MICHIGAN STATE UNIVERSITY

08/29,08/31: Capstone Overview

The Capstone Experience

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James Mariani

Department of Computer Science and Engineering
Michigan State University

Fall 2023

From Students…
…to Professionals

CSE498, Collaborative Design

- "The Capstone Experience"
- Professors
  - Dr. Wayne Dyksen ("Dr. D.")
  - Prof. James Mariani
- Team Managers (TMs)
  - Tommy Hojnicki
  - Griffin Klevering
  - Luke Sperling
- Class Meetings
  - Tu, Thu 3:00 – 4:20 p.m. Eastern Time
  - All-Hands:
    - STEM 1130
    - Microsoft Teams General Channel
  - Split-Hands:
    - Luke: International Center 115
    - Griffin: STEM 1130
    - Tommy: Engineering 1145

- 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 08/29 and 08/31

- 08/29
  - Introduction to Capstone Logistics
  - Overview of Projects
  - Team Member Survey
- 08/31
  - Capstone Logistics
  - What's ahead?

Capstone Overview

➢Course Logistics

• Client Projects

• Course Logistics (Continued Next Meeting)

Course Goals

- 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

- 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 15 (Short) Weeks

Course Goals

- Build a significant software system.

- 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
  - Guest Speaker(s)
- Split-Hands
  - Team Status Reports
  - Team Formal Presentations (30% of Final Grade)
  - Team Project Videos

Weekly Schedule

- 08/29: Capstone Overview 1
- 08/31: Capstone Overview 2
- 09/05: Risks and Prototypes
- 09/07: Team Status Report Presentations
- 09/12: Project Plan
- 09/14: Schedule and Teamwork
- 09/15: Team Photos (8:00 a.m. – 5:00 p.m.)
- 09/19: Team Project Plan Presentations
- 09/21: Team Project Plan Presentations
- 09/26: Team Project Plan Presentations
- 09/28: Design Day Booklet Process
- 10/03: Creating and Giving Presentations
- 10/05: Resume Writing and Interviewing
- 10/10: Team Alpha Presentations
- 10/12: Team Alpha Presentations
- 10/17: Team Alpha Presentations
- 10/19: Intellectual Property
- 10/24: October Break

- 10/26: Design Day and the Project Videos
- 10/31: Ethics and Professionalism
- 11/02: Team Status Report Presentations
- 11/07: Team Status Report Presentations
- 11/09: Team Status Report Presentations
- 11/14: Team Beta Presentations
- 11/16: Team Beta Presentations
- 11/21: Team Beta Presentations
- 11/23: Thanksgiving
- 11/28: Team Status Report Presentations
- 11/30: Team Status Report Presentations
- 12/03: Project Videos Due
- 12/05: Project Videos
- 12/06: All Deliverables Due
- 12/07: Project Videos
- 12/07: Design Day Setup
- 12/08: Design Day
- 12/13: Capstone Wrap Up (10:00 a.m. – 12:00 p.m.)

The Capstone Labs

- 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

- **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 <u>in person</u>.
  - Team Meetings
  - Triage Meetings
  - Client Conference Calls
- Schedule Accommodations
  - Made For Reasonable Requests
  - Not Made For
    - Working Unreasonable Number of Hours
    - Commuting Distance to Campus

CSE498 Prerequisites

- Must Have Successfully <u>Completed In Advance</u>
  - CSE300 (Waived for Students "Grandfathered" In)
  - 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
  - WRA (Tier I Writing Requirement)
- Ability to Read Email
  - Immediately
  - Carefully
  - Completely

Capstone Overview

✓Course Logistics

➢Client Projects

• Course Logistics (Continued)

Team / Project Generalities

- 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

- 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

- 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

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. Ally
2. Amazon
3. Anthropocene Institute
4. Auto-Owners
5. Bosch
6. DRIVEN-4
7. Evolutio
8. GM
9. HAP
10. Kellogg's
11. Kohl's
12. Lockheed Martin Space
13. Magna
14. Meijer
15. Michigan State University CSE
16. Moii
17. MSUFCU
18. Roosevelt Innovations Data Science
19. Roosevelt Innovations Knowledge Science
20. RPM
21. Stryker
22. TechSmith
23. Union Pacific
24. United Airlines Quality Assurance
25. Urban Science
26. UWM
27. Vectra
28. Volkswagen
29. W K Kellogg Co
30. Whirlpool

Team Ally

Project Overview

Ally Financial Education Platform

- Functionalities
  - Educate Consumers about Money Management
  - With an Interactive Learning Platform

- Features
  - Support Many Types of Media
    - Courses
    - Blogs
    - Videos, etc.
  - Recommend Financial Courses
  - Track User Progress Through Quizzes
  - Include Admin and User Views

- Technologies
  - Visual Studio Code
  - React / JavaScript / NodeJS
  - Amazon Web Services
  - Machine Learning (ML)

ally

Detroit, Michigan
Charlotte, North Carolina

Team Amazon
Project Overview

Email Improvement Tool

- Functionalities
  - Make Automated Emailing Simpler
  - By Analyzing Email Templates and Content
  - Using a Machine Learning Model
- Features
  - Create and Train a Machine Learning Model
  - Classify Email Templates
  - Summarize Email Contents
  - Evaluate Email Clarify and Empathy
  - Create an Easy-to-Use Web Application
- Technologies
  - Angular / Vue / React
  - AWS Machine Learning (ML)
  - AWS Cloud Development Kit
  - AWS Lambda / EC2 / ECS
  - AWS Dynamo / Relational Databases

amazon

Seattle, Washington
Detroit, Michigan

Team Anthropocene Institute

Project Overview

Machine Learning for Optimization of Carbon Removal

- Functionalities
  - Make the Earth Greener
  - Using Real Environmental Data
  - And Machine Learning Methods
- Features
  - Access Multiple Unique Data Sources
  - Analyze Data for Patterns
  - Create and Train a Machine Learning Model
  - Identify Sites for Carbon Removal
  - Within an Attractive Web Application
- Technologies
  - Modern Web Framework
  - Database Technologies
  - Machine Learning (ML)

Anthropocene Institute
Palo Alto, California

Team Auto-Owners

Project Overview

Help me see!

- Functionalities
  - Minimize Number of Insurance Claims
  - Through Augmented Reality Application
  - That Provides Intuitive Loss Info on AR Objects
- Features
  - Provide Loss Exposure and Prevention Info
  - Overlay Objects into the Live Scene
  - Identify Existing Object to Gather Info
  - Develop Game Aspect for Testing
- Technologies
  - C++
  - Windows SDK
  - Unity
  - HoloLens (Developer Mode)
  - Augmented Reality (AR)

Auto-Owners
INSURANCE
Lansing, Michigan

Team Bosch

Project Overview

Trailering Safety Using Computer Vision

- Functionalities
  - Make Trailer Hitching Safer
  - By Analyzing and Rating Videos
  - Using a Machine Learning Strategy
- Features
  - Process Video Frames
  - Analyze and Label Hitching Videos
  - Train a Machine Learning Method
  - Rate Hitching Attempts
  - Report Errors in the Hitching Process
- Technologies
  - Python / Java / CPP
  - Video Processing Framework
  - Machine Learning (ML)
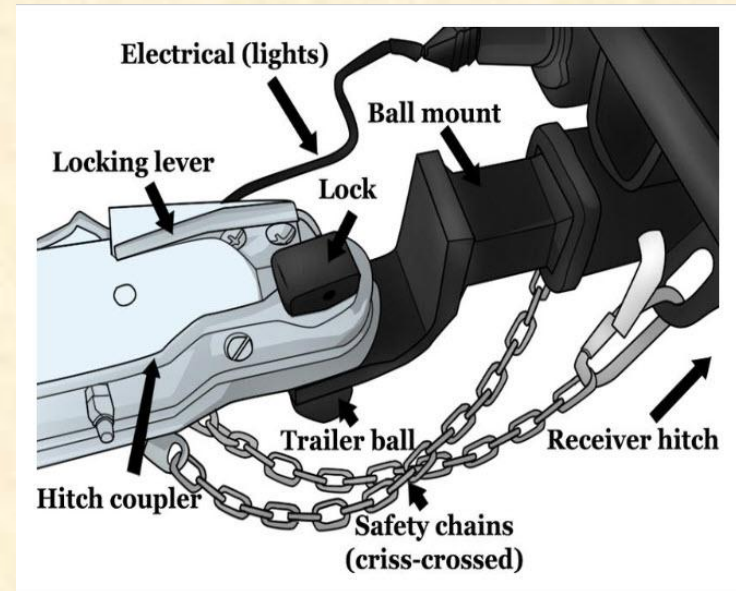
BOSCH
Plymouth, Michigan

Team DRIVEN-4
Project Overview

DRIVEN-4 Connect Update and Upgrade

- Functionalities
  - Streamline Data and Device Management
  - For Internet of Things (IoT) Devices
  - With Web App and Supporting APIs
- Features
  - Analyze Data From Various Databases
  - Perform Device Firmware Updates
  - Manage Users and Devices for Firm
  - Learning Center for Users
- Technologies
  - Python
  - Java
  - Flask / Flask API
  - MySQL
  - Fast API

DRIVEN-4

St. Joseph, Michigan
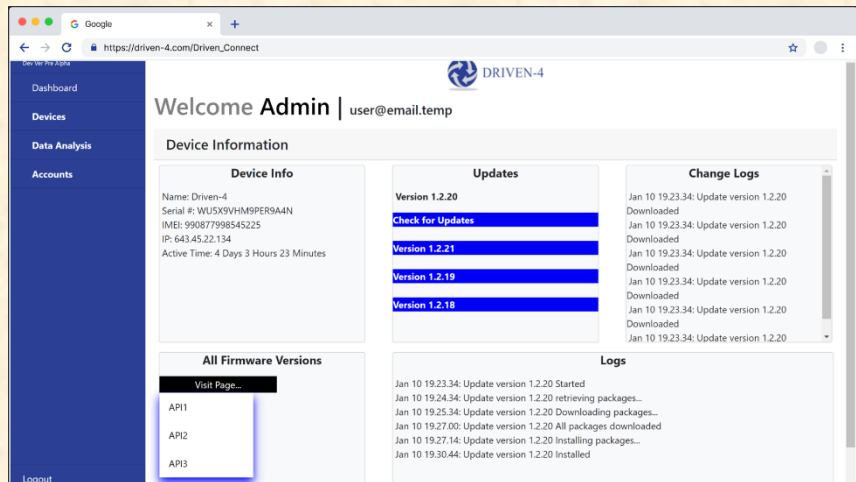
Team Evolutio
Project Overview

Evo Observability Platform

- Functionalities
  - Make Application Monitoring Easier
  - Using a Variety of Tracking Tools
  - Within an Easy-to-Use Web App
- Features
  - Trace Backend Services
  - Track Live Metrics and Dependencies
  - Integrate Error and Exception Logging
  - Generate Alerts via Email, SMS, and More
  - Build a Unique Web-Based Interface
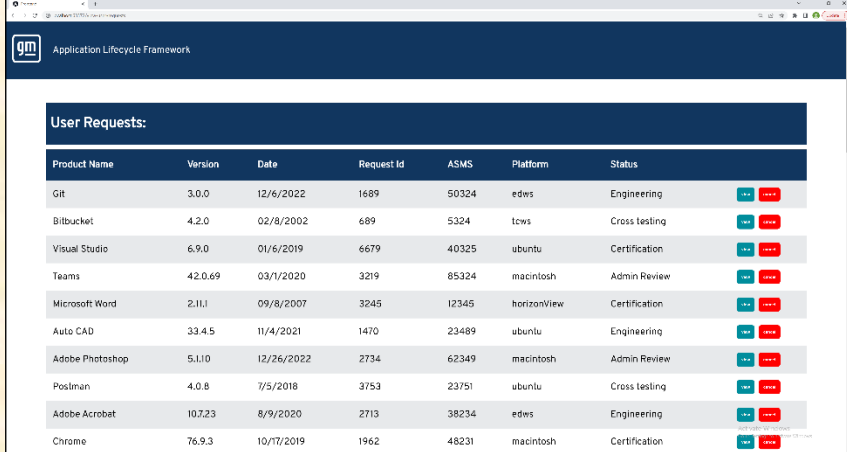- Technologies
  - OpenTelemetry
  - Apache Kafka
  - Druid / Neo4J
  - AWS Hosting

evolutio
Chicago, Illinois
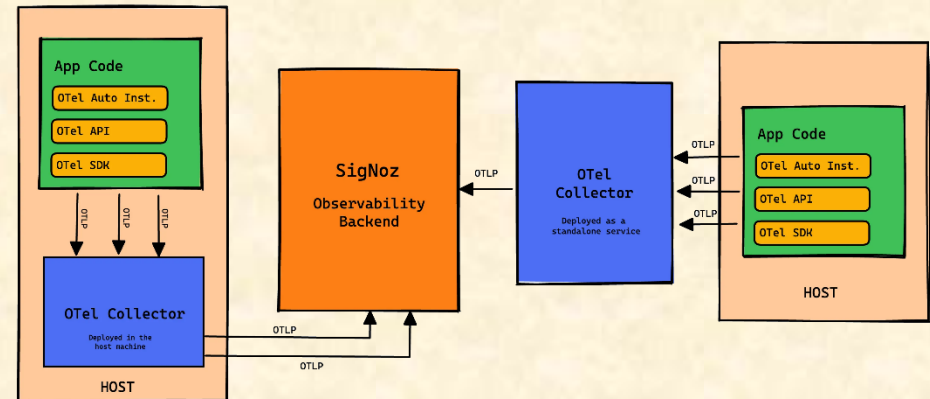
Team GM
Project Overview

Application Lifecycle Framework 2.0

- Functionalities
  - Enhance the GM Application Lifecycle
  - Track, Automate, and Validate Application Distribution
  - With an Intuitive Web Platform
- Features
  - Build New Features for an Existing Platform
  - Support Domain-Aware Requests
  - Incorporate Existing Validation Scripts
  - Offer Robust Troubleshooting and Logging
- Technologies
  - HTML
  - Java
  - Angular / JavaScript
  - MariaDB

Detroit, Michigan

Team HAP

Project Overview

Leveraging OpenAI for Business Analytics

- Functionalities
  - Make Business Analytics Faster
  - By Exploring the World of Artificial Intelligence
  - Within a Web Application
- Features
  - Utilize Many Different Data Sources
  - Train Several Machine Learning Models:
    - Search the HAP Site for Faster Answers
    - Help Users Create New Insurance Plans
    - Summarize Call Center Transcriptions
  - Apply Artificial Intelligence to an Existing Web App
- Technologies
  - OpenAI
  - ChatGPT
  - Artificial Intelligence (AI)
  - Machine Learning (ML)

hap

Detroit, Michigan

Team Kellogg's
Project Overview

Global Business Services Process Intelligence

- Functionalities
  - Improve Efficiency of Kellogg's Global Business Services
  - By Automatically Processing Customer Requests
  - With a User-Friendly Customer-Facing Web App
- Features
  - Design Platform to Handle Any Customer Request
  - Support Returns, Overages, Damages, and Shortages
  - Automate Many Parts of the Process
  - Unify System through Standardization
  - Create Intuitive Analytics Dashboard
- Technologies
  - Microsoft Office 365
  - Microsoft Power BI

Kellogg's®

Battle Creek, Michigan

Team Kohl's
Project Overview

Infinity Gauntlet

- Functionalities
  - Leverage Existing Data Centers
  - To Create Flexible Infrastructure
  - In a Cohesive Framework
- Features
  - Support Projects, Networking, Firewalls
  - Offer a Cloud-Agnostic Solution
  - Manage Configuration Synchronization
- Technologies
  - Terraform
  - Backstage



KOHL'S

Menomonee Falls, Wisconsin

Team Lockheed Martin Space
Project Overview

SmartSat™ Heterogenous Computing in Space

- Functionalities
  - Enable Applications to Run on Various Devices
  - By Developing Unified Execution Platform
  - That Provides Efficient Resource Use
- Features
  - Develop Accelerator App for Enabling Devices Access
  - Distribute Computation From Single File
  - Accelerate Applications Ran From SBC
- Technologies
  - C++
  - Python
 - Yocto Project™ / PetaLinux
  - SYCL / Vitis

LOCKHEED MARTIN

Littleton, Colorado
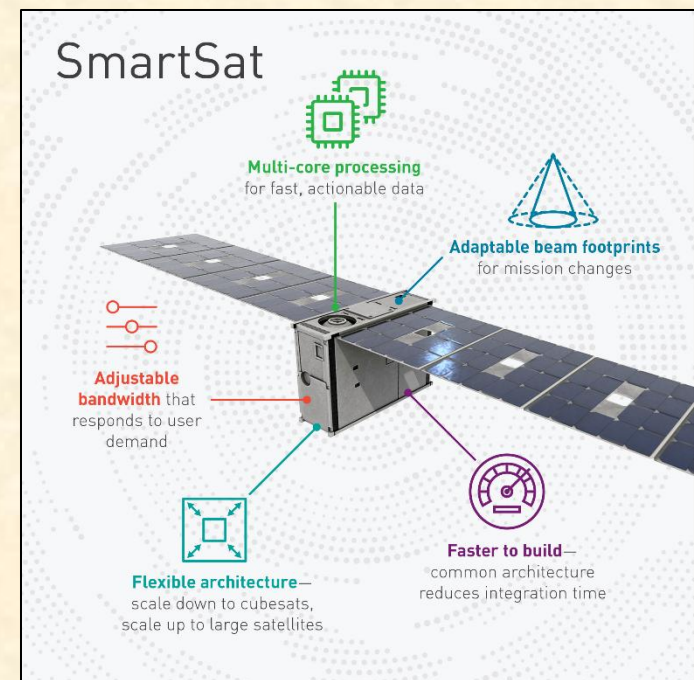
Team Magna
Project Overview

Composable 3D Model for a Manufacturing Plant

- Functionalities
  - Efficiently Manage Factory Resources
  - By Modeling Factories and Assets in 3D
  - Through a Web-Based Visualization App
- Features
  - 3D Visualizations of Factory
  - Fixed and Movable Assets
  - Rearrange Assets to Test New Layouts
  - Provide Feedback on Efficiency
- Technologies
  - GeoJSON / TopoJSON
  - CesiumJS / OpenRMF
  - gITF Editor (Gestaltor)

MAGNA
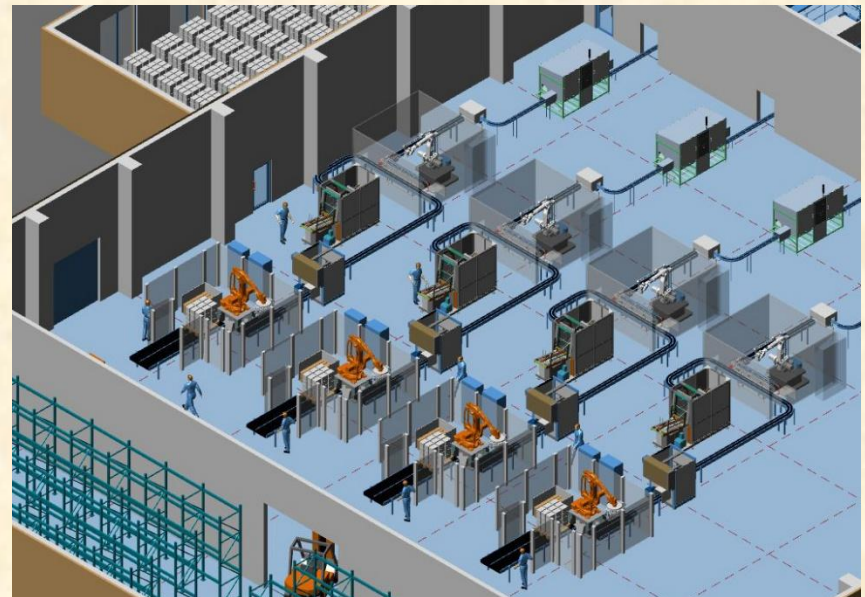
Tory, Michigan
Aurora, Ontario, Canada

Team Meijer

Project Overview

Enhanced Shopping Experience Using AI

- Functionalities
  - Improve Meijer Customer Satisfaction
  - By Offering Recipes Based on Previous Purchases
  - Personalize the Shopping Experience
- Features
  - Recommend Recipes Based on Purchases
  - Add Items for Recipes to Cart
  - Update Recipes for Diet Restrictions
- Technologies
  - React Native
  - SQL
  - Blazor Web Assembly
  - Microsoft Azure Web Services
  - Artificial Intelligence (AI)


meijer

Grand Rapids, Michigan

Team Michigan State University CSE

Project Overview

clUML: A Browser-Based UML Editor

- Functionalities
  - Provide UML Designers Improved Experience
  - Streamline Design Experience for Students
  - Through a Course-Lib Embedded Page
- Features
  - Full-Featured UML Editor
  - Sanity Check for Identifying Common Errors
  - API For File Management
  - Unit Testing to Verify Functionality
- Technologies
  - JavaScript
  - Yarn
  - Karma / Jasmine
  - PhpStorm
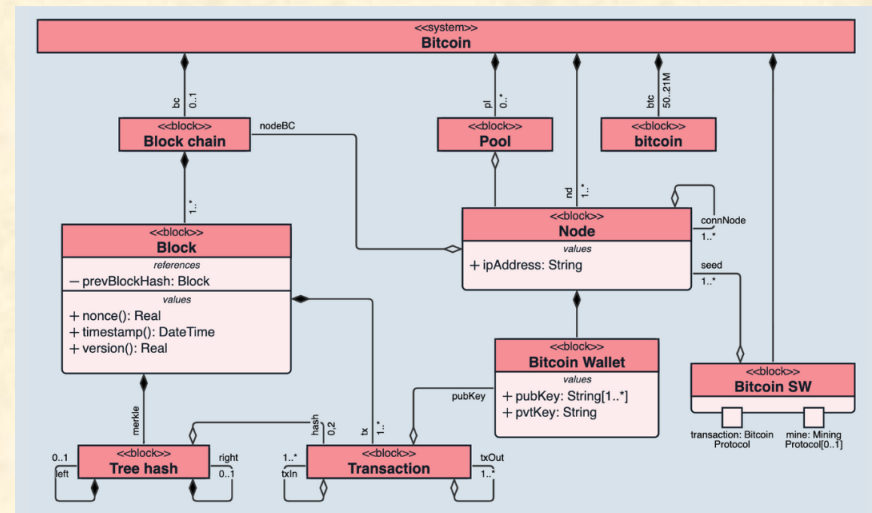
Team Moii

Project Overview

Small Object Detection Using CCTV Cameras

- Functionalities
  - Make the World a Safer Place
  - By Locating Small Objects
  - Using a Unique Artificial Intelligence Approach
- Features
  - Train an AI Model Using an Existing Dataset
  - Create an API to Utilize your Model
  - Deploy and Run the AI Model in a Real Time Setting
  - Send Real Time Alerts Using a Variety of Methods
- Technologies
  - Python 3.6+
  - PyTorch
  - Google Cloud API
  - Artificial Intelligence (AI)

moii

Troy, Michigan

Team MSUFCU
Project Overview

Digital Banking Car App

- Functionalities
  - Improve MSUFCU User Experience
  - Through Dedicated Mobile Car Apps
  - To Enable Easy Account Management
- Features
  - Enable Voice Management
  - Check Account Balances
  - M2M Payments
  - Full Chatbot Integration
- Technologies
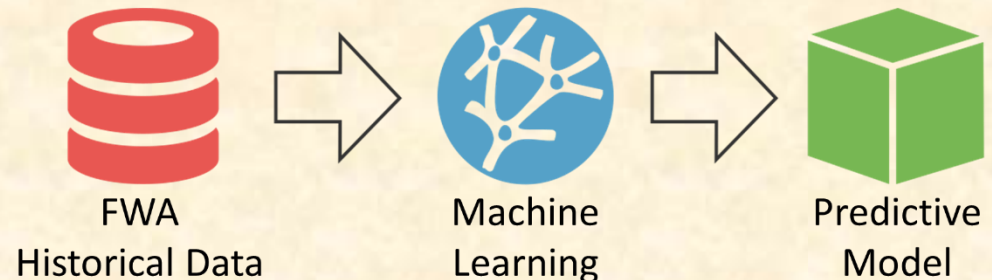 - HTML
  - PHP
  - Swift / Java
  - MySQL

msufcu.

East Lansing, Michigan

Team Roosevelt Innovations Data Science

Project Overview

Predictive Claims Scoring

- Functionalities
  - Protect Roosevelt Innovations and its Members
  - By Minimizing the Frequency of Fraud
  - With Machine Learning and Data Analytics
- Features
  - Identify Fraudulent Claim Likelihood
  - Model Performance Metrics
  - Data Visualizations for Model Impact
- Technologies
  - Snowflake
  - PyTorch
  - Scikit-learn
  - FastAPI
  - Tableau
  - Machine Learning (ML)

FWA Historical Data → Machine Learning → Predictive Model

Roosevelt
simple. seamless. smart.
Okemos, Michigan

Team Roosevelt Innovations Knowledge Science
Project Overview

Universal Guided Web Editor

- Functionalities
    - Improve Developer Environment
    - By Developing a Guided Editor Component
    - That Adapts Desktop Editor for the Web
    - With Expanded Functionality
- Features
    - Adapt to Many Languages
    - Save and Restore Authoring Sessions
    - Configure Rendering Properties
- Technologies
    - TypeScript
    - Angular
    - Git

Roosevelt
simple. seamless. smart.
Okemos, Michigan

Team RPM
Project Overview

AI-Based Chat Service

- Functionalities
  - Improve RPM's Carrier Productivity
  - By Aiding Carriers with Specifications of Shipments
  - With a Context-Aware Chatbot
- Features
  - Understand Pertinent Details during Chats
  - Identify when to Connect to a Live Employee
  - Provide a Reusable and Scalable Solution
- Technologies
  - Microsoft C# / .NET
  - Artificial Intelligence (AI)
  - Machine Learning (ML)

Royal Oak, Michigan

Team Stryker
Project Overview

Electronic Data Interchange (EDI) Transaction Monitoring

- Functionalities
  - Improve Stryker's Electronic Data System
  - By Automatic Processing of Transaction Info
  - In an Easy-to-Use Web App
- Features
  - Analyze and Visualize Performance
  - Simulate Flow of Transactions Supply Chain
  - Detect and Alert Decreases in Transaction Volumes
  - Visualize Data and Alerts
- Technologies
  - Microsoft PowerBI
  - Microsoft SQL
  - Microsoft Azure Web Services
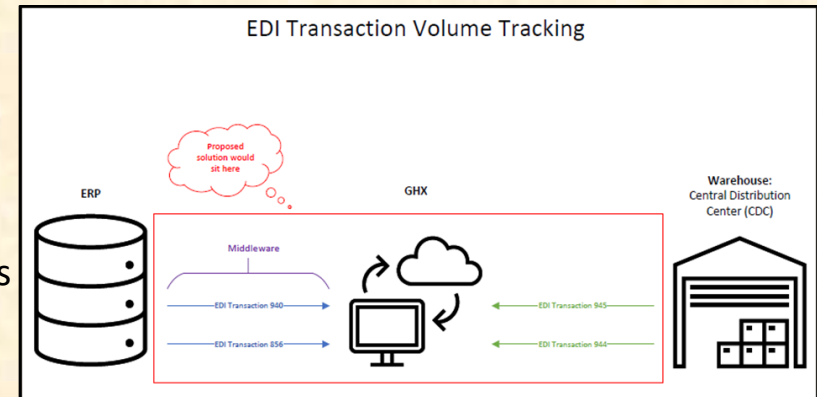
stryker

Kalamazoo, Michigan

Team TechSmith
Project Overview

ACE: Automated Content Editor

- Functionalities
  - Make Video Creation Easier
  - By Creating Video Based On User Input
  - Using an Artificial Intelligence Model
- Features
  - Create a Linear Video Editor
  - Train an Artificial Intelligence Model
  - Read User Inputs for Video Requests
  - Use the Model to Dynamically Create Video
  - Edit Video, Audio, and Images Automatically
- Technologies
  - Angular
  - FFmpeg
  - Microsoft Azure Web Services
  - Artificial Intelligence (AI)
  - Machine Learning (ML)

TechSmith®
East Lansing, Michigan
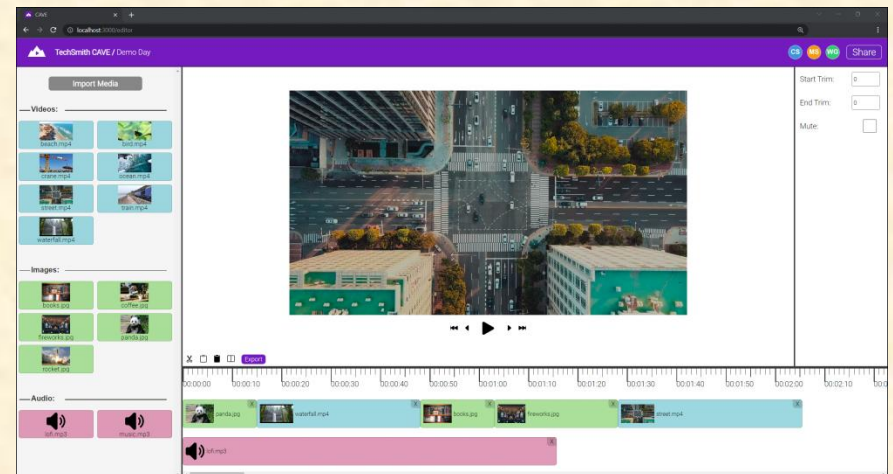
Team Union Pacific
Project Overview

Railroad Switch Alignment Training

- Functionalities
  - Train Employees to Align Railroad Switches
  - With an Interactive Training Course

- Features
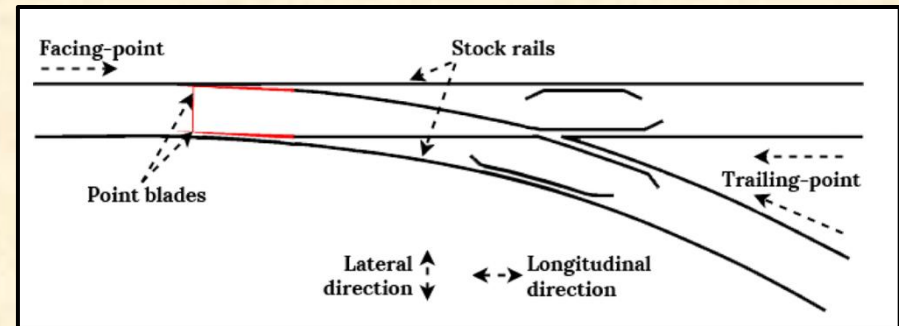 - Provide Variety with Randomized Challenges
  - Offer a Realistic Simulation
  - Teach Basics with a Tutorial

- Technologies
  - Unity3D
  - WebGL
  - SCORM

UNION PACIFIC

BUILDING AMERICA®
Louisville, Colorado
Omaha, Nebraska

Team United Airlines Quality Assurance
Project Overview

Audit Automation Tool

- Functionalities
  - Improve Efficiency of United Airlines Auditing
  - By Detecting if Manuals Meet Industry Standards
  - With Natural Language Processing
- Features
  - Ingest Maintenance Manuals and Requirements
  - Automatically Generate Reports
  - Answer Questions about Requirements
  - Suggest Candidates for Audit Coverage
  - Develop Feedback Loop to Improve Accuracy
- Technologies
  - Python
  - Natural Language Processing (NLP)

UNITED

Chicago, Illinois
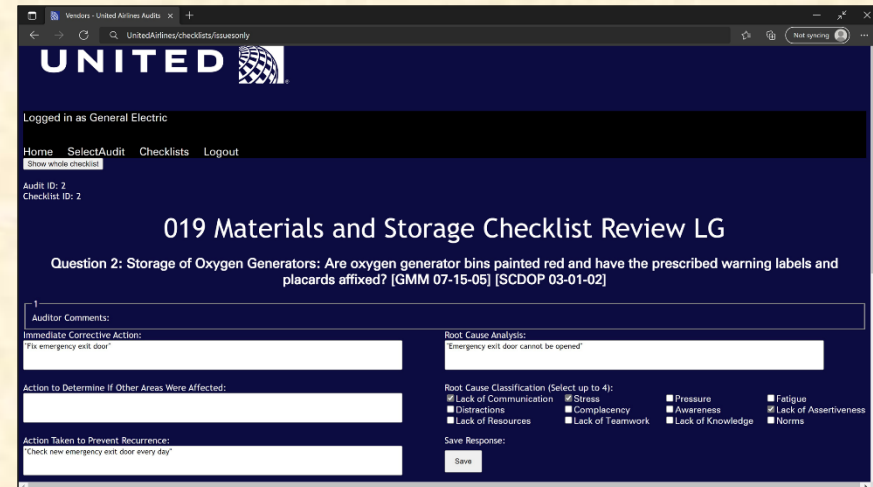
Team Urban Science
Project Overview

Synthetic Media

- Functionalities
  - Make Video Creation Easy
  - By Utilizing Artificial Intelligence
  - To Create Generated Instructional Videos
- Features
  - Train Artificial Intelligence Models to Create
    - Synthetic Avatars
    - Fake Voices
    - Scripts
  - Design an Attractive User Interface
  - Create an Admin Application to Track Videos
- Technologies
  - HTML / CSS
  - C# / .NET Core
  - Python
  - Angular / Chart.js / TypeScript
  - Dapper
  - SQL
  - Artificial Intelligence (AI)

URBAN SCIENCE
Detroit, Michigan
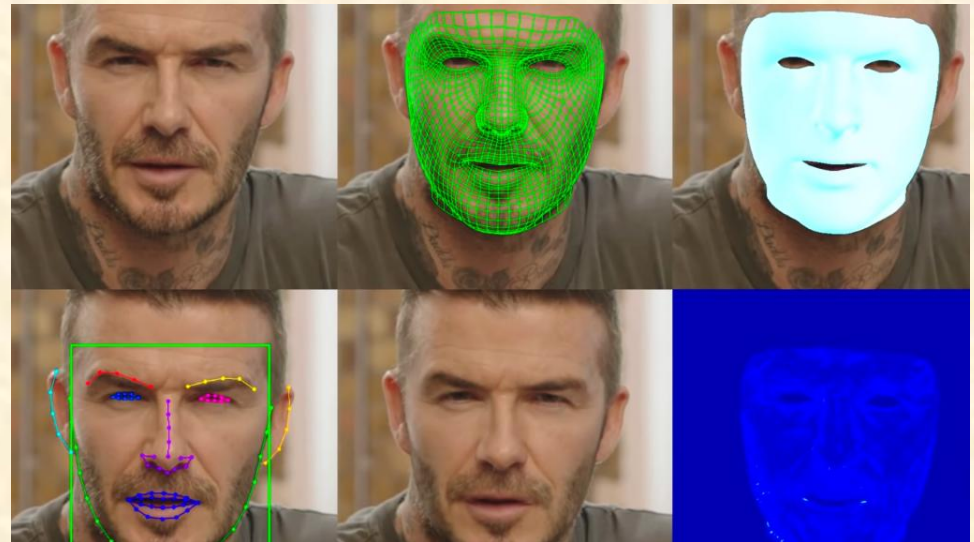
Team UWM

Project Overview

Change Insights Datamart and Risk Assessment

- Functionalities
  - Make Data Collection Easy
  - By Analyzing Information Faster
  - Using an Artificial Intelligence Model
- Features
  - Aggregate Data From Multiple Sources
  - Create a Single Data View
  - Train a Model To Track Changes in Data
- Technologies
  - C#
  - Octopus
  - Harness
  - ServiceNow
  - JIRA
  - Microsoft Azure Web Services
  - Talend
  - Artificial Intelligence (AI)

Change Management

01 Creating a change request
02 Reviewing the change request
03 Assessing the change risks
04 Approval of change
05 Implementing the change
06 Closing the change request

UWM
UNITED WHOLESALE MORTGAGE
Pontiac, Michigan

Team Vectra
Project Overview

Malware Command and Control Channel Simulator

- Functionalities
  - Improve Malware Detection
  - By Simulating Command and Control Channels
  - With Advanced Artificial Intelligence

- Features
  - Execute Evasion Detection Techniques
  - Identify Patterns using Artificial Intelligence
  - Leverage Data to Improve Detection

- Technologies
  - PyTorch
  - Scapy
  - Merlin
  - Artificial Intelligence (AI)
  - Machine Learning (ML)
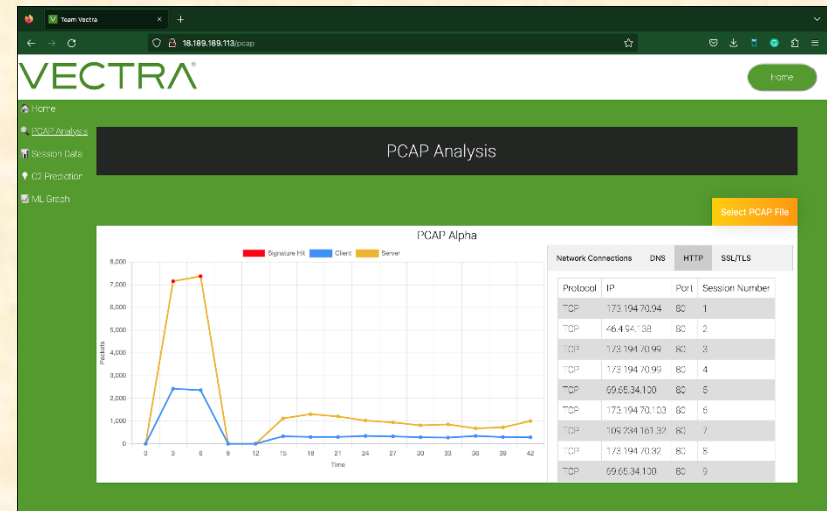
VECTRA®

San Jose, California

Luke

Team Volkswagen
Project Overview

Volkswagen Shopping App with Augmented Reality

- Functionalities
  - Modernize Car Buying Process
  - With an Augmented Reality Application
  - To View 3D Models of Automobiles
- Features
  - Advertise Various Volkswagen Models
  - Support Both Electric and Non-Electric
  - Swap Interior and Exterior Colors
  - Include Audio for Engine and Horn
- Technologies
  - Xcode
  - Android Studio
  - Blender
  - Augmented Reality (AR)

Team W K Kellogg Co

Project Overview

Global Business Services Process Intelligence

- Functionalities
  - Make Company Logistics Clearer
  - By Tracking Goods and Metrics
  - Within an Easy-to-Use Phone app
- Features
  - Document Production Information
  - Design an App for Employees to Enter Data
  - Identify Issues with Production
  - Recommend Solutions to Problems
- Technologies
  - Python
  - PowerApps
  - XML
  - Microsoft Office 365
  - PowerBI

WK Kellogg Co

Battle Creek, Michigan

Team Whirlpool

Project Overview

DeepOven: Volume and Quantity Estimation in Cooking

- Functionalities
  - Improve the Cooking Experience
  - By Providing Users With Cooking Insights
  - Through In-Oven Quantity Estimation

- Features
  - Build Intuitive Web Application
  - Estimate Volume and Quantity of Food
  - Visualize Data and Provide 3D Reconstructions

- Technologies
  - Python
  - JavaScript
  - Deep Learning
  - Whirlpool Technology 3

Whirlpool

Benton Harbor, Michigan

Attendance Today

- Sign into Google with MSU Credentials
- Google Form
  - https://forms.gle/3UZ56rbZk5w7iXnm7
  - https://shorturl.at/dDMPQ

Team Member Survey

- 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

- 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

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?

- 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 <u>tomorrow,</u> COB.
    (COB == Close of Business)
  - Complete conference call or online meeting by <u>Friday.</u>
  - Review project proposal.

What's ahead?

- Team Photos
  - Coordinated by James
  - Friday, September 15, 8:00 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.

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 Tommy
    - Heard From
    - Scheduled Weekly Triage Meeting
    - Met With Once?
- Capstone Lab
    - Found It
    - Successfully Logged into Systems
    - Began Configuring Systems
- Projects
    - Read Project Description
    - Discussed with Client
    - Began Exploring and Configuring Technologies
    - Began Exploring and Configuring Systems

About Us

- 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, Instructor @ MSU

About Us

- 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
- Tommy Hojnicki (hoy-Nick-ee)
  - Title: Graduate Teaching Assistant
  - Hometown: Naperville, Illinois
  - 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
  - Luke, Griffin, Tommy == TM
- Dr. D. and James
  - TMs' Manager
  - Your…
    - Manager's Manager
    - "Skip-Level" Manager

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
  - <u>Do not</u> use Apple Boot Camp

The Capstone Labs

- 3340EB, 3352EB, 3358EB
- Security
    - Keep lab doors closed.
    - 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.
    - Email Dr. D. and Instructors if door becomes unlocked.
- 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

- Do <u>not</u> "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 <u>not</u> 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.

We'll figure out how to get it to you.

For starters, use emulators.

Devices From Project Sponsors

- Special Purpose Devices
  - Microsoft HoloLens
  - 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,…

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
  - 09/07: Status Report Presentations
  - 09/19: Project Plan Presentations
  - 10/10: Alpha Presentations
  - 11/14: Beta Presentations
  - 12/03: Project Videos
  - 12/06: All Deliverables
  - 12/08: Design Day
  - 12/13: 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 Your Work for Others
  - Etc...
- Address Problems Immediately
  - Within Team
  - With Dr. D., James, Luke, Griffin, Tommy
- 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   <u>30</u>
  - Total   70
- Individual (30%)
  - Technical Contribution   10
  - Team Contribution   10
  - Team Evaluation   05
  - Meeting Attendance, Preparation & Participation   <u>05</u> ← 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

- In the capstone course, absence does <u>not</u> make your teammates' hearts grow fonder.
  - Nonresponsive
    - Email
    - Slack
    - Microsoft Teams Messages
  - Miss Meetings
    - All-Hands
    - Triage
    - Client
    - 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 may tell other team members they no longer need to assign you work.

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
  - Not for Students
    - Working ≥ 20 Hours Per Week
    - Commuting Long Distance 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%
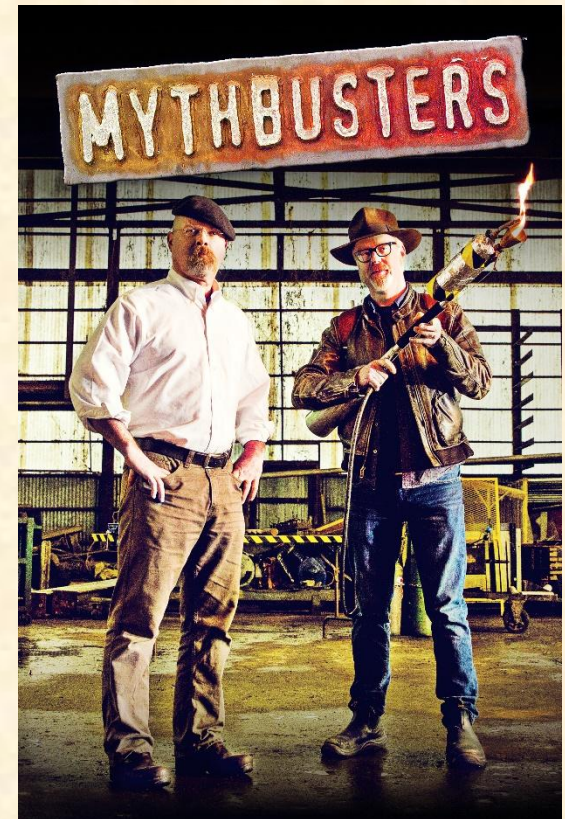
- Do students fail capstone? Yes

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
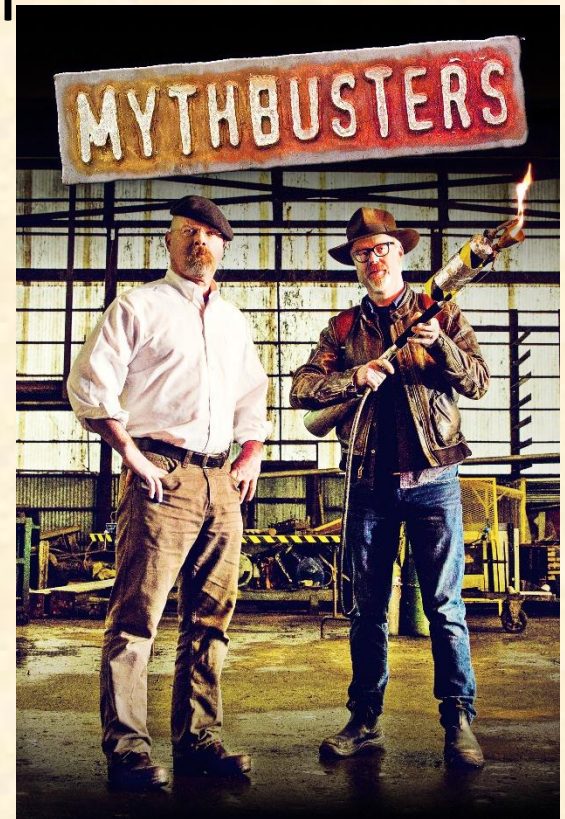
"Meeting-Ready"

- 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.)

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

MAPP Point Deductions
- All-Hands / Split-Hands
  - Meeting-Ready≤ 3:00:00 p.m.
    - Present
    - -0.0 MAPP Points
  - 3:0:01 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
    - In Person: Leave the Room for 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.

- 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

- 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
    - ASAP
    - 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
- Cannot Be Excused from Doing Work

- Requesting Excused Absences
  - Handled by James and TM
    - Email James and TM
    - CC Dr. D.
      (Dr. D. will not respond.)
- Taking or Retaking Capstone in Spring 2024
  - 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

- 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
    - Correctly
    - On Time
  - Willingness to Take on New Tasks
  - Making Significant Technical Contribution
- Read the syllabus.

Technical Contribution

- Required of Everyone
- Significant Work and Code
- Does Not Include Code…
  - Committed to GitLab by Someone Else
  - That Does Not Work
  - That Was Copied from the Internet
  - Not Included In 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 Documents
  - Giving Presentations
- Read the syllabus.

Technical Contribution

- Pair Programming
  - Writing Code Together
  - <u>Not</u> 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
    - Person Laptop
  - If Not Able, Assume Not Working

Technical Contribution

- 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.

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 Instructors

Using Existing Code

- Ok
  - Examples
  - Prototypes
  - Open-Source Code
    - Fragments
    - Libraries
    - Utilities
- Not Ok
  - Copy-and-Paste
  - Vast Amounts of Your Project
  - Not Open Source
- Ask client in advance.
- Document and report all existing code used.
- Be Careful!
- If unsure, ask Instructors and/or your client.

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 <u>in advance</u>.

VISA

- Verified Individualized Services and Accommodations

- Let us know immediately.

- We will work with you.

Integrity of Scholarship

- MSU's policies will be enforced.

- Individual and teamwork must be original including all code committed to a team's main GitLab branch

- Providing false information to the professor, instructors or fellow team members about matters related to the course will be considered academic dishonesty.

- Violators…
  - …will be referred to the appropriate deans.
  - …will receive a grade of F (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
- 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

- Taken by Professional Photographer
- Used
  - On Capstone Website
  - In Design Day Booklet
  - In The Capstone Experience Booklet
- Dress
  - Business or Business Casual
  - Coordinated

Team Photos

- Team Amazon, Fall 2019

105

Engineering Building, 1300 Hallway | First Floor **8:00 a.m. - Noon / CSE 498**

Amazon
SPARTI: Selling Partner Application Ready to Integrate

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.
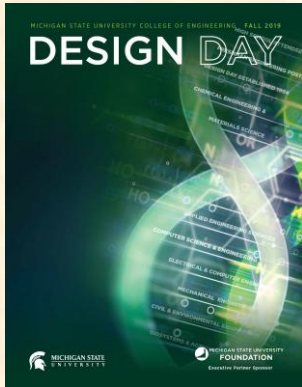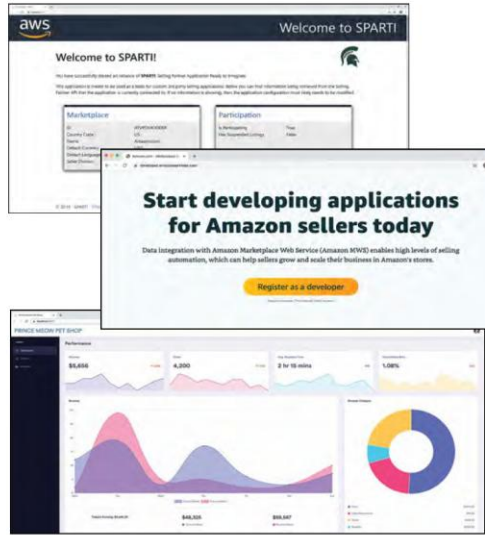
Start developing applications for Amazon sellers today

Data integration with Amazon Marketplace Web Service (Amazon MWS) enables high levels of selling automation, which can help sellers grow and scale their business in Amazon's stores.

Register as a developer

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

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Amazon
SPARTI: Selling Partner Application Ready to Integrate

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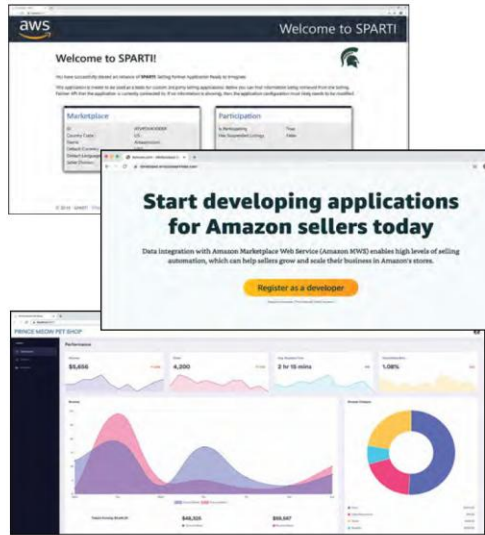
Third-party sellers often create custom selling management applications. However, the process of creating these custom applications is often too difficult or overly time-consuming.

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.

Michigan State University
Team Members (left to right)

Tyler Rozwadowski
Waterford, Michigan

Jordan Mulcahy
Jackson, Michigan

Rose Wang
Shanghai, Shanghai, China

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Portage, Michigan

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Amazon
Project Sponsors

Christin Burek
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Detroit, Michigan

Madhuri Marri
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Team Photos

- Team Amazon, Fall 2022

Team Photos

- Team Roosevelt Innovations Data Science, Fall 2022

Team Photos

- Coordinated by James
- Friday, September 15, 8:00 a.m. – 5:00 p.m.
  - On-Time Attendance Required
  - Put on your calendar now. ← **Note**
  - Do not plan travel. ← **Note**
  - Engineering 3112
- Dress
  - Business Preferred
  - At Least Business Casual
  - Team Coordinated

What's ahead?

- Upcoming Meetings
  - 09/05, Tu: Risks and Prototypes
  - 09/07, Th: Team Status Report Presentations
  - 09/12, Tu: Project Plan
  - 09/14, Th: Schedule and Teamwork
  - 09/15, Fr: Team Photos (8:00 a.m. – 5:00 p.m.)
  - 09/19, Tu: Team Project Plan Presentations
  - 09/21, Th: Team Project Plan Presentations   **10% of Team Grade**
  - 09/26, Tu: Team Project Plan Presentations

What's ahead?

- Split-Hands Meetings
  - Used On Presentation Days
    - 09/07: Team Status Report Presentations
    - 09/19, 09/21, 09/26: Team Project Plan Presentations
  - Three Locations
    - Luke: International Center 115 ←**Might Change**
    - Griffin: STEM 1130
    - Tommy: Engineeering 1145
  - Find the rooms in advance.
  - Attendance Taken As Usual Including Lateness

What's ahead?

- Website, Email and Team's Messages
  - Check Constantly
  - Read Carefully
  - Not Seeing and/or Reading Email ≠ Valid Excuse
- Triage Meetings
  - Scheduled
  - Attendance & Preparation
- 09/19, 09/21, 09/26: Team Project Plan Presentations
  - Slide Deck Posted Online
  - Read and Review
  - Discuss in Triage Meetings

What's ahead?

- 09/07: Team Status Report Presentations
  - One Week 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, Wednesday, 09/06
  - 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.
  - Replace blanks by dashes.
- Examples
  - Team Amazon
    team-amazon-status-report-presentation.pptx
  - Team Kellogg's
    team-kelloggs-status-report-presentation.pptx
  - Team Roosevelt Innovations Knowledge Science
    team-roosevelt-innovations-knowledge-science-status-report-presentation.pptx

Read Me

- Presenting
  - The Status Report Presentations will be given on Thursday, September 7.
  - 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 International Center 115, Griffin's teams will meet in STEM 1130, and Tommy's teams will meet in Engineering 1145.
  - 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.

READ ME

- Creating and Editing
  - <mark>Use only the Windows version of Office 365</mark>.
  - 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., Wednesday, September 6.
  - 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., Wednesday, September 6. 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., Wednesday, September 6. 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]

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 2023

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

Describe your sponsor is 30 seconds or less.

Delete this textbox and the brace to the left.

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

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

[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

[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

[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.