MICHIGAN STATE
U N I V E R S I T Y

01/10,01/012: Capstone Overview

The Capstone Experience

Dr. Wayne Dyksen
James Mariani

Department of Computer Science and Engineering
Michigan State University

Spring 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:
    - Anthony 1281
    - Microsoft Teams General Channel
  - Split-Hands:
    - Luke: STEM 3202
    - Griffin: STEM 2202
    - Tommy: Anthony 1281

- 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 01/10 and 01/12

- 01/10
  - Introduction to Capstone Logistics
  - Overview of Projects
  - Team Member Survey
- 01/12
  - 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

- 01/10: Capstone Overview
- 01/12: Capstone Overview
- 01/17: Risks and Prototypes
- 01/19: Team Status Report Presentations
- 01/20:   Team Photos (10:00 a.m. – 3:00 p.m.)
- 01/24: Project Plan
- 01/26: Schedule and Teamwork
- 01/31: Team Project Plan Presentations
- 02/02: Team Project Plan Presentations
- 02/07: Team Project Plan Presentations
- 02/09: Design Day Booklet Process
- 02/14: Creating and Giving Presentations
- 02/16: Resume Writing and Interviewing
- 02/21: Team Alpha Presentations
- 02/23: Team Alpha Presentations
- 02/28: Team Alpha Presentations
- 03/02: Team Alpha Presentations
- 03/07: (Spring Break, No Meeting)
- 03/09: (Spring Break, No Meeting)

- 03/14: Intellectual Property
- 03/16: Design Day and the Project Videos
- 03/21: Ethics and Professionalism
- 03/23: Team Status Report Presentations
- 03/28: Team Status Report Presentations
- 03/30: Team Status Report Presentations
- 04/04: Team Beta Presentations
- 04/06: Team Beta Presentations
- 04/11: Team Beta Presentations
- 04/13: Team Beta Presentations
- 04/18: Team Status Report Presentations
- 04/20: Team Status Report Presentations
- 04/23: Project Videos Due
- 04/25: Project Videos
- 04/26: All Deliverables Due
- 04/27: Project Videos
- 04/27: Design Day Setup
- 04/28: Design Day
- 05/04: Capstone Wrap Up (5:45 p.m. – 7:45 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
- Remote Access Instructions will be emailed.
- In-Person Access
  - Fully Vaccinated With Booster Two Weeks Prior
  - Sanitizing Wipes
    - Keyboard and Mouse
    - Desktop
    - Before and After Use
  - Hand Sanitizer

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.
  - 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 (Can Be Waived)
  - 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 1
9. GM 2
10. Kellogg's
11. Lockheed Martin Space
12. Magna
13. Meijer
14. Michigan State University CSE
15. Michigan State University Linguistics
16. Moii
17. MSUFCU
18. Roosevelt Innovations Data Science
19. Roosevelt Innovations Knowledge Science
20. RPM
21. Targets' Tip
22. TechSmith
23. Union Pacific
24. United Airlines Airport Operations
25. United Airlines Quality Assurance
26. United Airlines Training
27. Urban Science
28. Vectorform
29. Vectra
30. Whirlpool

Team Ally

Project Overview

Ally Offers Ecosystem

- Functionalities
  - Offer Exposure to Small Businesses
  - By Showcasing Deals to Customers
  - With a Web App
- Features
  - Upload Offers Seamlessly
  - Support Multiple Roles
  - Show Personalized Offers for Customers
- Technologies
  - Visual Studio Code
  - JavaScript, React, NodeJS
  - Amazon Web Services
  - Machine Learning (ML)
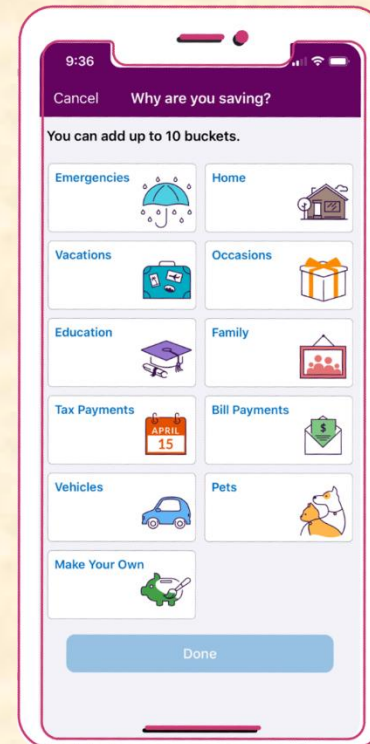
Detroit, Michigan
Charlotte, North Carolina

Team Amazon
Project Overview

Amazon Group Buying Tool

- Functionalities
  - Increase Product Sales and Buyer Trust
  - By Assisting Users in Making Group Purchases
  - Through an Intuitive Web Application
- Features
  - Create a Standalone Web Application
    - Product Searching
    - Cost Splitting
  - Develop a Secure Login
  - Implement Product Recommendations with Machine Learning
- Technologies
  - Amazon Web Services (AWS)
  - Machine Learning (ML)
  - Programming Language with Data Science Capability (e.g. Python or Java)
  - Javascript Framework (e.g. Angular or React or Vue.js)

Seattle, Washington
Detroit, Michigan

Team Anthropocene Institute
Project Overview

## Machine Learning for Numeracy Training

- Functionalities
  - Assist The Public in Making Decisions
  - By Increasing Knowledge on Numeracy
  - Utilizing Machine Learning Strategies
- Features
  - Access Information Within Multiple Databases
  - Perform Machine Learning Analysis on Data
  - Create an Intuitive Web Application
  - Visualize Information for User Education
- Technologies
  - ChatGPT
  - Modern Web Framework
  - Database Technologies
  - Machine Learning (ML)

One Thousand or Not?

Ten Thousand or Not?
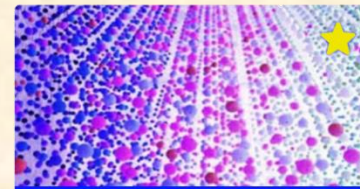
Well Rounded Division 2: E-Notation

Well Rounded Division 3: Words / Words

Anthropocene Institute
Palo Alto, California

Team Auto-Owners
Project Overview

The Summarizer

- Functionalities
  - Summarize Document Contents
  - To Create and Report Out Analysis Metrics
  - With a fully Automated Process
- Features
  - Word Frequency Metrics of Documents
  - Document Sentiment Analysis
  - Trends of Topic Sentiment Over Time
  - Develop Web or Standalone Application
- Technologies
  - Natural Language Processing (NLP)
  - Artificial Intelligence (AI)
  - Machine Learning (ML)

Auto-Owners
**INSURANCE**
Lansing, Michigan

Team Bosch

Project Overview

Web Interface for CarMaker Simulation Tool

- Functionalities
  - Make Autonomous Vehicles Safer
  - By Helping Engineers Modify and Run Simulations
  - Within an Easy-to-Use Web App

- Features
  - Remotely Control CarMaker Simulations
  - Load and Modify Simulation Parameters
  - Start and Stop Simulations
  - Save Simulation Results
  - Implement a Secure LogIn System

- Technologies
  - IPG CarMaker
  - Python
  - Python-Based Web Framework (e.g. Django or Flask)
  - HTML & CSS
  - CSS Library (e.g. Bootstrap 5 or Tailwind CSS)
  - JavaScript
  - Svelte Frontend JavaScript Framework
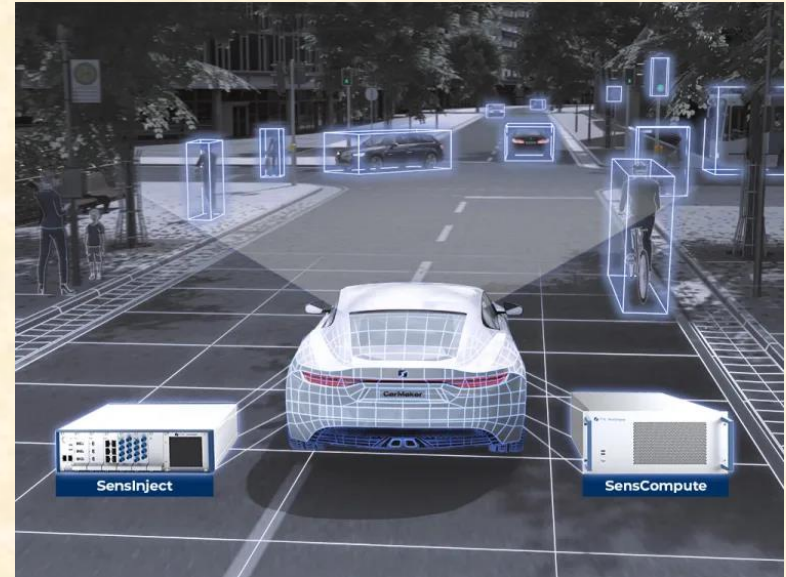
BOSCH
Invented for life

Plymouth, Michigan

Team DRIVEN-4
Project Overview

Driven Connect Application, Server, and Backend

- Functionalities
  - Provide Users Efficient Management
  - For Centralized Module System
  - By Building Technological Infrastructure
- Features
  - Store Module and Firmware Data for Fast Access
  - Create user Facing Asset Manager and Data Analyzer
  - Automate OTA Module Updating
- Technologies
  - Python, FastAPI, Flask
  - MySQL or Similar Database Architecture
  - ESP32 Devkit C
  - SwaggerUI
  - Arduino
  - ESP32 OTA Method

DRIVEN-4
St. Joseph, Michigan
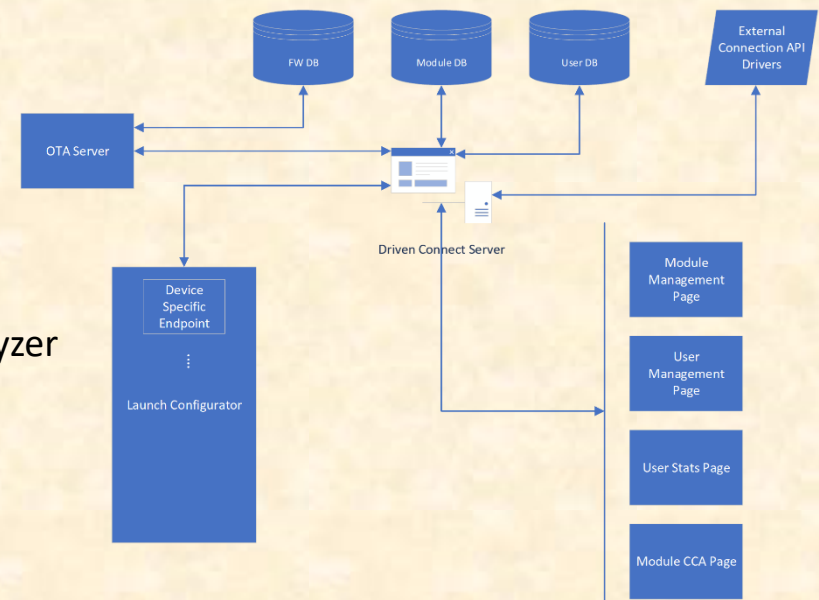
Team Evolutio
Project Overview

#BIKES4ERP Tracking

- Functionalities
  - Help Less Fortunate Children Attend School
  - By Dynamically Tracking Their Bicycles
  - Through an Easy-To-Use Web App
- Features
  - Track User Bicycle Location and Usage Statistics
  - Provide an Admin Portal To Register New Users
  - Determine If Bicycles Have Been Stolen
  - Alert Users of Stolen Bicycles
- Technologies
  - Amazon Web Services (AWS)
  - JavaScript, React
  - Databasing Technologies
  - Messaging: AWS SNS, SQS
  - Docker, Kubernetes
  - CI/CD: Harness
  - Raspberry PI
  - GPS

ēVOLUTĪO
Chicago, Illinois

Team GM 1
Project Overview

Virtual Reality Network Monitoring

- Functionalities
  - Offer an Immersive Way to Monitor Web Traffic
  - And Perform Administrative Action
  - Using Virtual Reality
- Features
  - Visualize Data in Ways Designed for VR
  - Automatically Integrate Network Metadata
  - Identify Potential Malicious Users
- Technologies
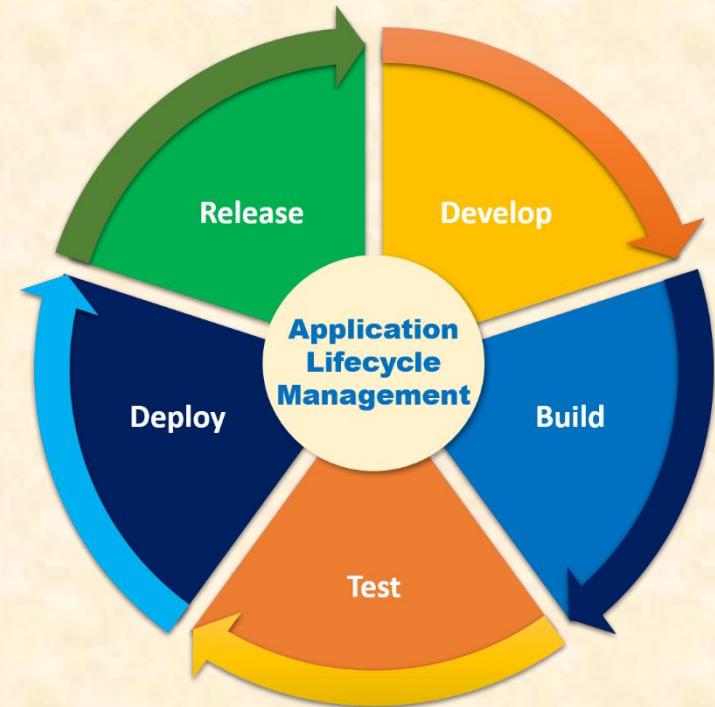 - Unreal Engine
  - C#
  - MySQL

gm

Detroit, Michigan

Team GM 2
Project Overview

Application Lifecycle Framework

- Functionalities
  - Automate the App Distribution Process
  - For a Variety of Client Compute Types
- Features
  - Support Many Compute Types
  - Validate Requests Automatically
  - Create Automation Scripts for Interdependent Systems
- Technologies
  - Web Server
  - MySQL

Detroit, Michigan

Team Kellogg's
Project Overview

Global Business Services Process Intelligence

- Functionalities
  - Refine Business Processes to Increase Performance
  - By Collecting "Touch" Data for Processes
  - To Identify Improvements to Existing Software

- Features
  - Measure and Expand Celonis Adoption
  - Process "Touch" Data Reporting
  - Demonstrate Metric Improvements Based on Data
  - Design Visually Intuitive UI for Data

- Technologies
  - Microsoft Office 365
    - Teams
    - Sharepoint
    - Power Apps, Power Automate
    - Forms
  - Celonis Process Intelligence

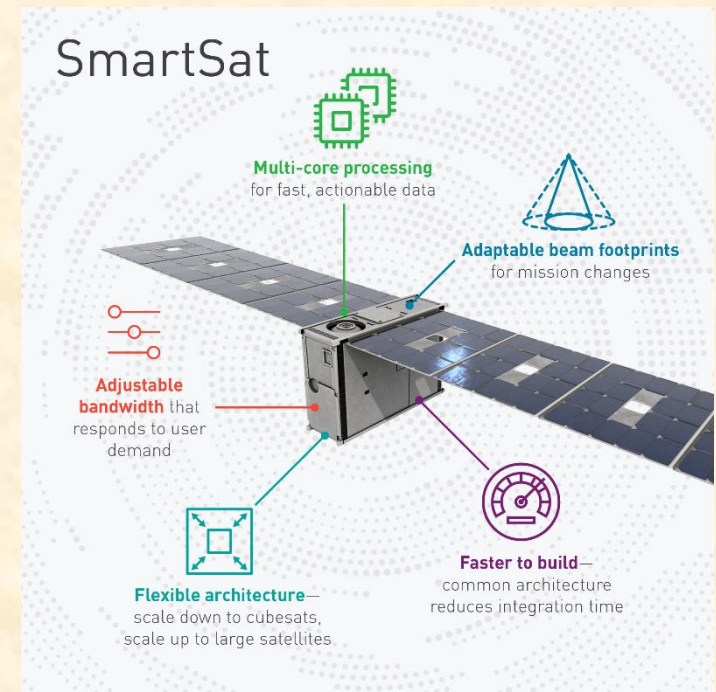**Kellogg's**®

Battle Creek, Michigan

Team Lockheed Martin Space

Project Overview

SmartSat™ Software Development Kit & AI Platform

- Functionalities
  - Increase Usability of SmartSat™ SDK
  - And Expand SDK Functionality
  - By Developing Resource and Dependence Management
- Features
  - Facilitate Downloading SDK for Target Architecture
  - Allow Maintainers to Easily Upload New Releases
  - Initiate and Deploy Streamlined AI/ML Workflows
  - Work on Real Hardware
- Technologies
  - JavaScript, Electron
  - Flask
  - ONNX
  - AMD ROCm
  - Linux Packaging (RPM)
  - Docker

SmartSat

Multi-core processing
for fast, actionable data

Adaptable beam footprints
for mission changes

Adjustable bandwidth that
responds to user demand

Flexible architecture—
scale down to cubesats,
scale up to large satellites

Faster to build—
common architecture
reduces integration time

LOCKHEED MARTIN

Littleton, Colorado

Team Magna

Project Overview

Dashboard for Data Visualization

- Functionalities
  - Increase Reliability of Dashboard
  - With System Verification and Expanded Functionality
  - Providing Up-To-Date Data Analysis
- Features
  - Automatically Load New Data
  - Update Visuals Based on Loaded Data
  - Data Dashboard With New Visuals
  - Automation and End-to-End Testing
- Technologies
  - QuickSight
  - Amazon Web Services (AWS)
  - Selenium or Other Automation Tool

Tory, Michigan
Aurora, Ontario, Canada

Team Meijer

Project Overview

Organization Efficiencies Utilizing WiFi Locationing

- Functionalities
  - Improve the Customer Experience
  - By Redirecting Resources to Busy Sections
  - Using Real Time Store Traffic Data
- Features
  - Track Customer and Employee Activity
  - Provide Customer Heat Map to Managers
  - Manage Front End Resources
  - Digital Payment at Gas Pump
- Technologies
  - JavaScript, React
  - Juniper-Mist
    - Wi-Fi Technology
    - API
  - Bluetooth and Wi-Fi Integration
  - Microsoft BI
  - Azure Web Services
  - Blazor WebAssembly

meijer

Grand Rapids, Michigan
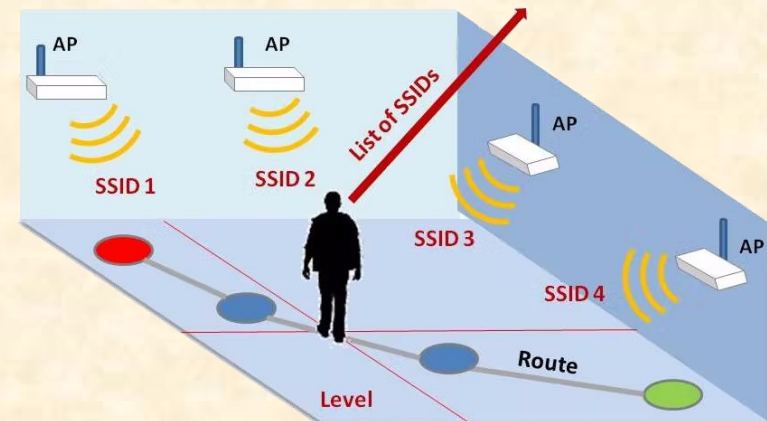
Team Michigan State University CSE

Project Overview

Improved Peer Review in CourseLib

- Functionalities
  - Assist MSU Students in Their Education
  - By Adjusting How They Get Feedback
  - Utilizing the Peer Review System
- Features
  - Modify the Existing CourseLib System
  - Implement Reviewee Assignment Alterations
  - Adjust the Reviewee Email Notification System
  - Create a Dialog between Reviewer and Reviewee
  - Develop Diagram Markup Capability
- Technologies
  - JavaScript
  - Vue
  - PHP
  - SQL
  - Composer
  - Yarn

East Lansing, Michigan

Team Michigan State University Linguistics

Project Overview

Build-an-App for Humanities Researchers

- Functionalities
  - Build App Creation Software
  - That Automatically Produces an Audio Recording Mobile App
  - For Non-technical Users
- Features
  - Offer an In-depth Tutorial
  - Support Seamless Changing of Aesthetics
  - Upload Pictures, Logos and Other Graphics
- Technologies
  - iOS, Swift
  - Android, Java, Kotlin
  - Flutter

Team Moii

Project Overview

Image Similarity System

- Functionalities
  - Provide Users a Connected System
  - That Finds Similar Images of Selected Area
  - Identifying Possible Alternate Products

- Features
  - Draw Bounding Boxes of Subjects
  - Algorithm to Identify Similar Images
  - Output and Filter Results

- Technologies
  - PyTorch
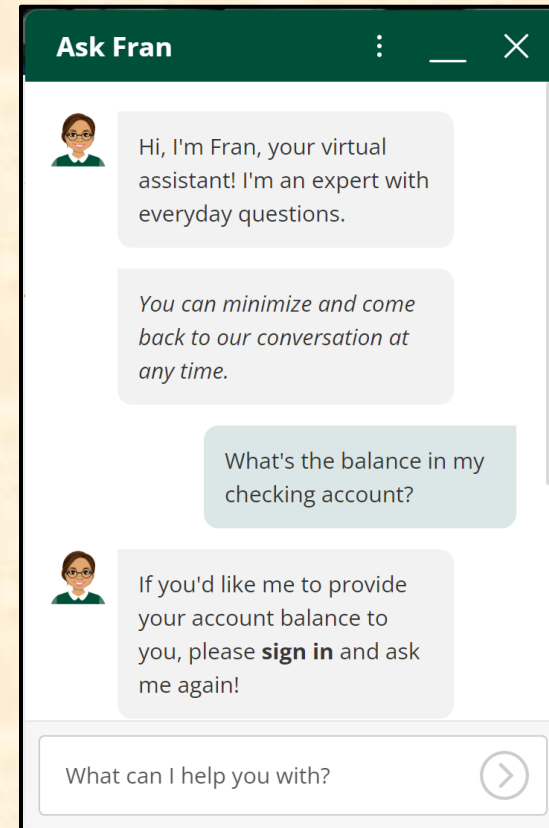 - Python 3.6+
  - ReactJS
  - Google Cloud

moii

Troy, Michigan

Team MSUFCU

Project Overview

Predictive Chatbot Experience

- Functionalities
  - Expand Customer Service Methods
  - With a Quicker and Personalized Approach
  - To Maintain Customer Loyalty
- Features
  - Predict Topic Customer is Querying
  - Suggest Actions Based on Transactions
  - Algorithm Management Platform
- Technologies
  - HTML, CSS
  - PHP, JavaScript
 - Android: Java, Kotlin
  - iOS: ObjectiveC, Swift
  - MySQL

Ask Fran

Hi, I'm Fran, your virtual assistant! I'm an expert with everyday questions.

You can minimize and come back to our conversation at any time.

What's the balance in my checking account?

If you'd like me to provide your account balance to you, please **sign in** and ask me again!

What can I help you with?

msufcu

East Lansing, Michigan

Team Roosevelt Innovations Data Science

Project Overview

Provider Analysis Toolkit

- Functionalities
  - Augment an Existing Analytics Toolkit
  - With a New Cloud-based Architecture
  - And Machine Learning
- Features
  - Offer Second-level Metrics using Statistics and ML
  - Decouple Application and Data Layers
  - Include Optimizations for Quicker Fraud Identification
- Technologies
  - HTML, CSS
  - Snowflake
  - FastAPI
  - Streamlit
 - Docker
  - Machine Learning (ML)

Roosevelt

simple. seamless. smart.

Okemos, Michigan
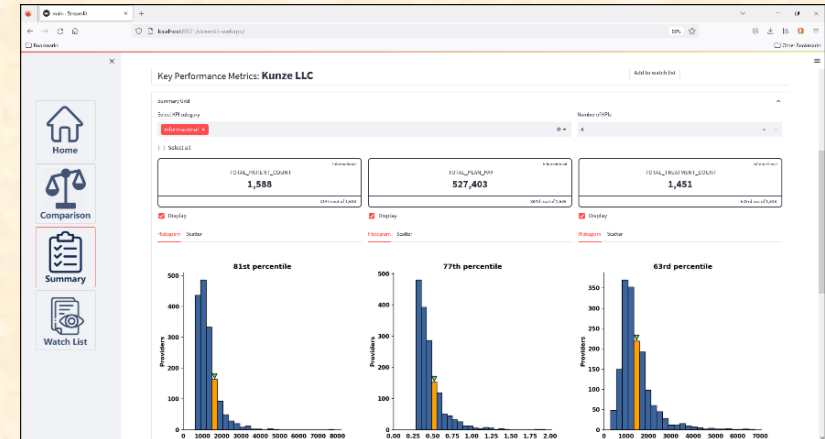
Team Roosevelt Innovations Knowledge Science
Project Overview

Model-Driven UI Framework

- Functionalities
  - Create a Robust Framework
  - For Managing a Heterogenous Set of Technologies
- Features
  - Offer a Language-Agnostic Solution
  - Support Relevant Metadata and Data Ordering
  - Dynamically Construct UI Based on Tech Stack
- Technologies
  - Typescript, Angular
  - Quarkus
  - Git

Roosevelt
simple. seamless. smart.
Okemos, Michigan
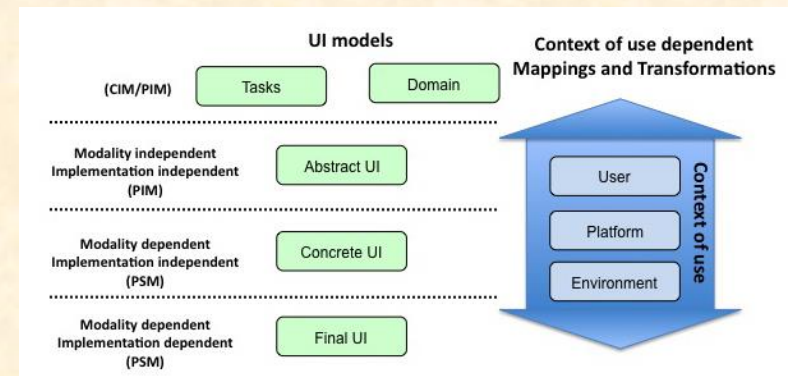
Team RPM
Project Overview

Building Shipments using Machine Learning

- Functionalities
  - Improve Profitability and Customer Satisfaction
  - By Building Optimal Shipments
  - With Individual Shipment Data
- Features
  - Algorithm to Build Optimal Shipments
  - Predict the Likelihood of Successful Shipment
  - Evaluate Carrier Performance
- Technologies
  - .NET
  - C#
 - PyTorch or Other ML Platform
  - Machine Learning (ML)

Royal Oak, Michigan

Team Targets' Tip
Project Overview

Documenting Academic Harassment

- Functionalities
    - Support Survivors of Academic Harassment
    - By Helping Them Document Incidents
    - Within Mobile and Web Applications

- Features
    - Design Mobile and Web Applications
    - Document and Categorize Harassment Incidents
    - Create a Portfolio of Users Experiences
    - Aggregate Incident Type and Frequency within an Admin Portal

- Technologies
    - iOS: Swift
    - Android: Android Studio, Kotlin
   - Database Technologies
    - Modern Web Framework

Targets' Tip
Make Academia Safe for Everyone
East Lansing, Michigan
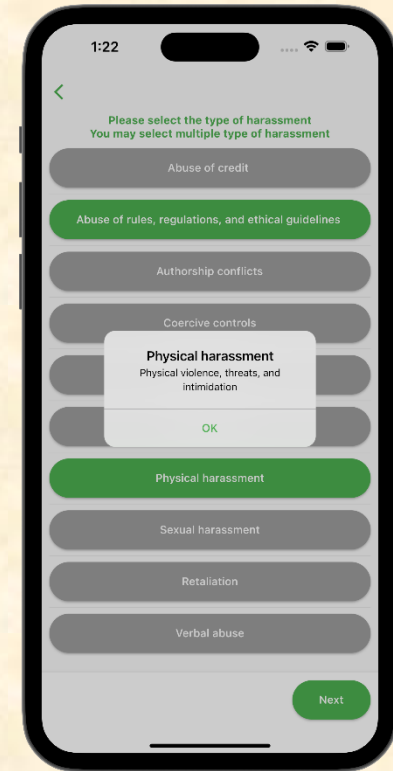
Team TechSmith
Project Overview

CAVE: Collaborative Audio/Video Editor

- Functionalities
  - Make Video Editing With as Group Easy
  - By Allowing Many People to Edit the Same Video
  - Through a Web and Mobile Application

- Features
  - Provide an Easy-to-Use Web and Mobile Appa
  - Allow Multiple Users to Add features to a Shared Location
  - Implement a Linear Video Editor
  - Support Asynchronous Editing by Multiple Users

- Technologies
  - JavaScript, React
  - Angular
  - iOS: Swift
 - Android: Android Studio, Kotlin
  - Windows
  - macOS

TechSmith®
East Lansing, Michigan
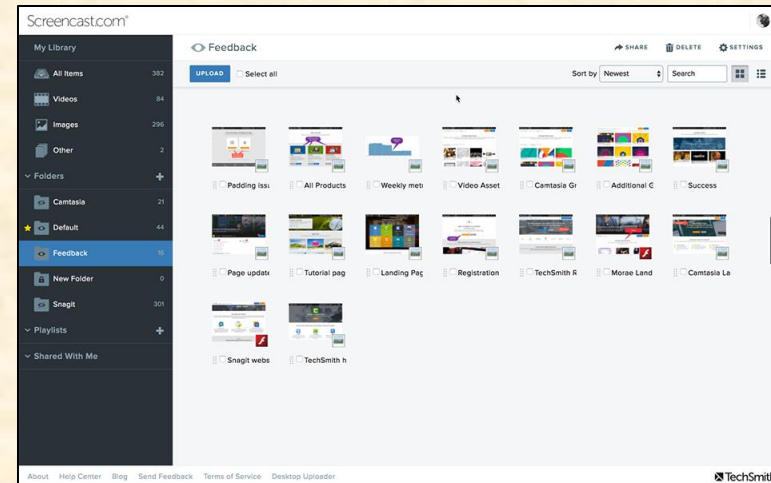
Team Union Pacific

Project Overview

Switch Alignment Mobile Game

- Functionalities
  - Train Employees to Align Railroad Switches
  - With a Fun Mobile Game
- Features
  - Support Different Conditions Such as Weather
  - Provide Variety with Randomized Challenges
  - Offer a Realistic Simulation
- Technologies
  - Unity3D
  - C#
  - Android: Android Studio, Kotlin
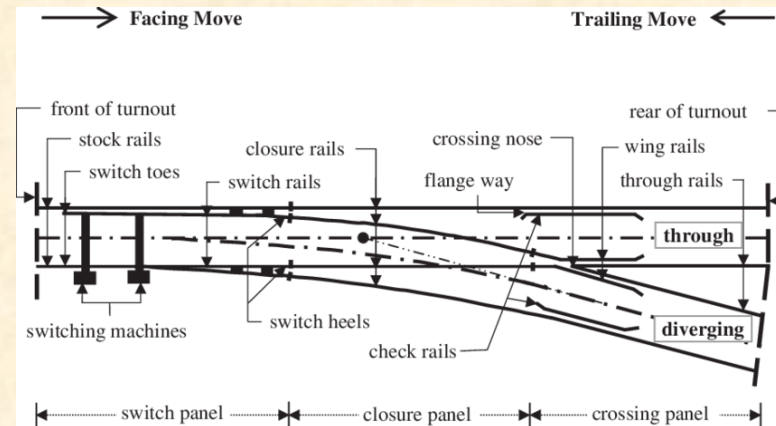
BUILDING AMERICA®
Louisville, Colorado
Omaha, Nebraska

Team United Airlines Airport Operations

Project Overview

Airline Passenger and Baggage Application

- Functionalities
  - Make Airlines More Efficient
  - By Simulating Airline Flights
  - And Generating Unique Passengers

- Features
  - Simulate Flights with Unique Passengers Itineraries
  - Generate Realistic Passenger Data and Baggage Tags
  - Simulate Boarding Passes and Baggage Tag Scanners
  - Maintain Databases with Passenger Information

- Technologies
  - Simulation
  - Database Technologies

UNITED

Chicago, Illinois
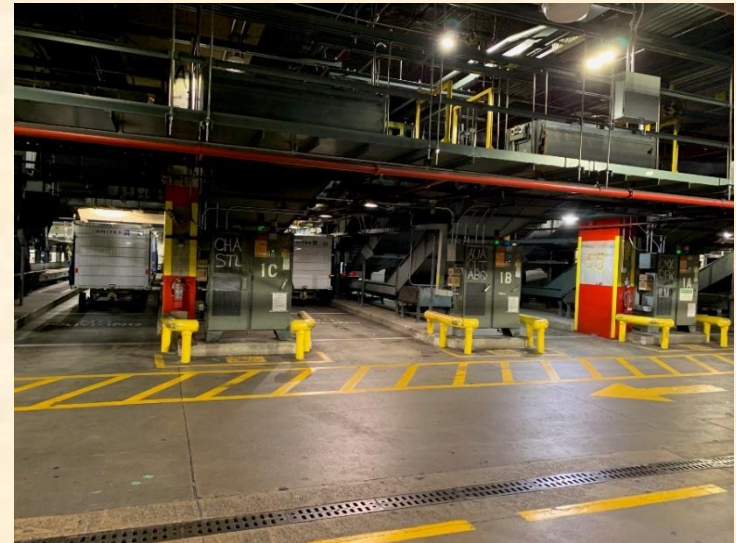
Team United Airlines Quality Assurance
Project Overview

Aircraft Appearance Assessment Tool

- Functionalities
  - Ensure Airplanes are Properly Maintained
  - By Analyzing Social Media Images
  - And Dynamically Generating Ratings
- Features
  - Collect Social Media Posts Containing Airplanes
  - Analyze Images for Specific Features of Airplanes
  - Generate Key Words and Categories for Images
  - Automatically Assess and Rate Image Quality
  - Display Images and Results in a Dashboard
- Technologies
  - Machine Learning (ML)
  - Twitter

UNITED

Chicago, Illinois

Team United Airlines Training
Project Overview

Adaptive Assessment Generator for Tech Ops Training

- Functionalities
  - Summarize Educational Content
  - And Automatically Generate Questions
  - Using Natural Language Processing
- Features
  - Allow Manual Input of Questions
  - Support Weighting Individual Subjects
  - Retrain on New Data Seamlessly
- Technologies
  - Natural Language Processing (NLP)
  - Microsoft Forms
  - Cornerstone LMS

UNITED

Chicago, Illinois

Team Urban Science

Project Overview

Fostering Office Collaboration in a Hybrid World

- Functionalities
  - Encourage Employees to Return to the Office
  - By Making it Easy to Coordinate with Co-Workers
  - Within an Easy-to-Use Application
- Features
  - Allow Employees To View and Reserve Seating
  - Alert Employees when Their Favorites are Comin
  - Allow Employees to Create Events
  - Implement an Admin Page To Adjust the Workpla
- Technologies
  - Python
  - Angular, Angular Material
  - Chart.js
  - .NET Core, Dapper, C#
  - SQL or Node-Data
  - Microsoft Teams
  - Git

URBAN SCIENCE
Detroit, Michigan

Team Vectorform
Project Overview

Flexible VR Training

- Functionalities
  - Train Employees in Virtual Reality
  - With AI-based Instructors
  - That Learn from Human Instructors
- Features
  - Support Both AI-led and Human-led Training
  - AI Instructors use Human Data to Improve
  - Offer a Dashboard to View Session Results
- Technologies
  - Unity3D
  - WebGL
 - Artificial Intelligence (AI)
  - Natural Language Processing (NLP)

Vectorform

Royal Oak, Michigan

Team Vectra
Project Overview

Predicting Malware Command and Control Channels

- Functionalities
  - Detect and Flag Malicious Users
  - That Operate a Command-and-Control Channel
  - Using Machine Learning
- Features
  - Intake Malware Packet Captures and Metadata
  - Extract Features of the Channels for Prediction
  - Implement a Scalable Solution to Handle Big Data
- Technologies
  - Python
  - Suricata
  - Machine Learning (ML)

VECTRA®

San Jose, California
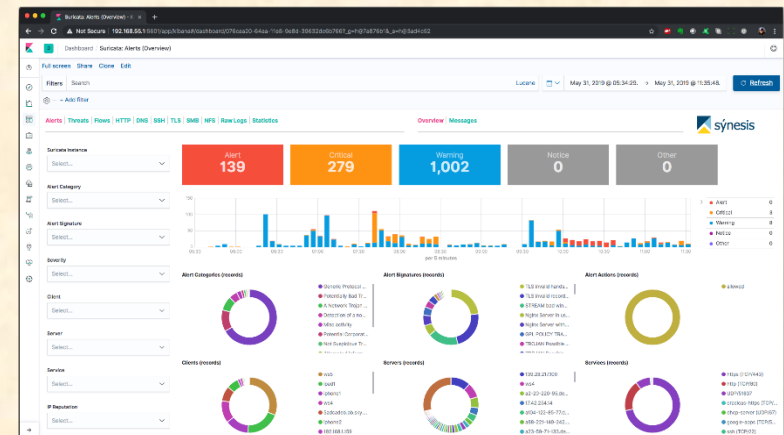
Team Whirlpool

Project Overview

SmartCook: Smart App for Induction Cooktop Cooking

- Functionalities
  - Dynamically Adjust Recipe Settings
  - Based on Users Chosen Cookware
  - To Automate the Cooking Process
- Features
  - Automatically Detect Pan Characteristics
  - Adjust Cooktop Settings to Pan
  - Progress Through Guided Recipe Automatically
  - Characterize Recipes into Common Types
- Technologies
  - Python,
  - Flutter
  - PyTorch or Other ML Library
  - Big Data
  - Machine Learning (ML)

Whirlpool

Benton Harbor, Michigan

Attendance Today

- Sign into Google with MSU Credentials
- Google Form
  - https://forms.gle/KP7SgK5UoejPBm9f7
  - shorturl.at/CHKN4

Team Member Survey

- Check Student ID
- Use Upper and Lower Case
  - Yes: Dyksen, Michigan
  - No: DYKSEN, MICHIGAN
- Hometown Country, NOT County
  - Yes: USA, China
  - No: 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

- **Never Completed**
  - Vaughan, Christian Lucas
  - Wu, Jiuhua

- **Incorrect Student ID**
  - Malzone, Ethan James

- **Incorrect NetID**
  - Greiner, Thad Anthony
  - Zhu, Yanjia

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: <u>Google Form</u>

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, January 20, 10:00 a.m. – 3:00 p.m.
    - o On-Time Attendance Required
    - o Put on your calendar now. **← Note**
  - Scheduled via Google From
    - o Email From James
    - o Look for it.
    - o Respond to it as a team ASAP.

Questions?

Capstone Overview

✓Course Logistics

✓Client Projects

➢Course Logistics (Continued)

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

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 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 (It's free.)
  - Create Virtual Machines
    - Windows 10 VM from Instructors
    - Allocate Sufficient Cores and Memory
    - Others as Needed
  - Don't use Apple Boot Camp
- Not Required to Use Capstone Lab Machines

The Capstone Labs

- 3340EB, 3352EB, 3358EB
- In-Person Access
  - Fully Vaccinated With Booster
  - Sanitizing Wipes
    - Keyboard and Mouse
    - Desktop
    - Before and After Use
  - Hand Sanitizer
- Holler if Wipes and/or Hand Sanitizer Out

The Capstone Labs

- 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
  - 01/19: Status Report Presentations
  - 01/31: Project Plan Presentations
  - 02/21: Alpha Presentations
  - 04/04: Beta Presentations
  - 04/23: Project Videos
  - 04/26: All Deliverables
  - 04/28: Design Day
  - 05/04: Capstone Wrap Up
    (5:45 p.m. – 7:45 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 | 25
  - Design Day | <u>05</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   12.5 / 25.0
  - Design Day   2.5 / 05.0
- 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.
  - …delete by our client
- I wrote lots of code, but it wasnn'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,
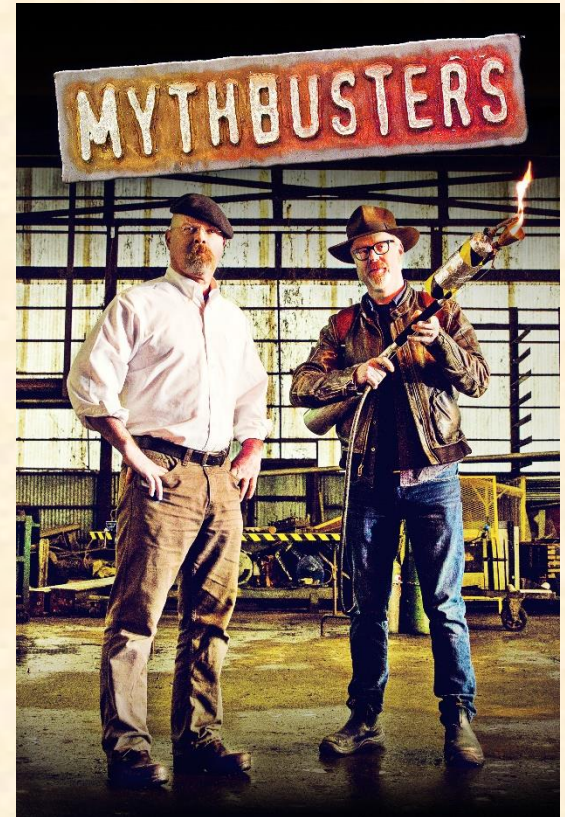 - visa status,
  - or anything else.

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

"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
        - ASAP
    - 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 Fall 2023
  - 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 fall. **←Note**
    - Re-enroll After Dropping
    - Re-take After Failing

Technical Contribution

- Required of Everyone
- Significant Work and Code
- Does Not Include Code…
  - Committed by Someone Else
  - For CheckInCount = 1 to 100 {Modify Code Slightly; Checked Code In Again}
  - That Does Not Work
  - That Was Copied from the Internet
  - Not Included In The Project
  - Etc…
- Necessary, but Not Sufficient
  - Doing Research
  - Creating UI/UX Designs
  - Creating Documents
  - Giving Presentations
- Read the syllabus.
  - Final Course Grade
  - Minimal Grade Requirements

Technical Contribution

- Pair Programming
    - Writing Code Together
    - <u>Not</u> Watching Someone Else Write Code
    - Receive Credit Only for Code Checked Under Your Name
- Demonstrating and Explaining Software
    - By Author
    - Any Time
    - In-Person
        - Lab iMacs
        - Person Laptop
    - If Not Able, Assume Not Working

Technical Contribution

- CSE 231

- Lines of Code

  - Project:
    Project Number

  - Solution:
    Number of Lines
    in Solution

  - Submitted:
    Median Number of Lines
    in Submitted

CSE 231		
Project	**Solution**	**Submitted**
2	56	93
3	102	121
4	105	167
5	167	202
6	206	263
7	231	346
8	151	255
9	160	256
10	324	430
Total	**1,502**	**2,133**

Technical Contribution

- CSE 335
- Project 1
  - 4-5 Students
  - 3 Weeks
  - Average Lines of Code
    - 4,511
    - About 900 - 1,125 Lines / Student
- Project 2
  - 1 Student
  - Average Lines of Code: 1,646
- Project 1 + Project 2 = ~2,500 Lines / Student

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.

- 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

- Any Time…
  - Before and After Meetings
  - Visit: 3149 EB
  - Call: 353-5573
  - Email: (dyksen@msu.edu)
  - Message Using Microsoft Teams
- Make Appointment
  - Meet in Person
  - Call Using Microsoft Teams
  - Meet Using Microsoft Teams

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?

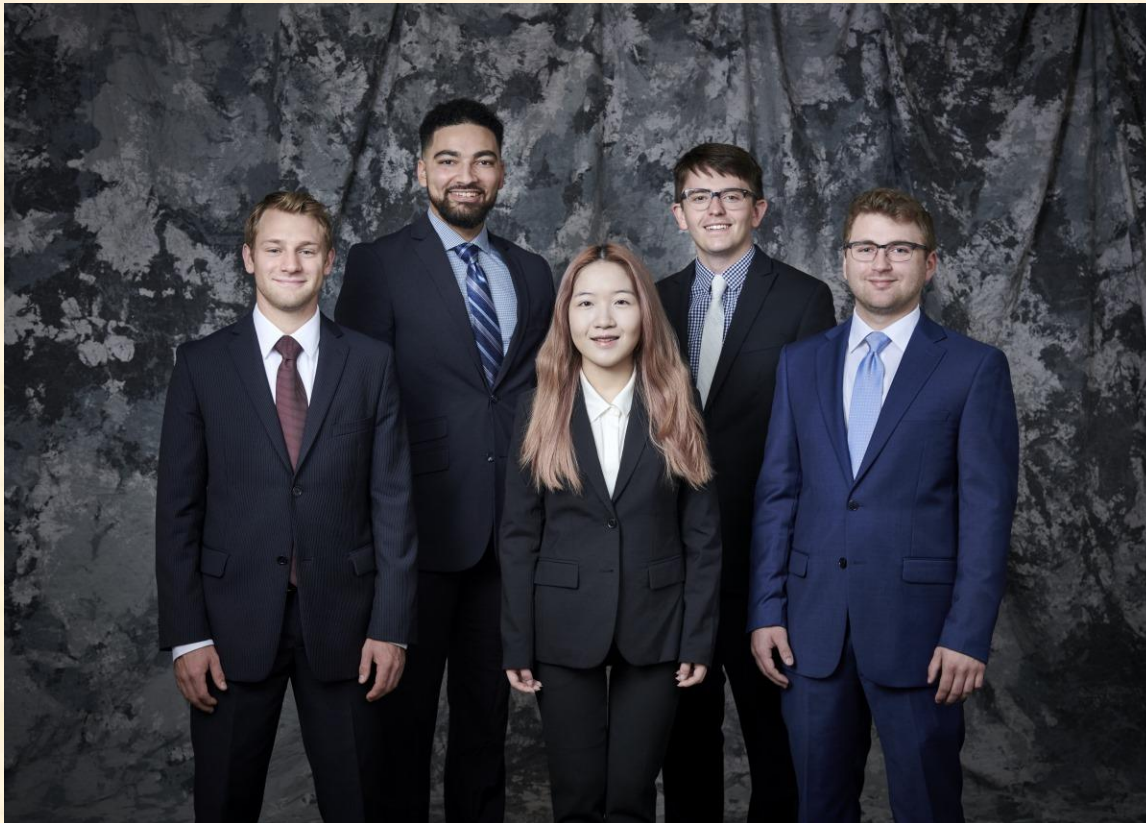**We're not done yet.**

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

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.
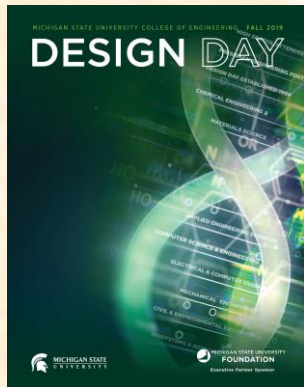
Team Amazon

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

Home | Site Map | News | Project Sponsorship | Maps and Directions | Contact Us

Department of Computer Science and Engineering

MICHIGAN STATE
U N I V E R S I T Y

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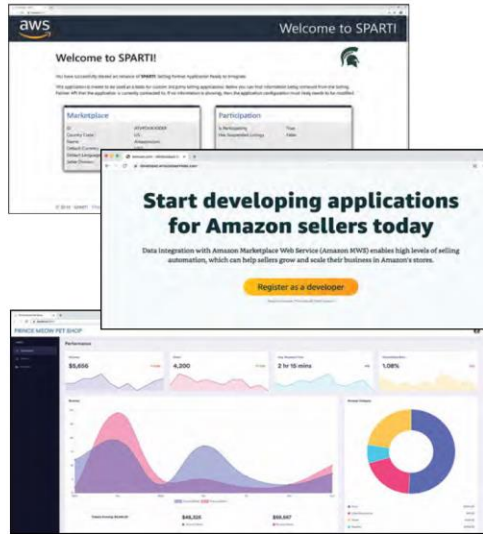
Third-party sellers often create custom selling management applications. However, the process of creating these custom applications is often too difficult or overly time-consuming.

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

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

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.

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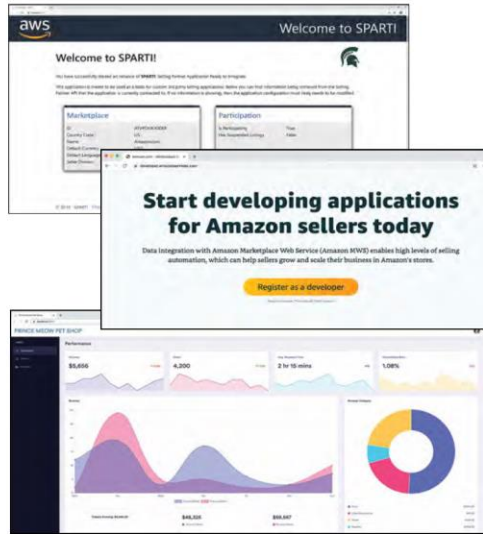
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Madhuri Marri — Detroit, Michigan

PAGE 25

106

Team Photos

- Team Amazon, Fall 2022

Team Photos

- Team Roosevelt Innovations Data Science, Fall 2022

Team Photos

- Coordinated by James
- Friday, January 20, 10:00 a.m. – 3:00 p.m.
  - On-Time Attendance Required
  - Put on your calendar now. **← Note**
  - Engineering 3112
- Dress
  - Business Preferred
  - At Least Business Casual
  - Team Coordinated

What's ahead?

- Upcoming Meetings
  - 01/17, Tu: Risks and Prototypes
  - 01/19, Th: Team Status Report Presentations
  - 01/20, Fr: Team Photos (10:00 a.m. – 3:00 p.m.)
  - 01/24, Tu: Project Plan
  - 01/26, Th: Schedule and Teamwork
  - 01/31, Tu: Team Project Plan Presentations
  - 02/02, Th: Team Project Plan Presentations
  - 02/07, Tu: Team Project Plan Presentations

10% of Team Grade

What's ahead?

- Split-Hands Meetings
  - Used On Presentation Days
    - 01/19: Team Status Report Presentations
    - 01/31, 02/02, 02/07: Team Project Plan Presentations
  - Three Locations
    - Luke: STEM 3202
    - Griffin: STEM 2202
    - Tommy: Anthony 1281
  - 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
- 01/31, 02/02, 02/07: Team Project Plan Presentations
  - Slide Deck Posted Online
  - Read and Review
  - Discuss in Triage Meetings

What's ahead?

- 01/19: 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, 01/18
  - 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, January 19.
  - 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 STEM 3202, Griffin's teams will meet in STEM 2202, and Tommy's teams will meet in Anthony 1281.
  - Dr. D. will combine the individual team slide decks into multiple slide decks, one for each TM.
  - Your TM project the combined slide decks using their laptop, which your team will use for your presentation.
  - Your team may have one or more presenters. All team members should turn their cameras on during their presentation.
  - The order in which the teams will present will be random.

READ ME

- Creating and Editing
  - Use only the Windows version of Office 365.
  - 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, January 18.
  - 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, January 18. 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, January 18. 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, January 9. 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

Spring 2023

From Students…
…to Professionals

Team [Team Name]

Status Report

[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.

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.