logistics
  - What's ahead?

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
- Start Your Transition
  - From… “Make one of these.” –CSE Professor
  - …To “Solve my problem.” –Customer/Client

Course Goals

[2 of 3]

- Teams of 5-6 Students
- Build Significant Software System
  - Design
  - Develop
  - Debug
  - Document
  - Deliver
- For Project Sponsor / Client
  (Note: We'll use "project sponsor" and "client" interchangeably.)
- In 14 (Short) Weeks

Course Goals

[3 of 3]

- Build a significant software system for a customer.
- Gather requirements.
- Work in a team environment.
- Learn new tools and environments.
- Build and administer systems.
- Develop communication skills.
- Develop interview talking points.
- Learn to do stuff on your own.
- Etc…

Professional Meeting Expectations

- Starts at 3:00 p.m. ET (Eastern Time) Promptly
- Meeting Ready
  - In Person: Seated
  - Microsoft Teams: Joined
  - Ready to Go
  - Looking Professional
- Not Meeting Ready Include But Not Limited To…
  - Entering a Room
  - Walking to a Seat
  - Being in the Process of Sitting Down
  - Joining a Meeting
- No…
  - Other Electronic Devices
    - Phones
    - Laptops
    - Etc.
  - Hats or Hoods
  - Coats
  - Eating
  - Sleeping
  - “Breaks”

Project Deliverables

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

See Major Milestones.

All-Hands/Split-Hands Meetings

- All-hands
  - Dr. D.
  - James Mariani
  - Luke Sperling
  - Guest Speaker(s)
- Split-Hands
  - Team Status Reports
  - Team Formal Presentations (30% of Final Grade)
  - Team Project Videos

Weekly Schedule

- 08/27, Tu: Capstone Overview 1
- 08/29, Th: Capstone Overview 2
- 09/03, Tu: Risks and Prototypes
- 09/05, Th: Project Plan
- 09/10, Tu: Team Status Report Presentations
- 09/12, Th: Schedule and Teamwork
- 09/17, Tu: Team Project Plan Presentations
- 09/19, Th: Team Project Plan Presentations
- 09/20, Fr: Team Photos (9:00 a.m. – 5:00 p.m.)
- 09/24, Tu: Team Project Plan Presentations
- 09/26, Th: Design Day Booklet Process
- 10/01, Tu: Creating and Giving Presentations
- 10/03, Th: Resume Writing and Interviewing
- 10/08, Th: Intellectual Property
- 10/10, Th: Team Alpha Presentations
- 10/15, Tu: Team Alpha Presentations
- 10/17, Tu: Team Alpha Presentations
- 10/22, Tu: October Break
- 10/24, Th: Design Day and the Project Videos
- 10/29, Tu: Ethics and Professionalism
- 10/31, Th: Team Status Report Presentations
- 11/05, Tu: Team Status Report Presentations
- 11/07, Th: Team Status Report Presentations
- 11/12, Tu: Team Status Report Presentations
- 11/14, Th: Team Beta Presentations
- 11/19, Tu: Team Beta Presentations
- 11/21, Th: Team Beta Presentations
- 11/26, Tu: Team Status Report Presentations
- 11/28, Th: Thanksgiving
- 12/01, Su: Project Videos Due
- 12/03, Tu: Project Videos
- 12/04, We: All Deliverables Due
- 12/05, Th: Project Videos
- 12/05, Th: Design Day Setup (12:30 p.m. – 3:00 p.m.)
- 12/06, Fr: Design Day
- 12/08, We: Capstone Wrap Up (10:00 a.m. – 12:00 p.m.)

The Capstone Labs

[1 of 2]

- 3340EB, 3352EB, 3358EB
- Door Lock
  - Electronic Keypad
  - Code = #########
  - Do Not Give Out to Other Students
- Systems
  - Up to Three per Team
    - Two 27” iMacs
    - One Dell Rack-Mounted Server (Optional)
  - Team 100% Responsible
    - Building
    - Maintaining
    - Securing
    - Backing Up
- WiFi
  - SSID: CSE498, CSE498 5MHz
  - Key: ???????
- 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
  - At Most One Drawer Per Team
  - Only As Needed
  - Assigned by Instructors
  - Obtain Keys from CSE Office

The Capstone Labs

[2 of 2]

- 3340EB, 3352EB, 3358EB
- In-Person Access
  - Sanitizing Wipes
    - Keyboard and Mouse
    - Desktop
    - Before and After Use
  - Hand Sanitizer
- Remote Access
  Instructions will be emailed.

Scheduled Lab Times

- No Formal Lab Sessions
- “Credit” for Scheduled Weekly Meetings
  - Team Meetings
  - Client Conference Calls
  - Triage Meetings with TMs
- Meeting Times TBA With
  - Team
  - Client
  - TMs
- Students must be available to meet in person.
  - Team Meetings
  - Triage Meetings
  - Client Conference Calls
- Schedule Accommodations
  - Made For Reasonable Requests for Class and Work Schedules
  - Not Made For
    - Travel, Even Approved Travel
    - Working Unreasonable Number of Hours
    - Commuting Distance to Campus

CSE498 Prerequisites

- Must Have Successfully Completed In Advance
  - CSE300
  - CSE325
  - CSE335
  - At Least Two CSE Technical 400-Level Courses Chosen From CSE402, CSE404, CSE410, CSE415, CSE420, CSE422, CSE425, CSE431, CSE434, CSE435, CSE440, CSE450, CSE460, CSE471, CSE472, CSE476, CSE477, CSE480, and CSE482
  - Tier I Writing Requirement (WRA 101 or WRA 195H)
- Ability to Read Email
  - Immediately
  - Carefully
  - Completely

Capstone Overview

✓Course Logistics

➢Client Projects

- Course Logistics (Continued)

Team / Project Generalities [1 of 3]

- Clients
  - Vary in Size and Type
  - Sponsor/client contacts 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 Timeline
  - Client Contact
  - Team Dynamics
  - Project Plan (in ~3 Weeks)
  - Entirely New…
    - Languages
    - Environments
    - API's
    - SDK's
    - Processes
    - Protocols
    - Hardware
    - 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
  - Course Feature, Not Bug
- Must Be Approved by Instructors

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 to clients. See Downloads.
- Contact Dr. D. or James For Questions.
- Not Willing to Sign Affects Project Choice

Project Teams

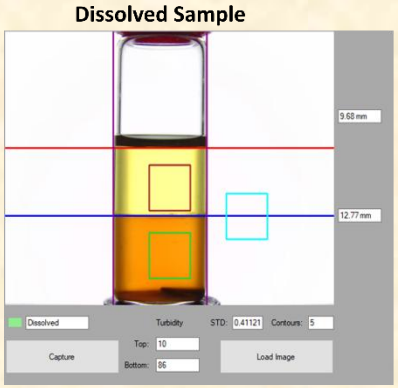
1. AbbVie
2. Ally
3. Amazon
4. Anthropocene Institute
5. Auto-Owners
6. DRIVEN-4
7. GM RIS
8. GM WHMS
9. HAP
10. Henry Ford Innovations RSE
11. Henry Ford Innovations RSVP
12. Kohl's
13. Launch
14. Magna MADO
15. Magna TDD4ES
16. Magna VNNG
17. Magna WFG4ADAS
18. Meijer
19. Michigan State University CSE
20. MSUFCU
21. Roosevelt Innovations Knowledge Science
22. RPM
23. Stryker IST
24. TechSmith
25. Union Pacific
26. Urban Science
27. Vectra AI
28. Volkswagen
29. Whirlpool
30. WK Kellogg Co

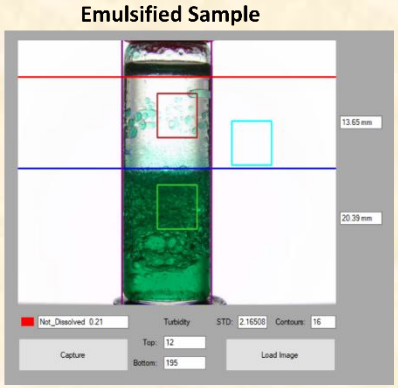
Team AbbVie

Project Overview

Image Analysis Tool for Biphasic Solutions

- Functionalities
  - Make Solvent Development Easier
  - By Making Sample Testing Faster
  - Utilizing Machine Learning Tactics
- Features
  - Design a Machine Learning Model that Will:
    - Detect Vials Within an Image
    - Detect and Save Key Metadata
    - Identify Key Solution Features
  - Visualize Results
  - Design Secure User Authentication
  - Develop a Model Retraining Mechanism
- Technologies
  - Visual Studio
  - OpenCV





abbvie

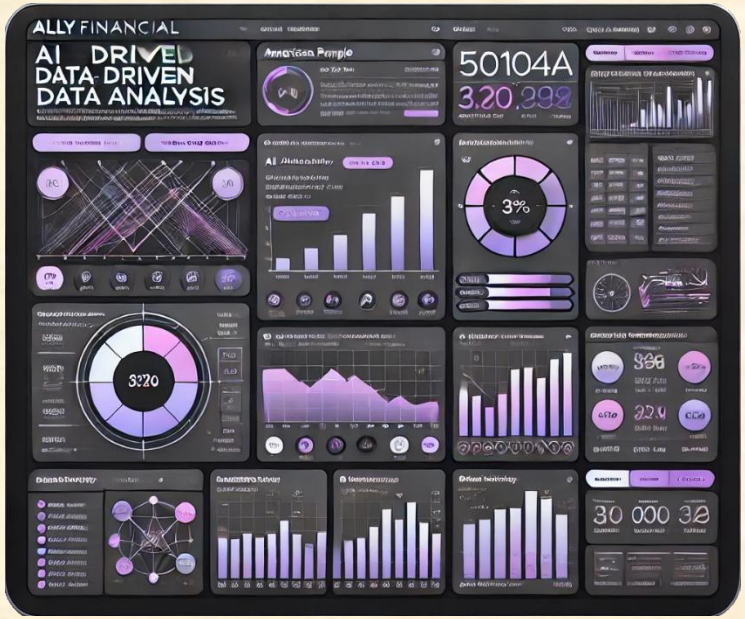
North Chicago, Illinois

Team Ally

Project Overview

Agentic Collaborator

- Functionalities
  - Increase Productivity
  - Through an All-In-One Web App
  - And AI Driven Data Analysis
- Features
  - Train a Custom Machine Learning Model
  - Analyze Data for Insights
  - Display and Visualize Data Trends
  - Generate Reports
  - Connect Employees
- Technologies
  - Python
  - Lagchain
  - React
  - Postgres



Detroit, Michigan
Charlotte, North Carolina

Team Amazon

Project Overview

Remediating AWS Security Gaps Using Generative AI

- Functionalities
  - Increasee AWS Safety
  - By Locating and Analyzing Security Gaps
  - Utilizing Machine Learning Strategies
- Features
  - Identify Security Gaps
  - Prioritize and Analyze Security Gaps
  - Give Insight on Gap Remediation
  - Design an Easy-To-Use Webapp
- Technologies
  - AWS Cloud Platforms
  - DynamoDB
  - Self-Service Security Assessment Tool
  - Machine Learning (ML)
  - Amazon QuickSight

amazon

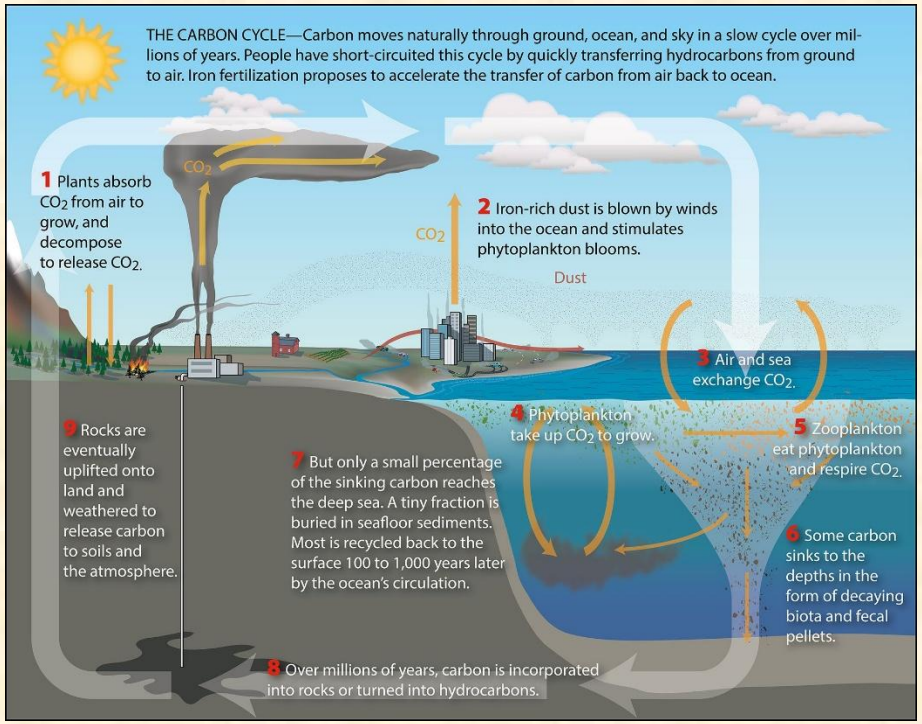
Seattle, Washington
Detroit, Michigan

Team Anthropocene Institute

Project Overview

Ocean Carbon Pollution Cleanup

- Functionalities
  - Make the Earth a Greener Place
  - By Analyzing Sensor Accuracy
  - Within a Custom Simulator
- Features
  - Gather Real Environmental Data
  - Design a Custom Simulator
  - Create Simulated Environments
  - Integrate Reading Devices in Environments
  - Calculate Reading Accuracy
- Technologies
  - Python
  - Modern Web Framework
  - Database Technologies



Anthropocene Institute

Palo Alto, California

Team Auto-Owners

Project Overview

From the Ground Up VR

- Functionalities
  - Educate Property Claims Associates
  - By Gamifying the Training Process
  - With an Interactive VR Game
- Features
  - Develop a Game to Play in VR
  - Create a Game Map Resembling a House
  - Design Floors in the House with Rooms to Explore
  - Provide Game Objectives for Players to Achieve
  - Use Objectives to Teach About Property Claims
- Technologies
  - Unity
  - Meta Quest 3 Headset

Auto-Owners INSURANCE

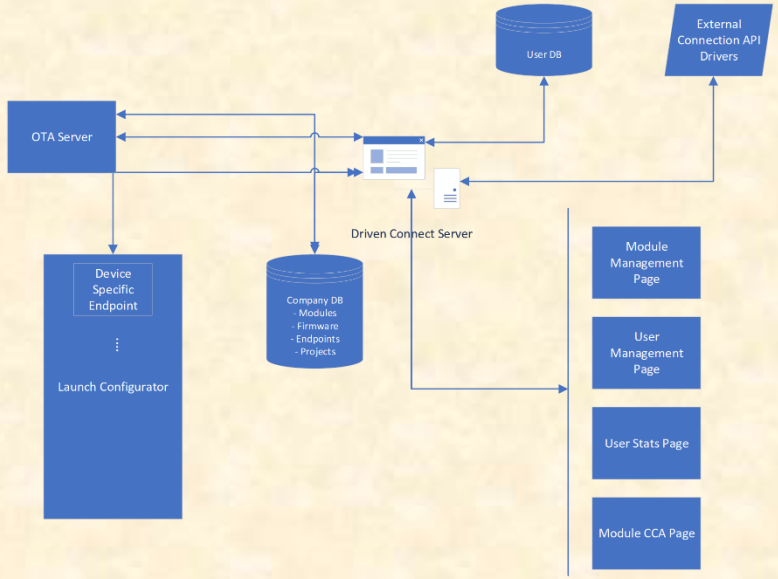
Lansing, Michigan

Team DRIVEN-4

Project Overview

DRIVEN-4 Connect Application

- Functionalities
  - Extend Capabilities of DRIVEN-4's Driven Connect
  - By Adding New and Enhanced Features
  - To the Server Application
- Features
  - Driven Connect is Used to Manage Data and Devices
  - Add New Features to Driven Connect
    - Implement Ability to Create Custom Data Dashboards
    - Redesign API Management Within System
    - Refine Database Schema
    - Integrate Stripe Payment System
    - Develop Custom Libraries from Code Bases
- Technologies
  - Python
  - Pandas
  - Java
  - Flask
  - MySQL and SQLAlchemy
  - Stripe



DRIVEN-4
St. Joseph, Michigan

Team GM RIS

Project Overview

Recycling Identification System

- Functionalities
  - Sort Recycling Automatically
  - With a Handheld Device
  - Using Plastic Identification
- Features
  - Collect Key Data
  - Manage Access with Roles
  - Provide Telemetry Data
  - Integrate Data with Centralized Database
  - Handle Communication Between Devices
- Technologies
  - Microcontroller / Single Board Computer
  - Sensors
  - Microsoft SQL Server

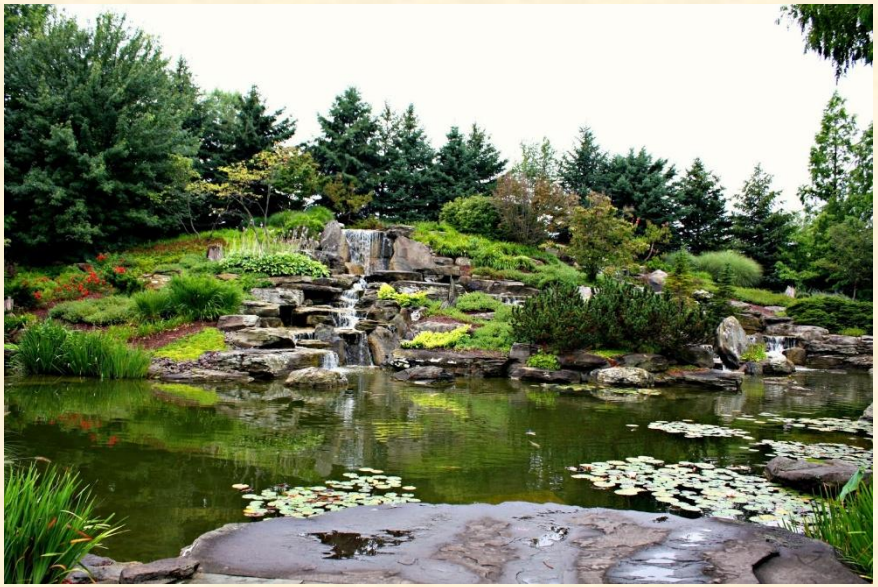
Detroit, Michigan

Team GM WHMS

Project Overview

Remote Wildlife Habitat Monitoring System

- Functionalities
  - Monitor and Identify Wildlife
  - With Audio and Visual Analysis
  - As Part of an Integrated Software Platform
- Features
  - Collect Wildlife Data with Remote Sensors
  - Convert Data into Public Database
  - Process Large Amounts of Raw Data
  - Integrate Findings with Science Projects
- Technologies
  - SQL
  - Microcontroller / Single Board Computer
  - Networking Components



Detroit, Michigan

Team HAP

Project Overview

Healthcare Payer Price Transparency

- Functionalities
  - Enhance Transparency Regarding Healthcare Costs
  - By Analyzing and Comparing Treatment Prices
  - Using Generative AI
- Features
  - Create a File Reader
  - Read Files From Hospitals and Insurance Providers
  - Collect Data About the Cost of Medical Treatments
  - Draw Insights from Data with AI
    - Compare Prices Between Medical Providers
    - Identify Areas for Improvement
- Technologies
  - ChatGPT
  - JSON File Reader

Detroit, Michigan

Team Henry Ford Innovations RSE

Project Overview

Modernizing Robotic Surgery Education

- Functionalities
  - Reduce Training Time for Surgeons
  - Using Robotic Surgery Training Data
  - Automatically
- Features
  - Provide Statistics and Suggestions for Improvement
  - Include a Dashboard for Easy Access of Data
  - Visualize Relevant Trends and Data
- Technologies
  - Med Hub
  - Intuitive
  - Microsoft Excel

HENRY FORD HEALTH
Innovations
Detroit, Michigan

Team Henry Ford Innovations RSVP

Project Overview

MSU-HFH Research Synergy Vanguard Portal (RSVP)

- Functionalities
  - Leverage MSU's Vast Research Capabilities
  - Into a Powerful Search Engine
  - To Enable Collaboration Between MSU and Henry Ford
- Features
  - Support Self-Editing of Faculty
  - Accept Inputs from Internal and Public Domains
  - Autonomously Curate Data
  - Make Recommendations for Research Collaboration
- Technologies
  - Microsoft SQL
  - Intranet
  - React

HENRY FORD HEALTH
Innovations

Detroit, Michigan

Team Kohl's

Project Overview

Governance of Expense in Kohl's Cloud Operations

- Functionalities
  - Decrease Operational Costs
  - By Tracking Google Cloud Costs
  - And Analyzing Methods to Save Money
- Features
  - Analyze Google Cloud Usage and Cost Data
  - Attribute Costs to Kohls Departments
  - Develop a Machine Learning Algorithm
  - Identify Opportunities for Cost Optimization
- Technologies
  - Google Cloud
  - Google API's
  - Google Big Query
  - Kubernetes

KOHL'S

Menomonee Falls, Wisconsin

Team Launch

Project Overview

Spatial IoT Control using Apple Vision Pro

- Functionalities
  - Quickly Interface with Home Appliances
  - Using IoT
  - And an Apple Vision Pro
- Features
  - Activate Appliances from a Distance
  - Control Thermostat and Other Settings
  - Design Robust Object Tracking
  - Support Custom Devices
- Technologies
  - Apple iPads and iPhones (iOS) / Swift
  - VisionOS
  - MQTT

Launch
by NTT DATA
Tory, Michigan

Team Magna MADO

Project Overview

Offline-Ready Mobile App for Delivery Optimization

- Functionalities
  - Improve Delivery Service
  - By Optimizing Delivery Routes and Orders
  - With a Cross-Platform Mobile Application
- Features
  - Design and Create a Mobile Application
  - Find Optimal Routes for Delivering Orders
  - Offer Real-Time Location and Status Updates
  - Construct a Dashboard to Display Live Data
  - Support Offline Capability to Avoid Service Disruption
- Technologies
  - Flutter
  - NodeJS or Golang
  - MongoDB with Realm
  - NextBillion.ai

MAGNA

Tory, Michigan
Aurora, Ontario, Canada

Team Magna TDD4ES

Project Overview

Test Driven Development for Embedded Software

- Functionalities
  - Make Test-Driven Development Simpler
  - By Creating a Testing Framework
  - Integrated as a Github Action
- Features
  - Research TDD Principles
  - Analyze Current Testing Protocols
  - Design a Testing Framework
  - Test Software and Hardware Emulators
  - Extensively Test Framework for Accuracy
- Technologies
  - C / C++ / Python
  - GNU Make
  - Github

MAGNA

Tory, Michigan
Aurora, Ontario, Canada

Team Magna VNNG

Project Overview

Visualizing Neural Network Gradients

- Functionalities
  - Improve Neural Network Training
  - By Visualizing Gradient Change
  - To Enhance Model Understanding
- Features
  - Identify Problematic Layers
  - Diagnose Training Issues
  - Show Data with Multiple Visualizations
  - Support Multiple Frameworks
- Technologies
  - PyTorch / TensorFlow
  - React
  - Vue.js

MAGNA

Tory, Michigan
Aurora, Ontario, Canada

Team Magna WFG4ADAS

Project Overview

World Feature Generation for ADAS Simulation

- Functionalities
  - Increase Automated Driving Safety
  - By Enhancing Simulation Quality
  - With Procedurally Generated Environments
- Features
  - Analyze Simulated Environments
  - Design Algorithms to Generate Environments
  - Manually Edit Simulated Environments
  - Visualize Adjustments
  - Ensure Simulation Realism
- Technologies
  - Python
  - Unreal Engine
  - Carla
  - Blender
  - BeamNG

MAGNA

Tory, Michigan
Aurora, Ontario, Canada

Team Meijer

Project Overview

Increasing Awareness of Meijer Branded Products

- Functionalities
  - Increase Customer Engagement with the Meijer Brand
  - By Promoting Meijer Products and Policies
  - With a Web Application
- Features
  - Design and Develop an eCommerce Website
  - For Customers to Buy Meijer-Owned Products
  - Offer Discounts and Promotions to Customers
  - Highlight Charity Efforts and Encourage Donating
- Technologies
  - Microsoft Azure DevOps and Web Services
  - Java or .NET
  - SQL

meijer

Grand Rapids, Michigan

Team Michigan State University CSE

Project Overview

Robotic Job Coaching

- Functionalities
  - Enhance the Virtual Job Coaching Experience
  - With Robotic Parts
  - To Better Train Workers Remotely
- Features
  - Facilitate Job Coaching Through a Single iPad
  - Automate a Queue System
  - Provide Seamless Remote Control of Robot Arm
  - Support Remote Monitoring
- Technologies
  - iOS / Swift
  - Kinovo Jaco Robot
  - Teleconferencing

East Lansing, Michigan

Team MSUFCU

Project Overview

Project Title Under Construction

- Functionalities
  - Facilitate Pick up and Drop off
  - For Bank Documents and Checks
  - Using a Self-Serve Locker System
- Features
  - Generate QR Codes Corresponding to Lockers
  - Protect Sensitive Records through Authentication
  - Service without Human Interaction
- Technologies
  - Java / Kotlin
  - HTML / CSS
  - Php
  - MySQL

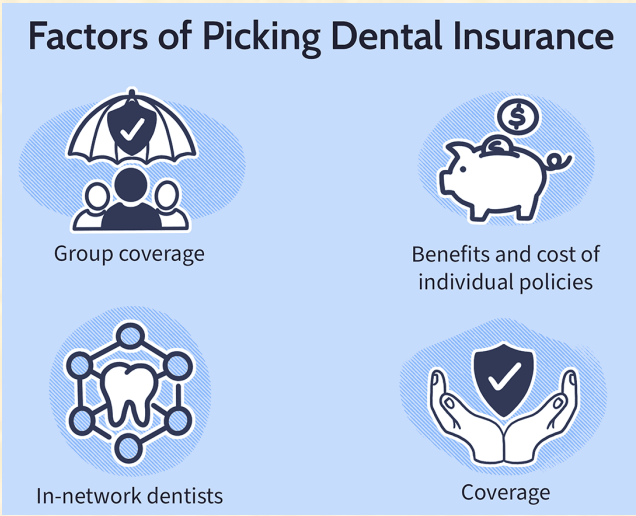
East Lansing, Michigan

Team Roosevelt Innovations Knowledge Science

Project Overview

Intelligent Benefits Parser and Knowledge Assistant

- Functionalities
  - Simplify Translation of Business Documents
  - By Extracting, Parsing, and Communicating Information
  - Using an LLM Knowledge Assistant
- Features
  - Create a Web Application
  - Users Upload Business Documents
  - Design a Document Parser to Extract and Store Information
  - Develop a Knowledge Assistant to Field Questions
  - Provide Answers to Questions About Stored Documents
- Technologies
  - Azure OpenAI
  - Angular
  - Typescript
  - Python
  - MongoDB



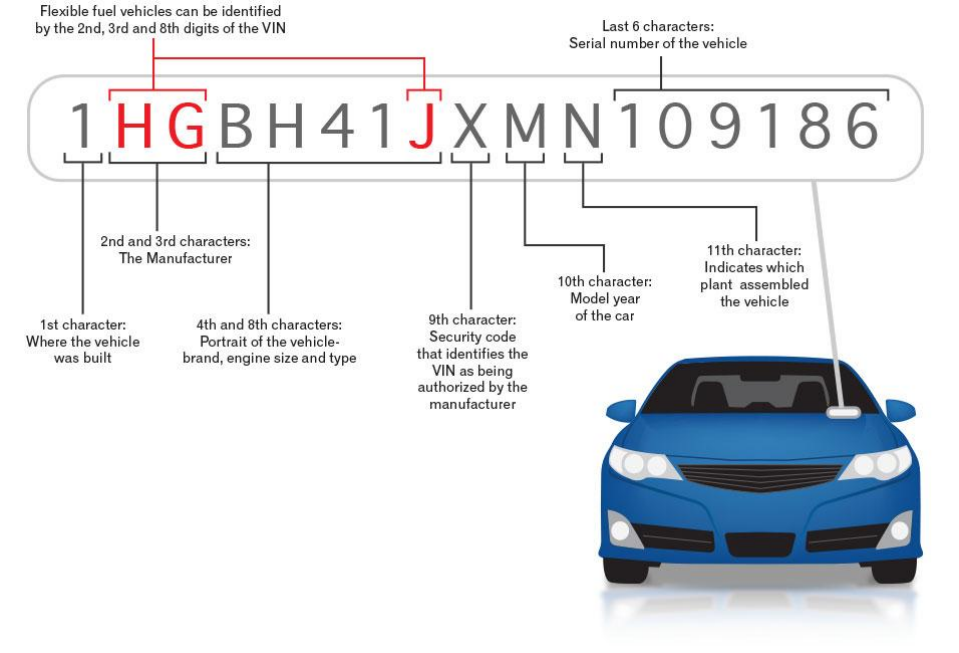
Roosevelt
simple. seamless. smart.
Okemos, Michigan

Team RPM

Project Overview

Automated VIN Integration for RPM Logistics

- Functionalities
  - Increase Workplace Productivity
  - By Locating and Analyzing Data
  - Using Machine Learning Strategies
- Features
  - Analyze Data from Multiple Sources
  - Design a Machine Learning Model
  - Parse Data for Key Data Points
  - Transform and Format Data
- Technologies
  - Microsoft Azure
  - C#
  - Python
  - .NET Framework
  - OpenAI
  - Azure AI Services



RPM

Royal Oak, Michigan

Team Stryker IST

Project Overview

Surgical OR Instruments and Needle Tracking

- Functionalities
  - Enhance Medical Patients' Safety
  - By Tracking Medical Instruments
  - With a Software Solution
- Features
  - Implement System for Tracking Surgical Instruments
  - Explore AI/ML Methods for Tracking
  - Possibility of a Hardware-Inclusive Solution
  - Design a Software Platform for a User Interface
- Technologies
  - SurgiCount Gen 3

stryker

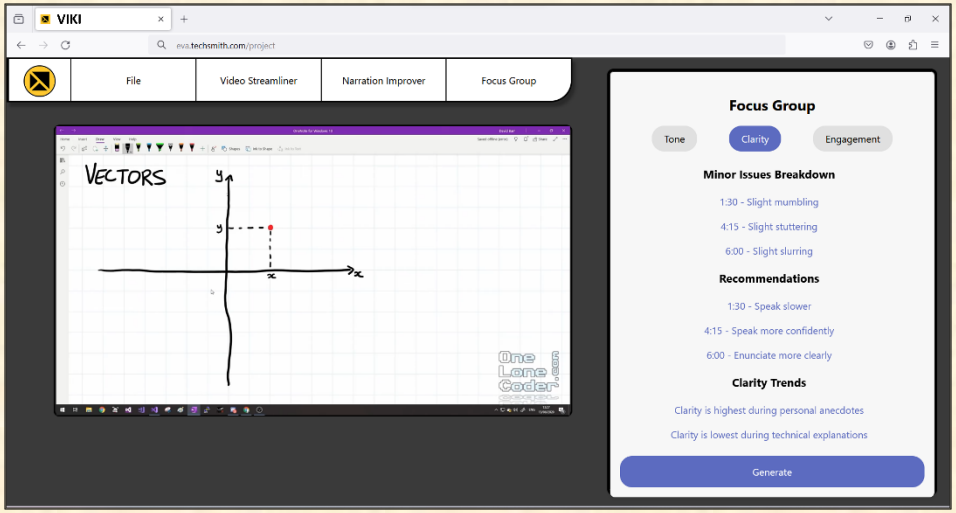
Kalamazoo, Michigan

Team TechSmith

Project Overview

Video Insight and Knowledge Interface (VIKI)

- Functionalities
  - Make Video Editing Easy
  - By Giving Users Feedback
  - Through AI Analysis
- Features
  - Analyze Videos for Key Factors
  - Develop Personas for AI Reviewers
  - Tailor Advice Based on Persona Attitude
  - Provide Users with Tips to Enhance videos
- Technologies
  - Microsoft Azure Services
  - Angular
  - React
  - Ffmpeg
  - OpenAI



TechSmith®
East Lansing, Michigan

Team Union Pacific

Project Overview

Virtual Reality Inspection Training

- Functionalities
  - Train Mechanics to Detect Defects
  - On Union Pacific Locomotives
  - With an Immersive Virtual Reality Module
- Features
  - Translate Movements to VR Input
  - Support Multiple Modules and Hardware Platforms
  - Implement Synchronization from LMS to VR
- Technologies
  - Unity Game Engine / C#
  - Meta Quest 3
  - Angular / React

BUILDING AMERICA®

Louisville, Colorado
Omaha, Nebraska

Team Urban Science

Project Overview

Predicting Automotive Sales Using Generative AI

- Functionalities
  - Increase Profitability
  - By Helping Dealers Make Decisions
  - Using Machine Learning Strategies
- Features
  - Locate Key Data Trends
  - Train a Machine Learning Model
  - Locate and Present Data Insights
  - Visualize Future Sales Predictions
  - Provide Insights to Manufacturers
- Technologies
  - Microsoft SQL Server
  - .NET Web API
  - .NET MAUI
  - Angular
  - Azure AI

URBAN SCIENCE
Detroit, Michigan

Team Vectra AI

Project Overview

AI Cyberattack Early Warning System

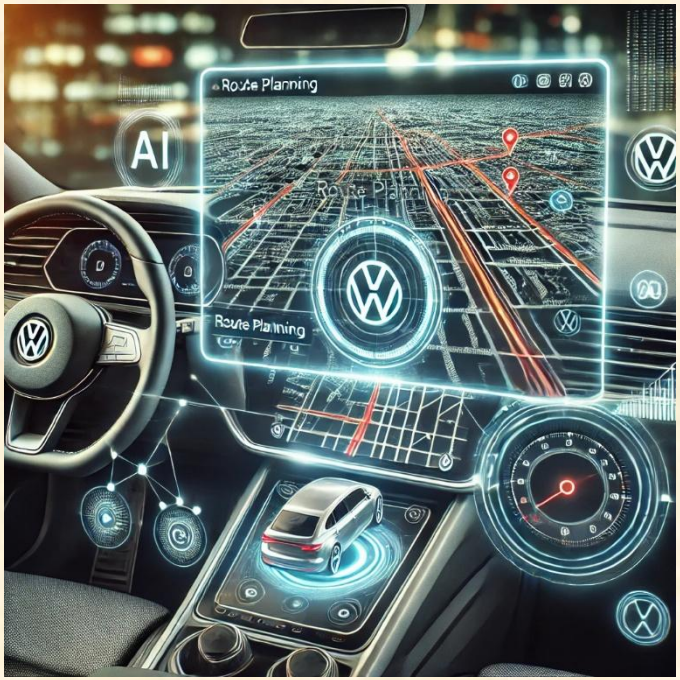
- Functionalities
  - Detect Cyberattacks Early
  - By Identifying Warning Signs
  - And Simulating All Possible Outcomes
- Features
  - Generate Simulation Configurations
  - Automatically Flag Suspicious Activity
  - Reveal Product Vulnerabilities
  - Enable AI Training with Simulation Data
- Technologies
  - Large Language Models
  - Vectra Hybrid Cyberattack Simulator

Team Volkswagen

Project Overview

Safe Journey AI

- Functionalities
  - Enhance Driver Safety
  - By Improving Route Planning
  - Using AI
- Features
  - Leverage AI to Gather and Analyze Safety Data
  - Provide Real-Time Safety Ratings and Alerts
  - Recommend Routes to Avoid High-Risk Areas
  - Suggest Safe Areas for Refueling Vehicle or Resting
  - Offer Secure Parking Options
- Technologies
  - Machine Learning Framework
  - Natural Language Processing
  - APIs and Web Scraping
  - Cloud Infrastructure
  - Backend Development
  - Frontend and UX Development



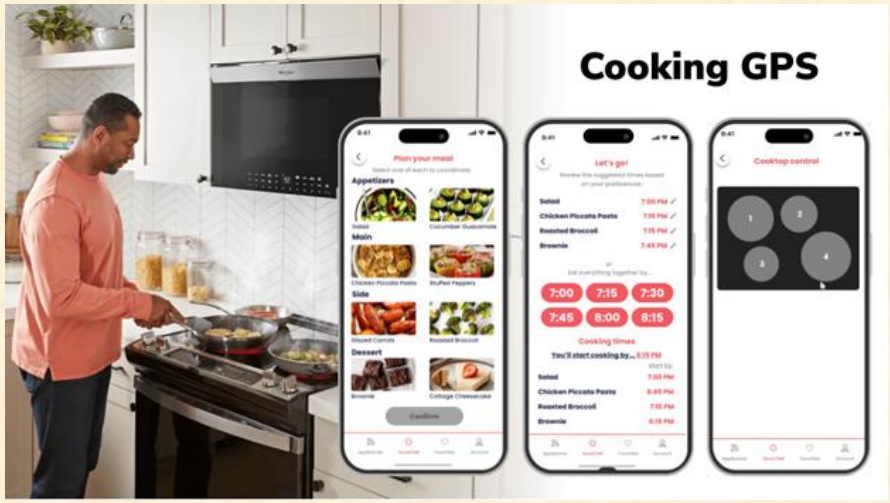
Auburn Hills, Michigan

Team Whirlpool

Project Overview

Cooking GPS

- Functionalities
  - Simplify the Process of Cooking a Meal
  - By Tracking and Planning Recipe Completion
  - Using GPS and Mobile Applications
- Features
  - Design a Mobile Application
  - Use Cooking Appliance Interfaces
  - Process Recipes for Cooking Instructions
  - Use Path Optimization to Sequence Events
  - Track User Progress During Cooking Process
- Technologies
  - Python
  - Flutter



Whirlpool

Benton Harbor, Michigan

Team WK Kellogg Co

Project Overview

Cereal Industry Analysis Tool using Generative AI

- Functionalities
  - Improve Business Models
  - By Analyzing Data About the Cereal Market
  - With a LLM
- Features
  - Investigate Annual Reports from Cereal Companies
  - Train an Open Source LLM on Report Data
  - Use Model to Investigate Industry and Competition
  - Use Model to Make Business Strategy Decisions
- Technologies
  - Amazon S3
  - Snowflake
  - Snowflake Arctic
  - R / Python

WK Kellogg Co

Battle Creek, Michigan

Attendance Today

- Open browser.
- Log into Google with MSU credentials.
- Go to www.capstone.cse.msu.edu.
- Click on…
  - + Other Links
  - > Downloads
  - First Meeting Attendance: Google Form
  - URL
    - https://shorturl.at/gY3WL
    - https://forms.gle/2Q8ga54VwJTC4oLXA

Team Member Survey [1 of 2]

- Check Student ID
- NetID
  - Yes: dyksen
  - No: dyksen@msu.edu
- Use Upper and Lower Case
  - Yes: Lansing, Michigan
  - No: LANSING, MICHIGAN
- Hometown Country, NOT County
  - Yes: USA, China
  - No: United States, Ingham, Wayne
- Use Floating-Point Numbers Only For GPAs
  - Yes: 3.7, 2.8
  - No: 3.5-3.7, ~3.5, About 3.5

Team Member Survey [2 of 2]

- Get out your laptops.
- Open browser.
- Log into Google with MSU credentials.
- Go to www.capstone.cse.msu.edu.
- Click on…
  - + Other Links
  - > Downloads
  - Team Member Survey: Google Form (https://forms.gle/8noPfRRtXNCPP3hz6)

First Assignments

- Read the Syllabus.
- Check out the Website.
- Check out the Lab.
  (3340EB, 3352EB, 3358EB)
  - See if you can find it.
  - See if you can get in.
- Find the meeting slides.
  capstone.cse.msu.edu/schedules/weekly-schedule

What's ahead? [1 of 3]

- Teams
  - Receive team assignments later today. (Keep checking your email.)
  - Meet initially later today or by tomorrow morning.
  - Start researching technologies.
  - Start configuring lab machines.
    - Team assignments given in emailed project proposals.
    - Instructors will email remote access instructions.
- Project Sponsor / Client Contact
  - Contact by email ASAP and certainly by tomorrow COB. (COB == Close of Business)
  - Complete conference call or online meeting by Friday.
  - Review project proposal.

What's ahead? [2 of 3]

- Team Photos
  - Coordinated by James
  - Friday, September 20, 9:00 a.m. – 5:00 p.m.
    - James will make a schedule.
    - On-Time Attendance Required
    - Put on your calendar now. ← **Note**
  - Scheduled via Google From
    - Email From James
    - Look for it.
    - Respond to it as a team ASAP.

What's ahead? [3 of 3]

- Scheduled Weekly Triage Meetings
  - Email from TM
  - Look for it.
  - When Available. Not Just When Desired.
  - Respond ASAP.
  - More On Thursday

Questions?

Capstone Overview

✓Course Logistics

✓Client Projects

➢Course Logistics (Continued)

Where are we?

- Teams/Projects
  - Assigned
  - Met and Working
- Sponsors/Clients
  - Contacted
  - Scheduled Weekly Meeting
  - Met With Once?
- Luke, Griffin and Sam
  - Heard From
  - Scheduled Weekly Triage Meeting
  - Met With Once?
- Capstone Lab
  - Found It
  - Successfully Logged into Systems
  - Began Configuring Systems
- Projects
  - Studying Project Description
  - Exploring and Configuring Technologies
  - Exploring and Configuring Systems
  - Discussed with Client

About Us

[1 of 2]

- Dr. D.
  - Title: Professor of Computer Science and Engineering
  - Hometown: North Haledon, New Jersey

  - Education: Calvin College (BS), Purdue University (MS, PhD)
  - Experience: Professor @ Calvin, Purdue, Nebraska, MSU
- James Mariani
  - Title: Professor of Instruction
  - Hometown: Sterling Heights, Michigan
  - Education: MSU (BS, MS, PhD Candidate)
  - Experience: CSE498 Grad, Teaching Assistant, Professor @ MSU

About Us

[2 of 2]

- Luke Sperling
  - Title: Graduate Teaching Assistant
  - Hometown: Birmingham, Michigan
  - Education: MSU (BS, MS, PhD Candidate)
  - Experience: CSE498 Grad, Teaching Assistant @ MSU
- Griffin Klevering
  - Title: Graduate Teaching Assistant
  - Hometown: South Lyon, Michigan
  - Education: MSU (BS, MS, PhD Candidate)
  - Experience: CSE498 Grad, Teaching Assistant @ MSU
- Samantha (Sam) Kissel
  - Title: Graduate Teaching Assistant
  - Hometown: Clarkston, Michigan
  - Education: MSU (BS, MS Candidate)
  - Experience: CSE498 Grad, Teaching Assistant @ MSU

Capstone TM Nomenclature

In the spirit of running like a business…

- ~~Teaching Assistant or TA~~
- Team Manager or TM
  - Not Traditional TA Role
  - Not a Tutor
  - Luke, Griffin, Sam == TM
- Dr. D. and James
  - TMs' Managers
  - Your…
    - Manager's Managers
    - "Skip-Level" Managers

Capstone Lab Machines

- Depends on Team Needs
  - Two 27” iMacs
  - Dell Rack-Mounted Server (Optional)
    - Connected to Outside World
    - Keep Secure
  - PC (Optional)
- Operating Systems on iMacs
  - Run Latest macOS
  - Install VMware Fusion 13 (It’s free.)
  - Create Virtual Machines
    - Windows 11 VM from Instructors
    - Allocate Sufficient Cores and Memory
    - Others as Needed
  - Do not use Apple Boot Camp

The Capstone Labs

[1 of 2]

- 3340EB, 3352EB, 3358EB
- Security
  - Keep lab doors closed. ← **Note**
  - Do not open doors for strangers.
  - Do not give out the door key code to others.
  - Do not invite non-capstone students to work in the lab with you.
- Wireless
  - SSID: CSE498
  - Key: ??????
  - Intended for Devices Requiring Lab Subnet
- Coffee
  - Some Provided by Us
  - BYOKC
- Game Playing / Video Watching
  - Not On Monitors Facing Hallway
  - Not If Other Team Members Need Machine

The Capstone Labs

[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.
- Be careful with cabinet drawers; don’t “maniac” them.
- Water Dispensers (Cooler and Fridge) are not connected to a drain.

Devices From MSU

- For Capstone Project Use Only
- By Team for the Semester
- Includes “General Purpose” Devices
  - iOS
    - iPads
    - iPhones
  - Android
    - Tablet
    - Phone
  - Surface Pro
  - Oculus Rift
  - Something Else
- How do you get them?
  - Ask TM
  - Pick Them Up from TM

If you need something, ask.

For starters, use emulators.

Devices From Project Sponsors

- Special Purpose Devices
  - Apple Vision Pro
  - Quest
  - iOS or Android Device
  - NVIDIA Jetson
  - Drone
  - Raspberry Pi
  - Etc…
- How do we/you get the devices?
  - Ask sponsor to ship to Dr. D. at MSU
  - Pickup from Dr. D. and/or TMs
- Where do we keep the devices?
  - In Capstone Lab
  - Locked Cabinet
- How do we return the devices?
  - Return to Dr. D. and/or Instructors
  - Ship via UPS, USPS,…

Software

- From MSU
  - macOS / Sonoma
  - Windows 11
  - Office 365
  - Git
- From Sponsor
  - Special Software
  - Cloud Computing

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 > Weekly Schedule
- Schedules > Major Milestones
  - 09/10: Status Report Presentations
  - 09/17,19,20: Project Plan Presentations
  - 10/10,15,17: Alpha Presentations
  - 11/14,19,21: Beta Presentations
  - 12/03,05: Project Videos
  - 12/04: All Deliverables
  - 12/06: Design Day
  - 12/08: Capstone Wrap Up
    (10:00 a.m. – 12:00 p.m.)

- Attendance is required.
- No excuses are accepted.
- Do not schedule anything during these times including interviews, travel home, etc.
- Will coordinate with your interviews.
- **Do NOT buy plane tickets to go home.**
- Read the syllabus.

Team Organization

- Up to Each Team
- Organize into Roles
  - Sponsor/Client Contact
  - Program Manager
  - Developer Roles
    - Web
    - Mobile
    - Back End
    - Front End
    - Etc.
  - Tester
  - Systems Administrator
  - Etc…
- Everyone must make significant technical contributions, including significant software contributions. ← **Fair Warning**

Team Dynamics

- Key to Success
- Significant Component of Course Grade
- Potential Teammate Problems
  - Not Attending Team Meetings
  - Not Being Involved
  - Not Responding
  - Not Completing Tasks On Time
  - Submitting Poor Work
  - Leaving Work for Others
  - Etc…
- Address Problems Immediately
  - Within Team
  - With Dr. D., James, Luke, Griffin, Sam
- Be Ready to Discuss During Interviews

Grading

- Team (70%)
  - Project Plan Document & Presentation 10
  - Alpha Presentation 10
  - Beta Presentation 10
  - Project Video 10
  - Project Software & Documentation 30
  - Total 70
- Individual (30%)
  - Technical Contribution 10
  - Team Contribution 10
  - Team Evaluation 05
  - Meeting Attendance, Preparation & Participation 05 ← Can Be Negative
  - Total 30

Grading

- 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

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					

Grading

- Every student must earn the following required minimal grades in each grading category.
- Failure to earn the required minimal grades in any of the grading categories is grounds for receiving a final grade of 0.0 for the course.
- Minimal Team Grade Requirements
  - Project Plan Document & Presentation 5.0 / 10.0
  - Alpha Presentation 5.0 / 10.0
  - Beta Presentation 5.0 / 10.0
  - Project Video 5.0 / 10.0
  - Project Software & Documentation 15.0 / 30.0
- Minimal Individual Grade Requirements
  - Technical Contribution 5.0 / 10.0
  - Team Contribution 5.0 / 10.0
  - Team Evaluation 2.5 / 05.0
  - Meeting Attendance, Preparation & Participation 0.0 / 05.0

Grading

Absence does not make your teammates' hearts grow fonder.

- Nonresponsive
  - Email
  - Slack
  - Discord
  - Microsoft Teams Messages
  - Phone
- Miss Meetings
  - All-Hands & Split-Hands
  - Triage
  - Sponsors
  - Team
- Miss Work ← **Key**
  - In Lab and/or Online with Teammates
  - During Sprints
  - Before Major Milestones
- Miss Deadlines
  - Other team members may be forced to do your work.
  - We will tell other team members they… ← **Fair Warning**
    - …can take over the tasks assigned to you.
    - …no longer need to assign you any tasks.

NB: Your teammates will be evaluating you weekly and at the end of the semester.

Grading

- 100% In Person Meetings
  - All-Hands & Split-Hands
  - Triage
  - Team Meetings with Sponsors
  - Team Meetings
- Accommodating Student Schedules
  - Only Reasonably for Class Schedules and Work
  - Not for Students
    - Traveling, Even Approved Travel
    - Working ≥ 20 Hours Per Week
    - Commuting to Campus

Grading

Unacceptable Excuses for Not Contributing

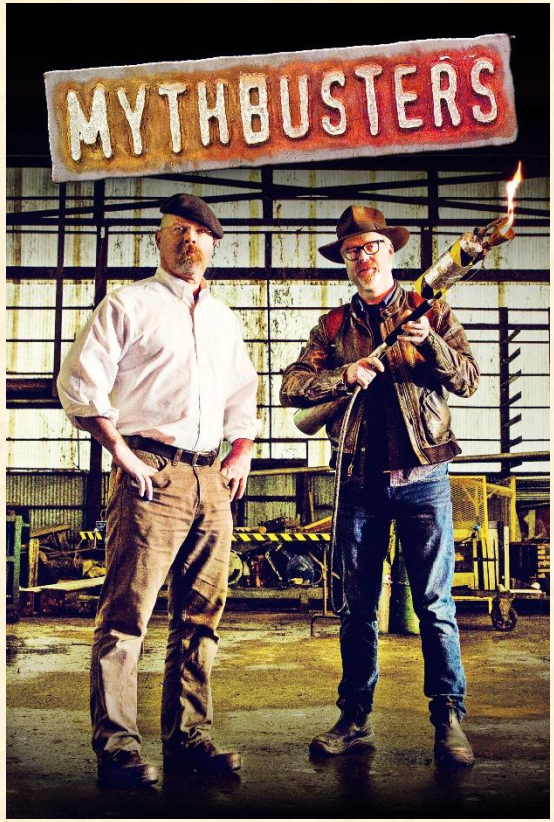
- My teammates…
  - …never asked me to do anything.
  - …never let me do anything.
  - …mistreated me.
- My features were…
  - …not included in the project.
  - …deleted by our client
- I wrote lots of code, but it wasn't included in the project.
- I work 20 hours per week at my job.
- I live 60 minutes from MSU.
- I didn't want to work on this project team.
- I did a lot of research about stuff we never used.
- I was busy interviewing.
- Etc…

Grading

- 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 at MSU including CSE,
  - the need to be graduated this semester,
  - the ability to enroll in CSE498 next semester,
  - financial aid,
  - hours worked in a job while a student at MSU,
  - distance commuting to MSU,
  - anticipated graduation from MSU,
  - acceptance of a job in anticipation of graduation,
  - rank in the armed forces,
  - mortgage on a property,
  - rental lease on a property,
  - upcoming wedding,
  - visa status,
  - or anything else.

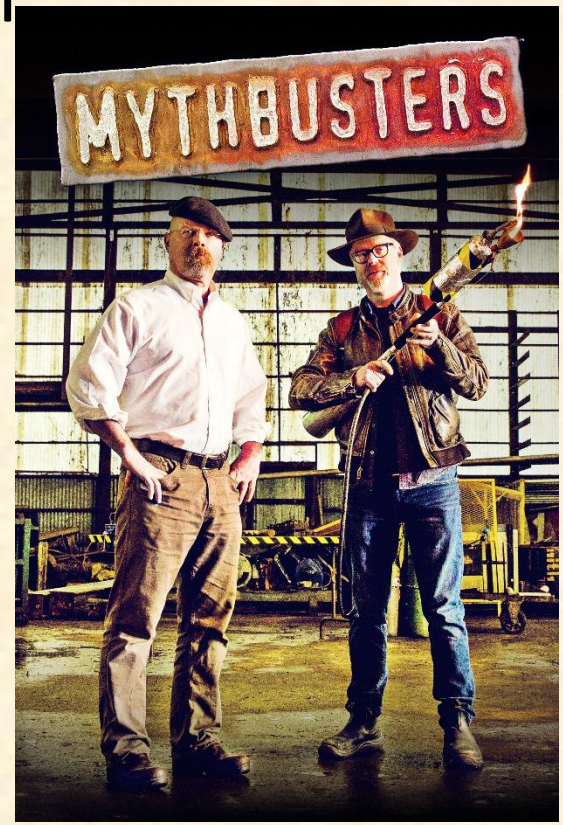
Grading

- Fall 2022 Grade Distribution
  - 4.0 120 72.3%
  - 3.5 19 11.5%
  - 3.0 11 6.6%
  - 2.5 5 3.0%
  - 1.5 0 0.0%
  - 1.0 1 0.6%
  - 0.0 8 4.8%
- Do students fail capstone? Yes



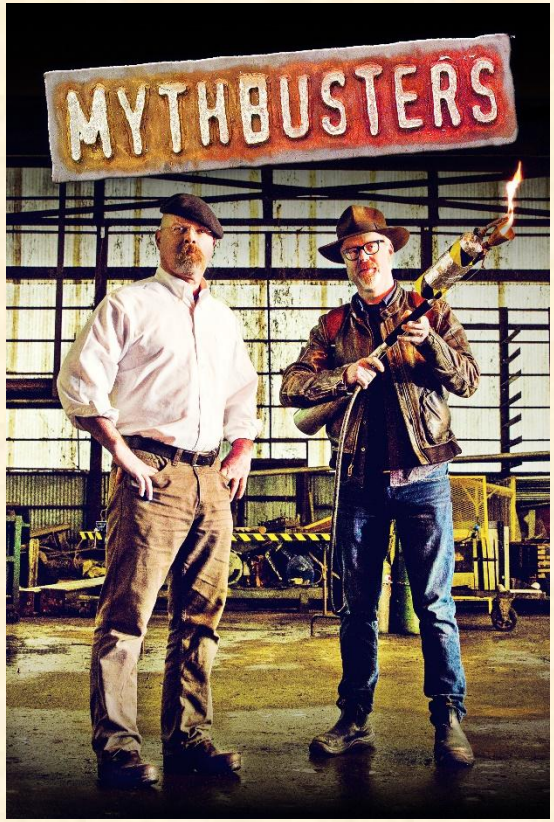
Grading

- Spring 2023 Grade Distribution
  - 4.0 119 68.0%
  - 3.5 15 8.6%
  - 3.0 9 5.1%
  - 2.5 4 2.3%
  - 2.0 5 2.9%
  - 1.5 4 2.3%
  - 1.0 7 4.0%
  - 0.0 12 6.9%
  - Do students fail capstone? Yes



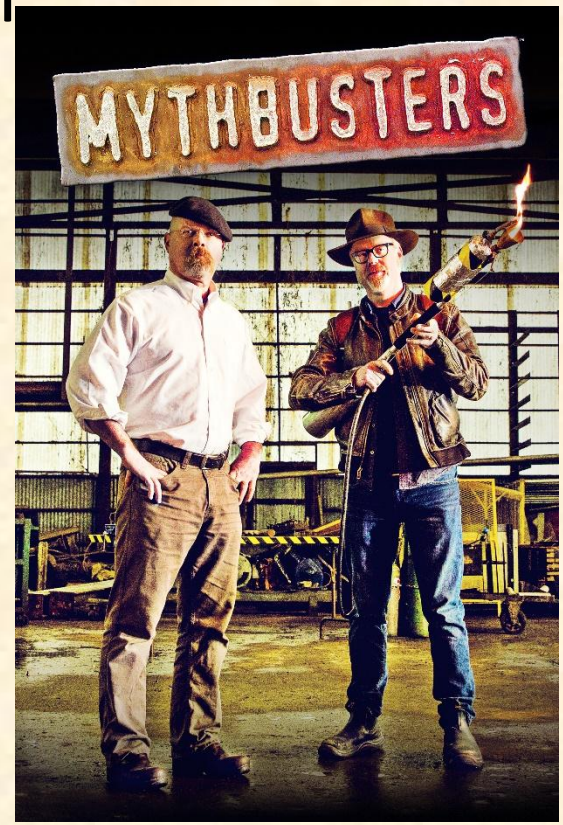
Grading

- Fall 2023 Grade Distribution
  - 4.0 75 50.0%
  - 3.5 27 10.0%
  - 3.0 10 6.7%
  - 2.5 6 4.0%
  - 2.0 10 6.7%
  - 1.5 3 2.0%
  - 1.0 8 5.3%
  - 0.0 11 7.3%
  - Do students fail capstone? Yes



Grading

- Spring 2024 Grade Distribution
  - 4.0 79 50.6%
  - 3.5 24 15.4%
  - 3.0 16 10.3%
  - 2.5 8 5.1%
  - 2.0 10 6.4%
  - 1.5 3 1.9%
  - 1.0 7 4.5%
  - 0.0 9 5.8%
  - Do students fail capstone? Yes



Meeting Attendance, Preparation & Participation (MAPP) [1 of 6]

"Meeting-Ready"

- In Person
  - Ready
    - Seated with Team in Correct Room in Assigned Seat
    - Coat and Hat Off
    - All Mobile Devices in Airplane Mode and Stowed
  - Not Ready
    - Entering the Room
    - Walking to a Seat
    - Taking off Coats and/or Stowing Devices
- Online
  - Ready
    - Joined to Microsoft Teams Meeting in Correct Channel
    - In Appropriate Location
  - Not Ready
    - Joined Using Only a Phone
    - In Inappropriate Location (Car, Bar, In Line at the RIV, etc.)

Meeting Attendance, Preparation & Participation (MAPP) [2 of 6]

Attendance Process

- In Person
  - By TM
  - Sign a Form
- Online
  - Microsoft Teams
    - Who
    - When Joined/Left the Meeting
  - Google Forms
    - One or More at Random Time During Meeting
    - One at End of Meeting
    - 60 Seconds to Complete

Google Form Attendance Check

↑↑↑↑↑↑↑↑

Only An Example

Meeting Attendance, Preparation & Participation (MAPP) [3 of 6]

MAPP Point Deductions

- All-Hands / Split-Hands
  - Meeting-Ready≤ 3:00:00 p.m.
    - Present
    - -0.0 MAPP Points
  - 3:00:01 p.m. ≤ Meeting-Ready ≤ 3:05:00 p.m.
    - Late
    - -0.5 MAPP Points
  - Meeting-Ready > 3:05:00 p.m.
    - Absent
    - -1.0 MAPP Points
  - Leave Meeting Before Ended by Instructor
    - In Person
      - Must Swipe Spartan ID Cards with TM, Leaving and Returning
      - Must Leave and Reclaim Mobile Devices with TM (Approved by University Ombudsperson)
      - -1.0 MAPP Points if (Fail to Swipe and/or Leave Mobile Devices) or (Extended Period)
    - Online
      - Miss Google Form (During or At End)
      - -1.0 MAPP Points
  - Weekly Triage Google Form and Google Slides
    - Late or Not at All
    - -0.5 MAPP Points
  - MAPP grade may become negative.

Meeting Attendance, Preparation & Participation (MAPP) [4 of 6]

- Almost No Excuses Accepted
  - One or Two Excused Possible for Interviews
  - Must Provide Information
    - Date, Company, Recruiter Name & Contact Info
    - In Advance
    - To Instructors
- Must Attend (No Excuses Accepted)
  - Your Team Presentations
  - All Project Video Viewing
  - Design Day
  - Design Day Wrap Up

Do NOT schedule interviews.
Do NOT schedule ANYTHING.
Do NOT buy plane tickets. ←Note

-5.0 MAPP Points Per Absence

- Read the syllabus.
  - Meeting Attendance, Preparation and Participation (MAPP) Grade
  - Meeting Attendance Policies and Procedures

Meeting Attendance, Preparation & Participation (MAPP) [5 of 6]

- Excused Meeting Absences
  - Job Interviews
    - Documentation Deemed Valid
    - In Advance
  - Sickness Including COVID
    - Documentation Deemed Valid
      - Stating Not Able to Attend Due to Illness
      - By Local Medical Professional
    - Not Later Than Two Days
    - If Concerned, May Sit Masked in Back of Meeting Room
    - Read the Syllabus
  - Grief Absence
    - See MSU Policy
    - Done in Advance
  - Some MSU Events
- Cannot Accommodate Most Conflicts
- No Accommodations for Personal Reasons Other Than Above
- Will NOT Be Excused from Doing Work **←Very Important Note**

Meeting Attendance, Preparation & Participation (MAPP) [6 of 6]

- Requesting Excused Absences
  - Handled by James and TM
    - Email James and TM
    - CC Dr. D.
      (Dr. D. will not forward or respond.)
- Taking or Retaking Capstone in Spring 2025
  - Due to Dropping or Failing
  - Extremely Limited Enrollment
  - First-time eligible students will get first priority.
  - You may not be able to take capstone in the spring. ←**Note**
    - Re-enroll After Dropping
    - Re-take After Failing

GitLab

- Every team must use MSU's GitLab.
  - Manage All Project Code
  - Instructors must have access.
- Access by External Project Sponsors
  - Can Accommodate
  - Contact James
- To Receive Credit for Code, Student Must
  - Commit Code
  - Using Student's GetLab Account
- Read the syllabus.

Team Contribution

- What % of Team Grade (70 Points) Does Student Deserve
- Based on Variety of Factors Including But Not Limited to…
  - Attendance and Participation
    - Team Meetings
    - Project Sponsor Meetings
    - All-Hands/Split-Hands Meetings
  - Completion of Tasks
    - Size and Number
    - Correctly
    - On Time
  - Willingness to Take on New Tasks
  - Making Significant Technical Contribution
- Read the syllabus.

Technical Contribution [1 of 3]

- Required of Everyone
- Significant Work and Code
- Does Not Include Code…
  - Committed to GitLab by Someone Else
  - That Does Not Work
  - Copied from the Internet
  - Generated by ChatGPT or Any LLM or any tool.
  - Simple HTML and/or CSS
  - Not Included in The Project
  - Not Relevant to the Project
  - For CheckInCount = 1 to 100 {Modify Code Slightly; Checked Code In Again}
  - Etc…
- Necessary, but Not Sufficient
  - Doing Research
  - Creating UI/UX Designs
  - Creating Presentations and/or Documents
  - Giving Presentations
- Read the syllabus.

Technical Contribution [2 of 3]

- Pair Programming
  - Writing Code Together
  - Not Watching Someone Else Write Code
  - Must Decide When Committing Who Gets Credit for What
  - Receive Credit Only for Code Checked Under Your Account
- Demonstrating and Explaining Software
  - By Author
  - Any Time
  - In-Person
    - Lab iMacs
    - Personal Laptop
  - If Not Able, Assume Not Working

Technical Contribution [3 of 3]

- Significant Effect on Team Contribution
- Project Software == 43% Team Grade
- No Significant Technical Contribution
  - No Credit for Project Software
  - Maximum of 57% of Team Grade
  - Maximum Team Contribution of 5.7/10.0
  - Most Likely Will Not Pass CSE498
- Read the syllabus.

Meeting and Work Expectations

- Meetings
  - In Person
  - Possibly Excused but Very Limited
  - If Miss Team Presentation, Must Give Presentation to Instructors
- Work
  - Entire Semester
  - Cannot Excuse Work Even if Meeting is Excused
- Example
  - Miss Entire Week
    - Attendance
      - Excused: -0
      - Unexcused:
        - -3+ MAPP Points == 3+% of Final Grade
        - -10 MAPP Points == 10% of Final Grade
    - Work
      - Attendance Excused or Unexcused
      - At Least -7% of Team Contribution Grade == At Least -4.9% of Final Grade
- See syllabus.

Using Existing Code

- Ok for Learning
  - Examples
  - Prototypes
  - Open-Source Code
    - Fragments
    - Libraries
    - Utilities
- Not Ok for Project Code
  - Copy-and-Paste
  - Not Open Source
  - ChatGPT or Any Large Language Model (LLM) **←Note**
- Ask instructors and client in advance.
- Document and report all existing code used.
- Be Careful!

Professionalism

- Be Professional and Respectful
  - Talking
  - Emailing
  - Texting
  - Messaging
  - Communicating in Any and All Forms
- Avoid Anything
  - Disrespectful
  - Offensive
  - Derogatory
  - Rude
  - Etc.
- All complaints must be reported even if complainant requests otherwise.

Travel to Client

- Reimburse for Mileage for Personal Car
- Travel Within Michigan (Outside of Lansing)
  - Benton Harbor
  - Battle Creek
  - Kalamazoo
  - Grand Rapids
  - Metro Detroit
- From East Lansing to Client and Back
- Cars Per Team Per Trip
  - < 6 Team Members, 1 Car
  - = 6 Team Members, 2 Cars
- See Brenda in the CSE office in advance.

Accommodation Letter

- Let us know immediately.
- We will work with you.
- If you would like an accommodation…
  - Contact your RCPD advisor.
  - Explain the desired accommodation with rationale.
  - Ask your RCPD advisor to contact us.

Integrity of Scholarship

- MSU's policies will be enforced.
- Academic dishonesty will include but not be limited to
  - committing code not written by the student to a team's main GitLab branch;
  - demonstrating code not written by the student to the instructors;
  - attempting to inflate the technical contribution by committing code not related to the project or by making multiple trivial commits or by any other means; and
  - providing false information to the professors, instructors or fellow team members about matters related to the course will be considered academic dishonesty.
- Violators…
  - …will be reported by an Academic Dishonesty Report (AD).
  - …will receive a grade of 0.0 in the course.

“Office” Hours

- Office
  - Any Time
  - Welcome to Call in Advance
- Email
- Microsoft Teams
  - Message
  - Meet
- Schedule an Appointment
  - In Person
  - Online via Microsoft Teams
- See Syllabus

Grade Appeal

- Students Must Demonstrate
  - Rights Violated
  - Base on Preponderance of the Evidence
- Steps to be Completed In Order
  - Meet with Instructors
  - Meet with Professor Owen
  - Request a Hearing
- If Hearing Board Finds Rights Violated
  - Case Returns to CSE
  - Grade Decided by CSE Professor(s) Appointed by Chairperson
- Nota Bene: Hearing Timing
  - Lengthy Process to Resolve
  - Two or More Months After Semester End
- Read the syllabus.

Problems

- Address Immediately
  - Respectfully
  - Within Team
  - With
    - TMs
    - James
    - Dr. D.

We don’t have one of these.

Capstone Overview

✓Course Logistics

✓Client Projects

✓Course Logistics (Continued)

Questions?

We're not done yet.

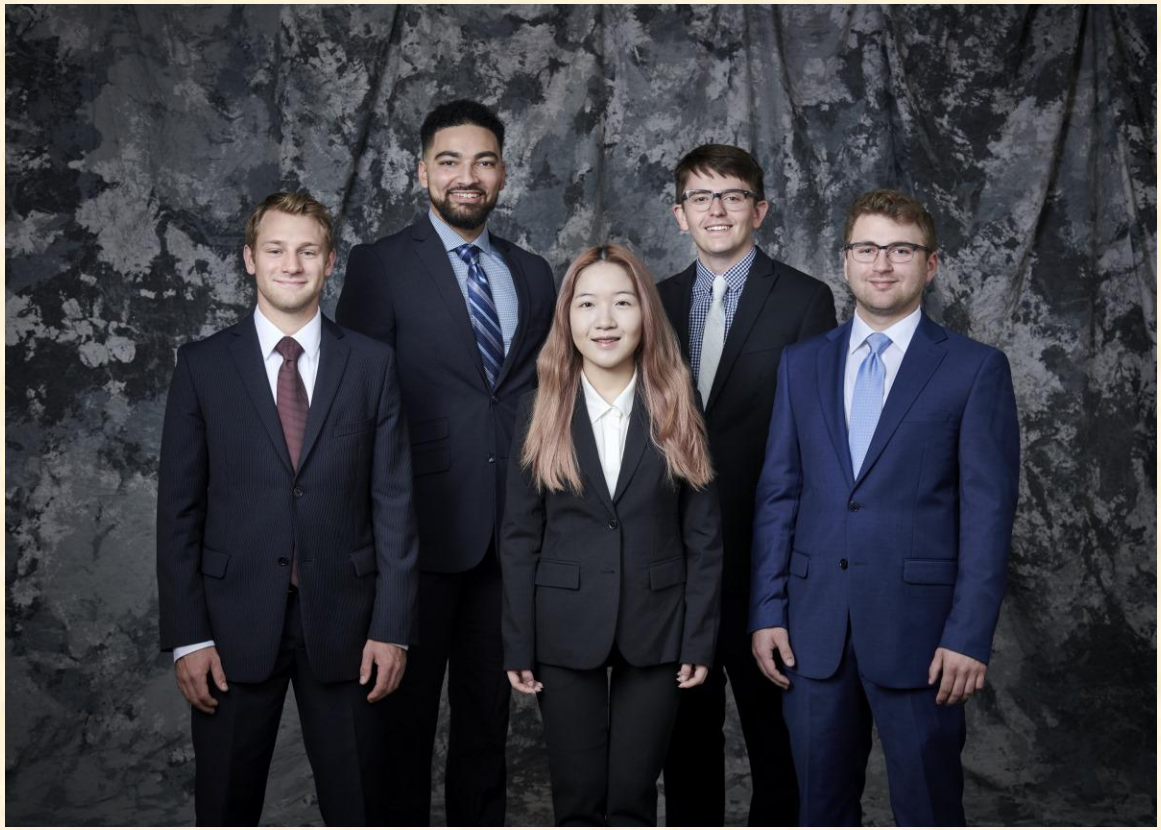
Team Photos

[1 of 7]

- Taken by Professional Photographer
- Used
  - On Capstone Website
  - On Design Day Website
  - In Design Day Booklet
  - In The Capstone Experience Booklet
- Dress
  - Business or Business Casual
  - Team Coordinated
  - Look Professional
  - Respect Personal Cultural and/or Religious Traditions
- Cannot Be Changed **←Note**
  - After Publications Printed
  - After Websites Published

Team Photos

- Team Amazon, Fall 2019



Team Photos [3 of 8]

The Capstone Experience
From Students...to Professionals

CSE498, Collaborative Design, Fall 2019
Computer Science and Engineering
Michigan State University

- > Home
- > News
- + Projects
- + Schedules
- + Design Day
- + Other Links
- + Archives
- > Contact Us

Team Amazon

amazon

Detroit, Michigan
Seattle, Washington

SPARTI: Selling Partner Application Ready to Integrate

Watch the Video...

Founded in 1994 as an online bookstore, Amazon is the largest online retailer in the world. Amazon has seen tremendous growth and success, making history by becoming the second U.S. company to be valued at $1 trillion. A key factor in Amazon's rise to the top is their e-commerce platform, which accounted for nearly 50% of all online retail purchases last year.

Today, more than half of the items sold on Amazon are managed and listed by third-party sellers. Amazon third-party sellers utilize the Amazon Seller Central portal to manually manage their listings and inventories on Amazon's platform. While the Seller Central site works well for small businesses, manual management becomes close to impossible for large and growing businesses.

Third-party sellers often create custom selling management applications. However, the process of creating these custom applications is often too difficult or overly time-consuming.

Our SPARTI application (Selling Partner Application Ready to Integrate) enables Amazon's third-party sellers to quickly and easily create custom selling management applications.

SPARTI provides users with a template application capable of fully connecting with Amazon's seller services. To deploy their custom site, a third-party seller merely needs to update the given template code with their own information.

Turnkey integration with Amazon Web Services (AWS) is also supported within SPARTI, giving third-party sellers the ability to automatically deploy and host their applications in the cloud.

Within the course of a day, a third-party seller is able to utilize the SPARTI project to build a containerized .NET application hosted on AWS ECS Fargate. The infrastructure for the application is instantiated by AWS CloudFormation.

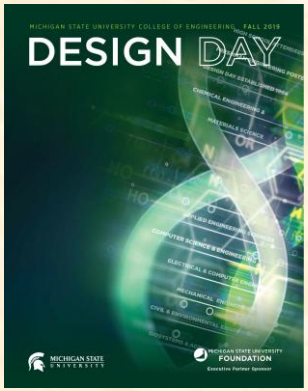
Team Amazon

SPARTI: Selling Partner Application Ready to Integrate

Watch the Video...

MSU Team Members (Left to Right)

Tyler Rozwadowski, Waterford, Michigan
Jordan Mulcahy, Jackson, Michigan
Rose Wang, Shanghai, Shanghai, China
Matt Maple, Portage, Michigan
Noah Girard, South Lyon, Michigan



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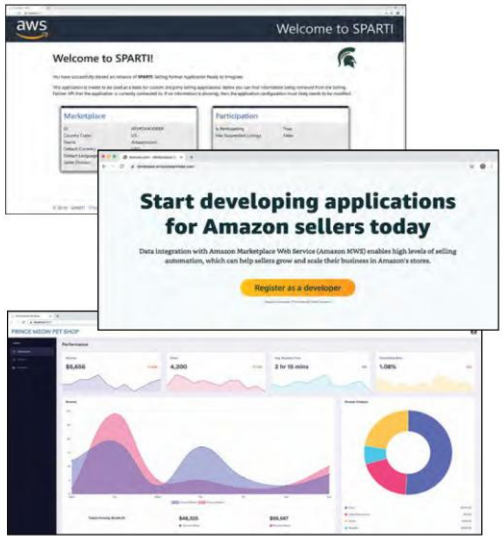

amazon

Michigan State University
Team Members (left to right)

Tyler Rozwadowski
Waterford, Michigan

Jordan Mulcahy
Jackson, Michigan

Rose Wang
Shanghai, Shanghai, China

Matt Maple
Portage, Michigan

Noah Girard
South Lyon, Michigan

Amazon
Project Sponsors

Christin Burek
Seattle, Washington

Garret Gaw
Detroit, Michigan

Evan Daikoku
Seattle, Washington

Sushma Gopalakrishnan
Detroit, Michigan

Madhuri Marri
Detroit, Michigan

Team Photos
[4 of 8]

The Capstone Experience
From Students...to Professionals
COMPUTER SCIENCE AND ENGINEERING 2021-2022

MICHIGAN STATE UNIVERSITY
Auto-Owners INSURANCE

Amazon
SPARTI: Selling Partner Application Ready to Integrate

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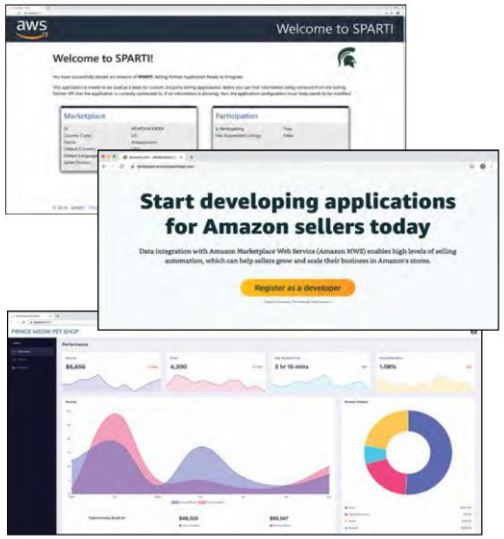

amazon

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Seattle, Washington

Garret Gaw
Detroit, Michigan

Evan Daikoku
Seattle, Washington

Sushma Gopalakrishnan
Detroit, Michigan

Madhuri Marri
Detroit, Michigan

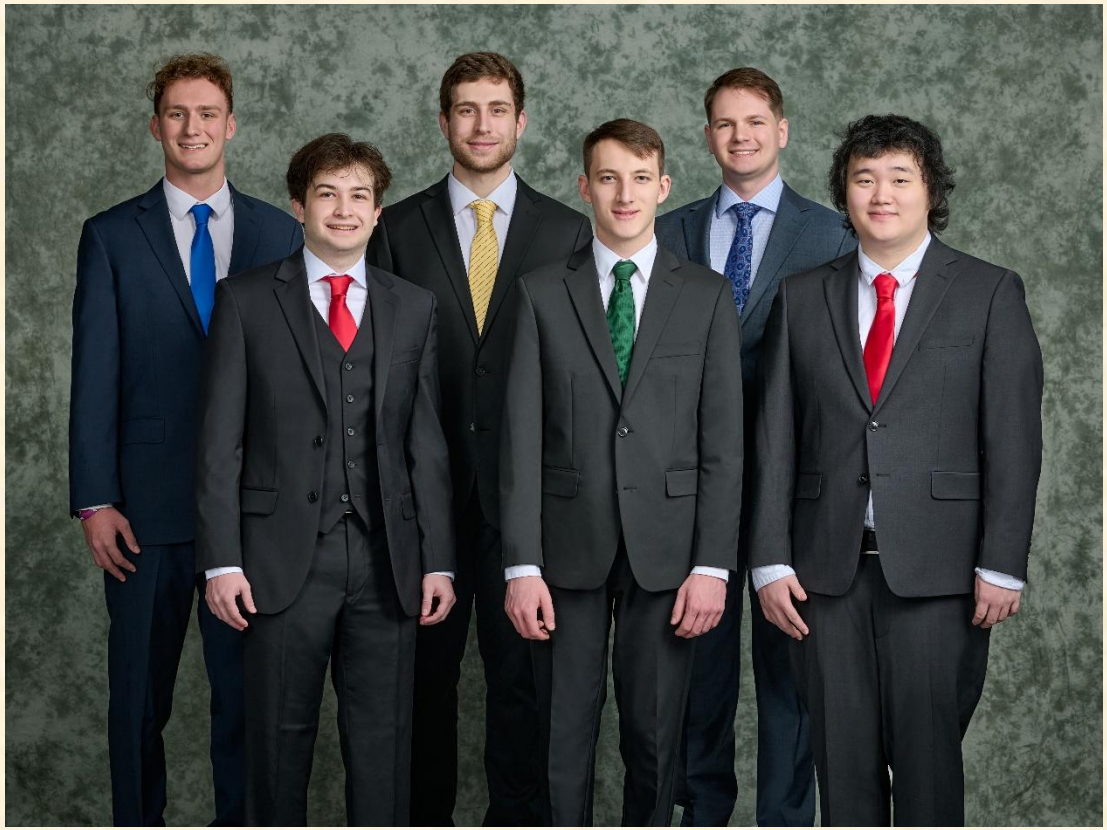
Team Photos
[5 of 8]

Team Photos

- Team Amazon, Spring 2024

Team Photos

- Team Google, Spring 2024



Team Photos

- Coordinated by James
- Friday, September 20, 9:00 a.m. – 5:00 p.m.
  - On-Time Attendance Required
  - Put on your calendar now. ← **Note**
  - Do not plan travel. ← **Note**
  - Outside of Engineering 3105 (CSE Conference Room)
- Dress
  - Business Preferred
  - At Least Business Casual
  - Team Coordinated

What's ahead?

[1 of 4]

- Upcoming Meetings
  - 09/03, Tu: Risks and Prototypes
  - 09/05, Th: Project Plan
  - 09/10, Tu: Team Status Report Presentations
  - 09/12, Th: Schedule and Teamwork
  - 09/20, Fr: Team Photos (8:00 a.m. – 5:00 p.m.)
  - 10/08, Tu: Team Project Plan Presentations
  - 10/10, Th: Team Project Plan Presentations
  - 10/15, Th: Team Project Plan Presentations

10% of Team Grade

What's ahead?

[2 of 4]

- Split-Hands Meetings
  - Used On Presentation Days
    - 09/10: Team Status Report Presentations
    - 09/17,19,24: Team Project Plan Presentations
  - Three Locations
    - Luke: 115 International Center
    - Griffin: 1281 Anthony
    - Sam: 1130 STEM
  - Find the rooms in advance.
  - Attendance Taken As Usual Including Lateness

What's ahead? [3 of 4]

- Website, Email and Team's Messages
  - Check Constantly
  - Read Carefully
  - Not Seeing and/or Reading Email ≠ Valid Excuse
- Triage Meetings
  - Scheduled
  - Attendance & Preparation
- 01/30, 02/01: Team Project Plan Presentations
  - Slide Deck Posted Online
  - Read and Review
  - Discuss in Triage Meetings

What's ahead?

[4 of 4]

- 09/10: Team Status Report Presentations
  - Less 2 Weeks From Today **←Note**
  - Split-Hands Meeting
  - Slide Deck Template Posted on Downloads Page
  - Must Use Windows Version of Office 365 **←Note**
  - Read Submission Instructions Carefully
  - Due by 11:59 p.m. ET, Monday, 09/09
  - Upload Two Times to Microsoft Teams
    - To General Channel File Space
      Folder "Team Status Report Presentation Slide Decks"
    - To Capstone Team's Private Channel
  - Aggregated Slide Decks by TM
    - On TM's Laptop Used by All Teams
    - One or More Presenters Per Team
    - Random Order

Aside: Filenames

- Convention
  - Use all lowercase.
  - Delete non-numeric and non-alphabetic characters except dashes.
  - Replace blanks by dashes.
- Examples
  - Team Amazon
    team-amazon-status-report-presentation.pptx
  - Team Auto-Owners
    team-auto-owners-status-report-presentation.pptx
  - Team Roosevelt Innovations Knowledge Science
    team-roosevelt-innovations-knowledge-science-status-report-presentation.pptx

Delete this slide.

Read Me

[1 of 2]

- Presenting
  - The Status Report Presentations will be given on Tuesday, September 10.
  - The purpose of your Status Report Presentation is for your team to demonstrate that you have made significant progress on your project. In particular, you will give status reports on a variety of things including the status of project sponsor contact, project sponsor meeting schedules, team meeting schedules, team organization, server systems and software, development systems and software, a brief description of the project, the status of your project plan and the initial identification of risks.
  - The time limit for your presentation is 6 minutes, which will be strictly enforced. Practice your presentation to ensure that your team will finish within the allotted time of 6 minutes.
  - Be ready to answer questions, including tough questions.
  - We will meet in "split-hands" meetings. Luke's teams will meet in 115 International Center, Griffin's teams will meet in 1281 Anthony, and Sam's teams will meet in 1130 STEM.
  - Dr. D. will combine the individual team slide decks into multiple slide decks, one for each TM.
  - Your TM will project the combined slide decks using their laptop, which your team will use for your presentation.
  - Your team may have one or more presenters.
  - The order in which the teams will present will be random.

Delete this slide.

READ ME

[2 of 2]

- Creating and Editing
  - Read and follow the instructions in “Editing Documents and Presentations Using Office 365” of our course syllabus.
  - You must use this PowerPoint slide deck template as is. Do not change the number of slides unless the instructions explicitly allow you to duplicate slides. Do not change the order of the slides. Do not change the styles. Do not edit the master slides.
  - Throughout the template, replace placeholders […] with the appropriate information.
  - Edit the center footer by clicking the Header & Footer button on the Insert ribbon. Change [Team Name] in the footer to your company name as in “Team TechSmith Status Report Presentation”. If necessary, extend the width of the center footer textbox on the master slide, making sure that you re-center the enlarged textbox.
  - Do not include any company confidential information in your presentation.
  - Delete every textbox that includes “Delete this textbox” and every slide that includes “Delete this slide.”
- Submitting
  - All presentations must be submitted to us and to your client by 11:59 p.m., Monday, September 9.
  - Name your PowerPoint slide deck file as “team-[team-name]-status-report-presentation.pptx” replacing “[team-name]” with your team’s name normalized by using all lower case, deleting non-numeric and non-alphabetic characters, and replacing blanks by dashes. Examples include “team-kelloggs-status-report-presentation.pptx” and “team-delta-dental-knowledge-science-1-status-report-presentation.pptx” .
  - Upload your PowerPoint slide deck to the folder “Status Report Presentation Slide Decks” in our Microsoft Teams General Channel file space by 11:59 p.m., Monday, September 9. In addition, upload your slide deck to your team’s private channel file space in case your slide deck is deleted by accident from the General Channel file space, and you need to prove that you did indeed upload your slide deck by the due date and time. Set File Explorer or Finder to show all file extensions to ensure that there are no blanks before the “.pptx” extension as in “team-amazon .pptx”.
  - Email a copy of your slide deck to your client as well by 11:59 p.m., Monday, September 9. Do not cc us on that email. Include some professional text in the body of your email to practice being a professional and to avoid having your email sent to your project sponsor’s junk folder.

MICHIGAN STATE UNIVERSITY

Status Report Presentation

[Project Title 36pt]

Status Information:
Think clicking "Status" on an Amazon order.

- You bought this on Monday, August 26. Helpful?
- We're going to send this to you. Satisfied?
- People who bought this also bought…. We good?

Where the $*(%($* is my order?

Delete this textbox.

The Capstone Experience

Team [Team Name 24pt]

[Team Member 1 16pt]
[Team Member 2 16pt]
[Team Member 3 16pt]
[Team Member 4 16pt]
[Team Member 5 16pt]
[Team Member 6 16pt]

Department of Computer Science and Engineering
Michigan State University

Fall 2024

From Students…
…to Professionals

Team [Team Name]

Status Report

[1 of 4]

[Project Title]

- Sponsor Overview
  - Overview Point 1
  - Overview Point 2
  - Overview Point 3
- Project Overview
  - Description Point 1
  - Description Point 2
  - Description Point 3
  - Description Point 4

Describe your sponsor is 30 seconds or less.

Delete this textbox and the brace to the left.

Describe your project in 30 seconds or less.

What problem does it solve?

Who will use it? How will they use it?

Delete this textbox and the brace to the left.

Team [Team Name]

Status Report

[2 of 4]

[Project Title]

- Server Systems / Software
  - Description &/or Status Point 1
  - Description &/or Status Point 2
  - Description &/or Status Point 3
- Development Systems / Software
  - Description &/or Status Point 1
  - Description &/or Status Point 2
  - Description &/or Status Point 3
- Project Plan Document
  - Status Point 1
  - Status Point 2
  - % Complete

Include status information.

Are all systems up and running?

Have you tested everything?

Delete this textbox and the brace to the left.

Include status information.
What's the status of your project plan document?
Have you started it?
How much have you written?
What percentage complete is it?
Delete this textbox and the brace to the left.

Team [Team Name]

Status Report

[3 of 4]

[Project Title]

- Client Contact
  - Status Point 1
  - Status Point 2
- Team Meetings
  - Status Point 1
  - Status Point 2
- Team Organization
  - Description Point 1
  - Description Point 2

Include status information.
Have you talked with/met with your client?
Have you scheduled a weekly conference call? When?
Have you scheduled an in-person meeting? When?
How many times has your team met so far?
Have you scheduled team meetings? How often?
Delete this textbox and the brace to the left.

Include status information.

Who's doing what?

Delete this textbox and the brace to the left.

Team [Team Name]

Status Report

[4 of 4]

[Project Title]

Risks

- Risk 1
  - Description
  - Mitigation
- Risk 2
  - Description
  - Mitigation
- Risk 3
  - Description
  - Mitigation
- Risk 4
  - Description
  - Mitigation

A "Risk" is a significant task that you need to accomplish that you currently do not know how to do. Usually, a risk is a "showstopper," meaning if you cannot complete the task, you cannot complete your project.

"Mitigation" for a particular risk is your plan for eliminating that risk; that is, your plan for figuring out how to accomplish the task.

List only "real" risks. For example, learning new computer languages is **not** a risk for an MSU CSE student.

Give "useful" explanations of how you are going to mitigate each risk. For example, "we will learn how to do it" is **not** a useful explanation.

Delete this textbox.