MICHIGAN STATE UNIVERSITY

01/13, 01/15: Capstone Overview

The Capstone Experience

Dr. Wayne Dyksen
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Jared Singh Sekhon

Department of Computer Science and Engineering
Michigan State University

Spring 2026



From Students…
…to Professionals

CSE498, Collaborative Design

- "The Capstone Experience"
- Professors
  - Dr. Wayne Dyksen ("Dr. D.")
  - Dr. James Mariani ("Dr. J.")
- Team Managers (TMs)
  - Griffin Klevering
  - Jared Singh Sekhon (Sing Sec on)
  - Luke Sperling
- Class Meetings
  - Tu, Thu 3:00 – 4:20 p.m. Eastern Time
  - All-Hands:
    - 158 Natural Resources
    - Microsoft Teams General Channel
  - Split-Hands:
    - Griffin: 2400 Engineering Building
    - Jared: 2250 Engineering Building
    - Luke: 158 Natural Resources
- 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.
  - Set up notifications for any email is from one of us.
  - Not noticing or reading an email from one of us will never be an excuse.

Meeting Goals for 01/13 and 01/15

- 01/13
  - Introduction to Capstone Logistics
  - Overview of Projects
  - Team Member Survey
- 01/15
  - Capstone Logistics
    - Expectations
    - Grading
  - What's ahead?

Capstone Overview

- Course Logistics

- Client Projects

- Course Logistics (Continued Next Meeting)

Course Goals

[1 of 3]

- Give You Experience In
  - Real World
  - Corporate Setting
- Start Your Transition
  - From Student…
  - …To Professional
- Start Your Transition
  - From… “Make one of these.” –CSE Professor
  - …To “Solve my problem.” –Customer/Client

Course Goals

[2 of 3]

- Teams of 5-6 Students
- Build Significant Software System
  - Design
  - Develop
  - Debug
  - Document
  - Deliver
- For Project Sponsor / Client / Customer
  (Note: We'll use all three interchangeably.)
- In 15 (Short) Weeks



Course Goals

[3 of 3]

- Build a significant software system for a customer.
- Gather requirements.
- Learn new languages, tools and environments.
- Build and administer systems.
- Develop communication skills.
- Develop interview talking points.
- Learn to do stuff on your own.
- Work in a team environment.
- 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 Includes But Not Limited To…
  - Entering a Room
  - Walking to a Seat
  - Being in the Process of Sitting Down
  - Joining a Meeting
- No…
  - Using Any Electronic Devices
    - Phones
    - Laptops
    - Etc.
  - Wearing Hats or Hoods
  - Wearing Coats
  - Eating
  - Sleeping
  - Taking “Breaks”

Project Deliverables

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

See Major Milestones.

All-Hands/Split-Hands Meetings

- All-hands
  - Instructors
  - Guest Speaker(s)
- Split-Hands
  - 3 Locations
  - With Your TM
  - Team…
    - Status Reports
    - Formal Presentations
    - Project Videos

Weekly Schedule

- 01/13: Capstone Overview
- 01/15: Capstone Overview
- 01/20: Risks and Prototypes
- 01/22: Project Plan
- 01/27: Team Status Report Presentations
- 01/29: Schedule and Teamwork
- 01/30: Team Photos
- 02/03: Team Project Plan Presentations
- 02/05: Team Project Plan Presentations
- 02/10: Design Day Booklet Process
- 02/12: All-Hands Meeting
- 02/17: Creating and Giving Presentations
- 02/19: Team Alpha Presentations
- 02/24: Team Alpha Presentations
- 02/26: Team Alpha Presentations
- 03/03: (Spring Break, No Meeting)
- 03/05: (Spring Break, No Meeting)
- 03/10: Team Status Report Presentations
- 03/12: Resume Writing and Interviewing
- 03/17: Design Day and the Project Videos
- 03/19: Intellectual Property
- 03/24: Ethics and Professionalism
- 03/26: Team Status Report Presentations
- 03/31: Team Status Report Presentations
- 04/02: Team Beta Presentations
- 04/07: Team Beta Presentations
- 04/09: Team Beta Presentations
- 04/14: Project Video Status Reports
- 04/16: Team Status Report Presentations
- 04/19: Project Videos Due
- 04/21: Project Videos
- 04/22: All Deliverables Due
- 04/23: Project Videos
- 04/23: Design Day Setup (12:30 p.m. – 3:00 p.m.)
- 04/24: Design Day
- 04/30: 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
    - Optional DECS Virtual Machine
  - Team 100% Responsible
    - Building
    - Maintaining
    - Securing
    - Backing Up
- 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
  - Microwave
- Lockable Storage
  - At Most One Drawer Per Team
  - Only As Needed
  - Assigned by Instructors
  - Obtain Keys from CSE Office

Scheduled Lab Times

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

CSE498 Prerequisites

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



Capstone Overview

✓Course Logistics

➢Client Projects

- Course Logistics (Continued)

Team / Project Generalities [1 of 3]

- Sponsors/Clients
  - Vary in Size and Type
  - Sponsor/client contacts are “volunteers.”
- Team Contact Person
  - Picked By Team
  - Main Point of Contact for Client
  - Must Be Responsible Person

Team / Project Generalities [2 of 3]

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



Team / Project Generalities [3 of 3]

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

Project Proposal Specifics

- Vary
  - Type
  - Current State of Specificity
- Challenge
  - Connect with Client
  - “Nail Down” the Project
    - Hard Enough
    - Not too Hard
  - Course Feature, Not Bug
- Must Be Approved by Instructors

Intellectual Property and Non-Disclosure Agreements

- Intellectual Property Agreement
  - You agree to assign ownership of intellectual property that may be created as a result of your project to your client.
    - Copyrightable Program Code
    - Patentable “Ideas”
  - Most clients will require an IP agreement.
- Non-Disclosure Agreement
  - You agree not to disclose client confidential information.
  - Most clients will require an NDA.
- To date…
  - Most code has not gone directly into production.
  - No patents have resulted.
- Use agreements provided by MSU to clients. See Downloads.
- Contact Dr. D. or Dr. J. For Questions.
- Not Willing to Sign May Affect Project Choice

Project Teams

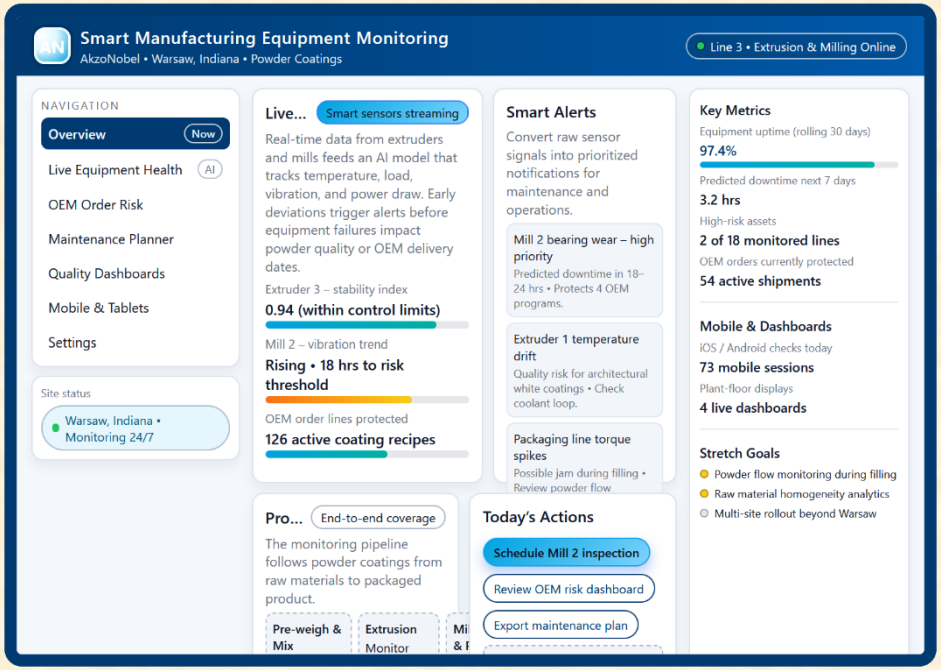
1. AkzoNobel
2. Ally
3. Amazon
4. Anthropocene Institute
5. Apple
6. Auto-Owners
7. Corewell Health
8. Delta Dental 3DMM
9. Delta Dental CDUIF
10. GM
11. HAP
12. Henry Ford Innovations
13. Kohler Co
14. Launch
15. Lockheed Martin Space
16. Ludus
17. Magna AI4CBM
18. Magna CADAIA
19. Meijer
20. MSUFCU
21. NetJets
22. PACE
23. PS Technology
24. RPM
25. Stripe
26. Stryker IST
27. TechSmith
28. Urban Science
29. Whirlpool
30. WK Kellogg Co

Team AkzoNobel

Project Overview

Smart Manufacturing Equipment Monitoring

- Functionalities
  - Increase Paint Manufacturing Efficiency
  - By Detecting Failures Early
  - Utilizing Artificial Intelligence Tools
- Features
  - Collect Data from Vibration Sensors
  - Develop Custom AI/ML Models
  - Detect Equipment Failure
  - Alert Personnel Before Errors
  - Recommend Solution Strategies
  - Design Custom Web and Mobile Apps
- Technologies
  - iOS / Android Hardware
  - Database Technologies
  - AI / ML Libraries



AkzoNobel

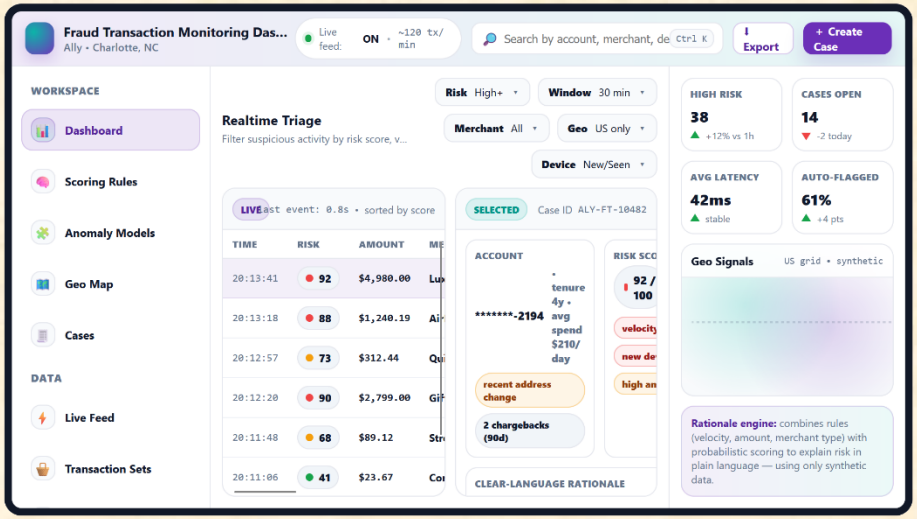
Amsterdam, Netherlands
Nashville, Tennessee

Team Ally

Project Overview

Fraud Transaction Monitoring Dashboard

- Functionalities
  - Improve Fraud Detection
  - Through a Real-Time Data Processing Pipeline
  - Within a Data Management Platform
- Features
  - Detect Patterns in Real-Time With …
  - A Low-Latency, Scalable Pipeline
  - Build Interactive Dashboards
  - Utilize LLMs for Risk Rationales
  - Deploy a Web-Application with an Intuitive UI
- Technologies
  - Python
  - PostgreSQL
  - React
  - Langchain



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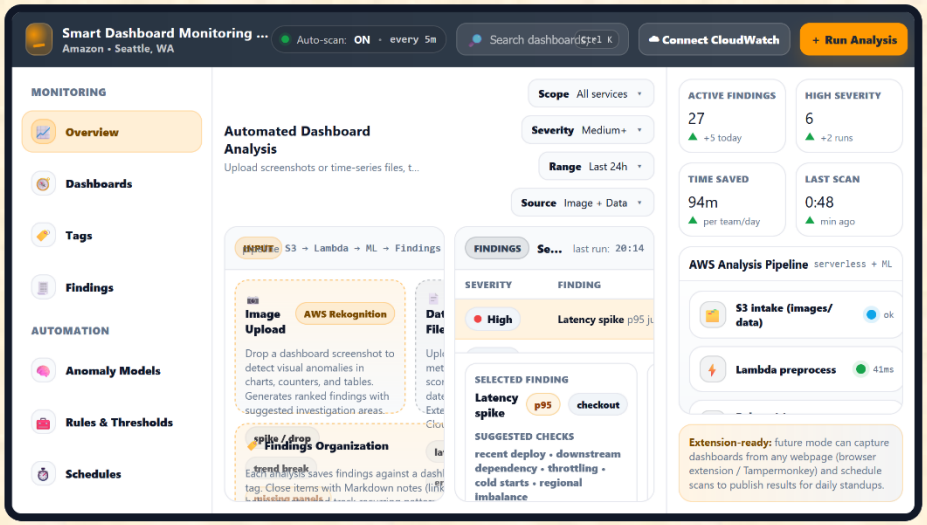
Detroit, Michigan
Charlotte, North Carolina

Team Amazon

Project Overview

Smart Dashboard Monitoring Platform

- Functionalities
  - Reduce Amazon Errors
  - By Locating Data Anomalies Early
  - Through an Intuitive Web App
- Features
  - Design an Attractive Web App
  - Ingest Amazon Data from a Variety of Sources
  - Analyze Data with AI / ML Models
  - Identify Analogous Trends or Patterns
  - Create Intuitive Visualizations
  - Report Concerning Findings to Amazon
- Technologies
  - AWS Lambda / S3 / CloudFront
  - AWS Rekognition / SageMaker
  - AWS API Gateway / Cloudwatch / CloudFormation

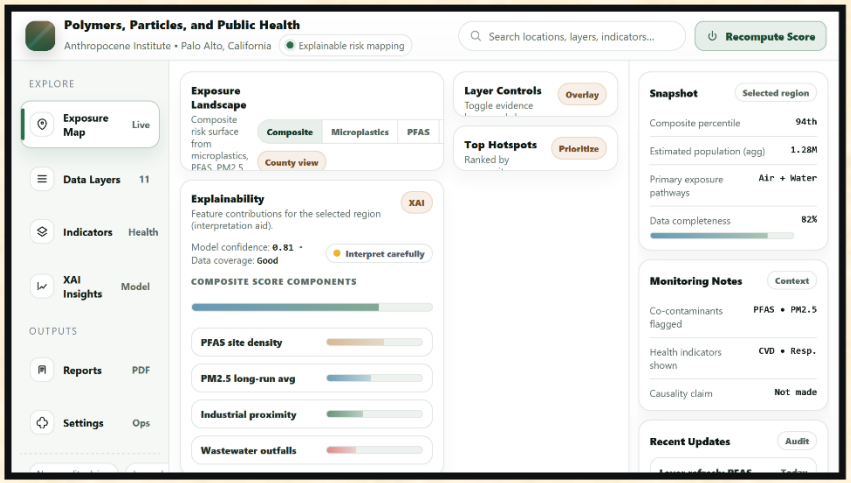


Seattle, Washington
Detroit, Michigan

Team Anthropocene Institute

Project Overview

Polymers, Particles, and Public Health



- Functionalities
  - Improve Education on Reducing Microplastics
  - Through Models Analyzing Varying Energy Sources
  - Utilizing a Web-Hosted Data Platform
- Features
  - Build Models Investigating Microplastic Sources
    - With Systems for Extrapolating Energy Source Change
    - Utilizing datasets related to Microplastic and Pollutants
    - Investigating Potential Solutions' Efficacy in Reducing Pollutants
  - Build a Consolidated Data Processing Pipeline
  - Host an Interactive and Intuitive Web-Application
- Technologies
  - PyTorch
  - SQL or other Database Languages
  - PowerBI or other Data Visualization Tools
  - Frontend Tools

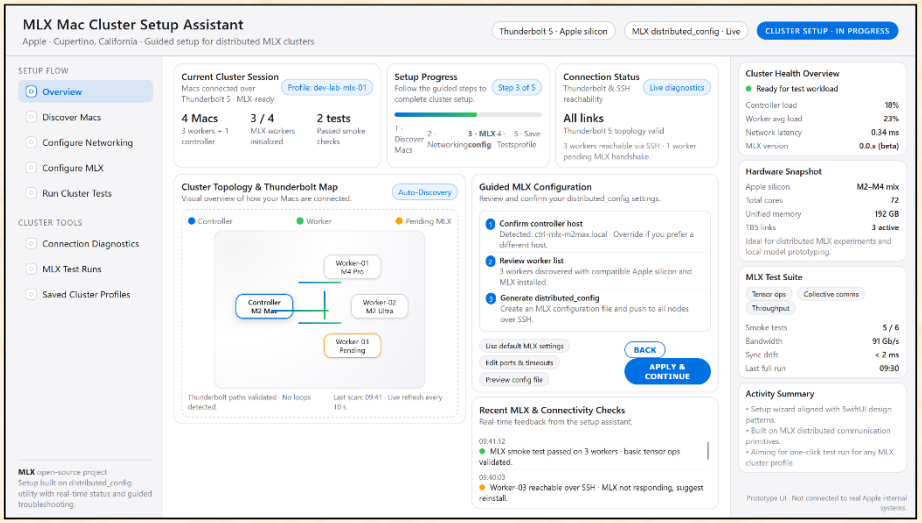
Anthropocene Institute
Palo Alto, California

Team Apple

Project Overview

Setup Assistant for MLX Mac Cluster

- Functionalities
  - Make Machine Learning on Apple Hardware Easier
  - By Simplifying Cluster Management
  - Via a User-Friendly Management Tool
- Features
  - Design an Intuitive MacOS App
  - Connect Real Apple Hardware via Thunderbolt
  - Assist Users During Cluster Setup
  - Provide Real-Time ML Training Feedback
  - Create a Robust Troubleshooting System
  - Contribute to an Open-Source ML Repository
- Technologies
  - Mac With Apple Silicon
  - Thunderbolt 5
  - Swift and Swift UI
  - MLX



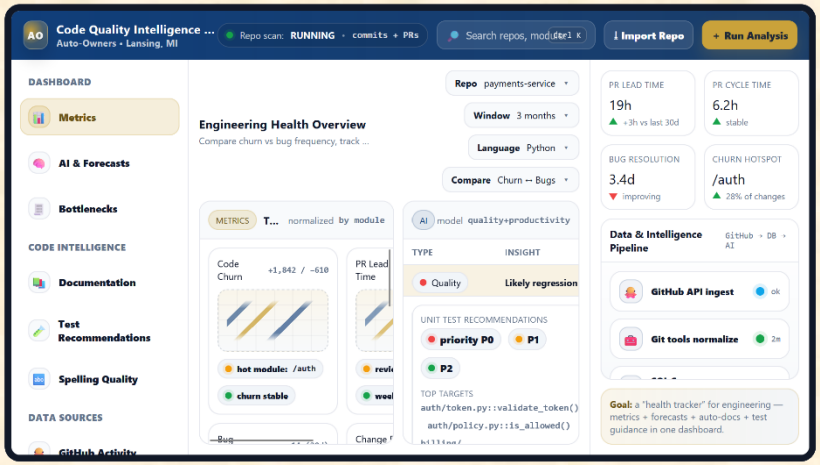
Cupertino, California

Team Auto-Owners

Project Overview

Code Quality Intelligence System

- Functionalities
  - Increase Reliability and Performance of Codebases
  - Through an Automated AI-Powered Platform
  - Hosted on a Web-Platform
- Features
  - Build a Code-Analysis Pipeline over Multiple Metrics
    - Code Churn
    - PR Lead Time
    - Etc.
  - Develop a Model to Predict Future Performance Trends
  - Build a UI for Visualizing Repository Metrics
- Technologies
  - React / Angular
  - Microsoft SQL Server
  - GitHub API
  - FastAPI / Flask

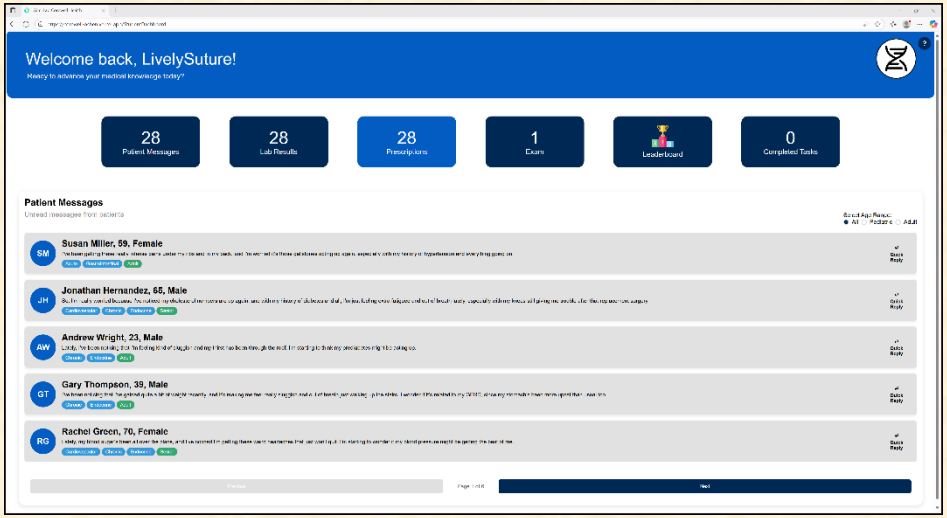


Auto-Owners INSURANCE
Lansing, Michigan

Team Corewell Health

Project Overview

An AI Tool for Enhancing Medical Education 2.0



- Functionalities
  - Increase Patient Quality of Care
  - By Training Medical Students
  - On Realistic AI Patients
- Features
  - Improve An Existing Training Service
    - Generate AI Patients
    - Enable Students to Practice Sending Messages
  - Design a Hospital Staff Messaging System
  - Adjust Patients to Target Students Dynamically
  - Tailor AI Feedback for Individual Students
  - Design a Realistic EHR User Interface
- Technologies
  - Machine Learning Technologies
  - Web Development Tools
  - Database Technologies

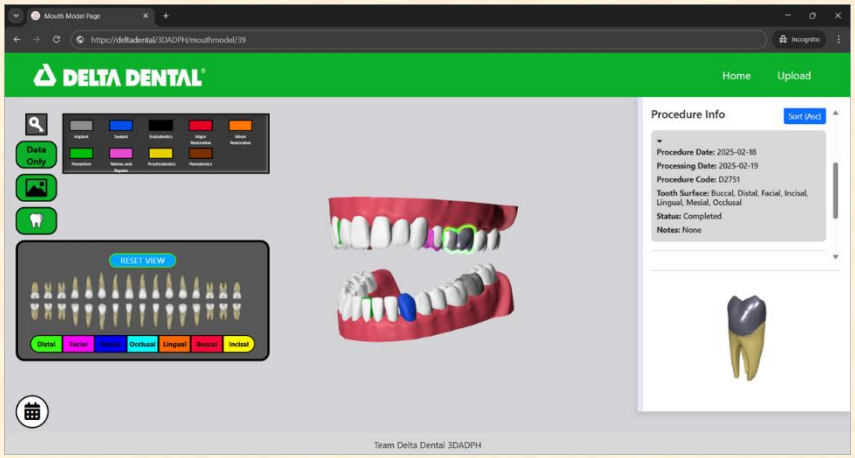
Corewell Health™
Grand Rapids, Michigan

Team Delta Dental 3DMM

Project Overview

Dynamic 3D Mouth Model

- Functionalities
  - Enhance Dental Insurance Capabilities
  - By Creating Individualized 3D Mouth Models
  - Deployed on an Angular Application
- Features
  - Build on a Previous Blender-Based Solution
  - Use Blender API to Create a Dynamic Model
  - Design a Frontend for 3D Model Visualization
  - Create a Robust Backend for Passing Visual Data
  - Develop an API Schema with a Variety of Input Sources
- Technologies
  - Angular
  - Blender
  - Python
  - Java (Quarkus)

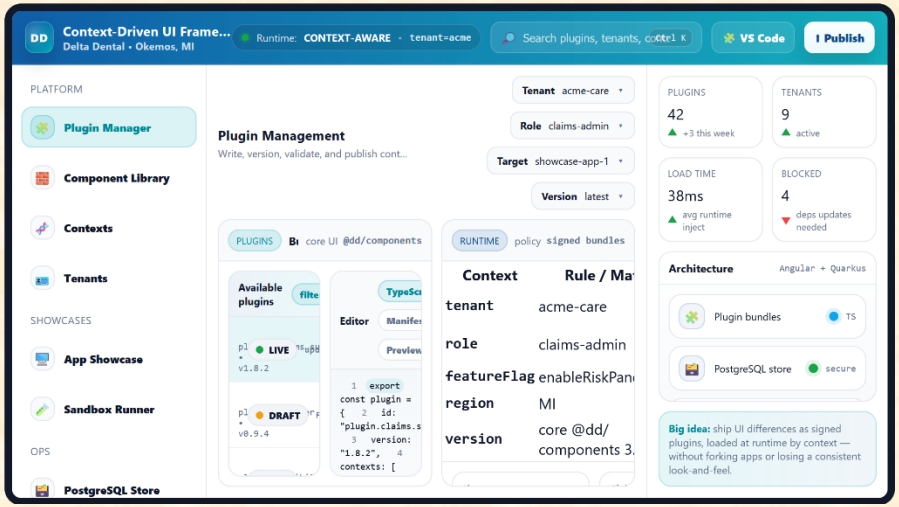


Team Delta Dental CDUIF

Project Overview

Context-Driven UI Framework

- Functionalities
  - Consolidate Delta Dental Applications
  - By Introducing Dynamism to Applications
  - Through Code Injection System
  - Integrated Into Existing Application Pipelines
- Features
  - Implement Secure Plugin Storage
  - Develop a Core Component Library for Plugins
  - Design System for Maximum Flexibility
  - Build a Backend Service for Operations
- Technologies
  - HTML / CSS / JavaScript / TypeScript
  - Angular
  - Java (Quarkus)
  - PostgreSQL



DELTA DENTAL®

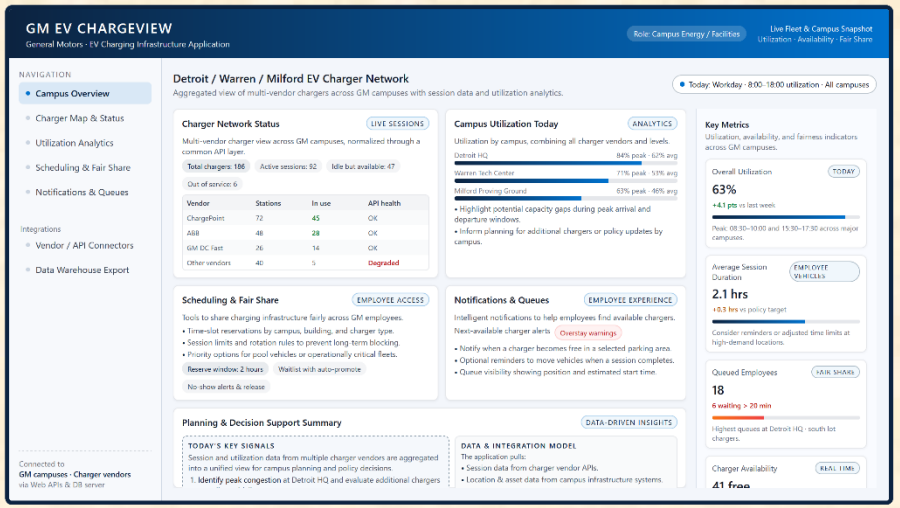
Okemos, Michigan

Team GM

Project Overview

EV Charging Infrastructure Application

- Functionalities
  - Improve GM's Electric Vehicle Offerings
  - By Facilitating and Tracking EV Charging Infrastructure
  - On a Web Dashboard
- Features
  - Collect Usage Data
  - Organize User Interactions
  - Send Notifications
  - Track and Visualize Statistics
  - Provide Scheduling System
- Technologies
  - MySQL
  - Python
  - Apache



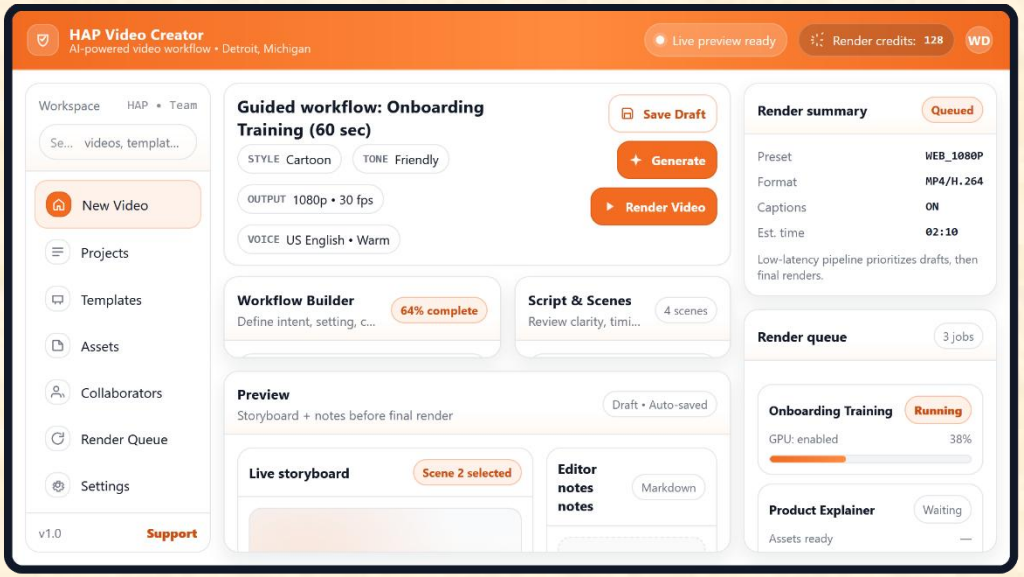
Detroit, Michigan

Team HAP

Project Overview

AI-Powered Video Creator Tool

- Functionalities
  - Modernize HAP Marketing and Engagement
  - By Generating AI Videos from Text
  - With a Guided Prompt Wizard
- Features
  - Provide a Modular Interface
  - Support Collaborative Video Editing
  - Build a Template Library
  - Manage Video Rendering Pipelines
  - Optimize for Speed and Efficiency
- Technologies
  - Large Language Models
  - HTML / CSS



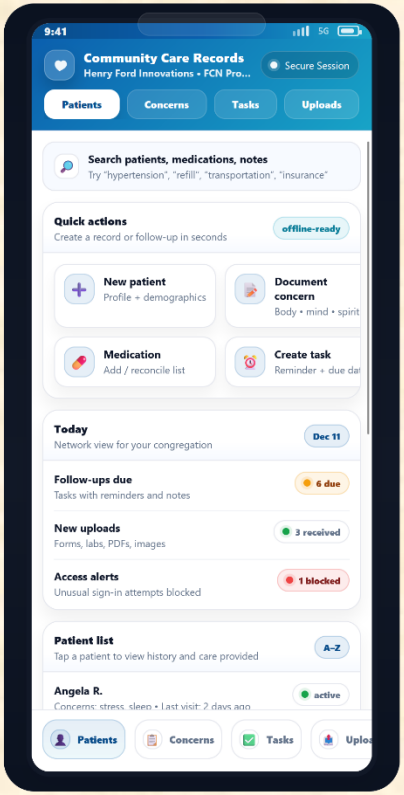
Detroit, Michigan

Team Henry Ford Innovations

Project Overview

Faith-Based Community Medical Database

- Functionalities
  - Offer Better Care to Those in Need
  - Through a Robust Data Management System
  - Hosted on a Cloud-based Data Platform
- Features
  - Build a Database for Patient Information
  - Implement Robust Database and Web-security
  - Develop a Data Upload and Ingestion System
  - Design and Build an Intuitive UI
  - Deploy a Production Ready Mobile/Web-Application
- Technologies
  - Azure or other Database Systems
  - SSL, TLS, etc.
  - Access Control (Oauth / LDAP)



HENRY FORD HEALTH
Innovations

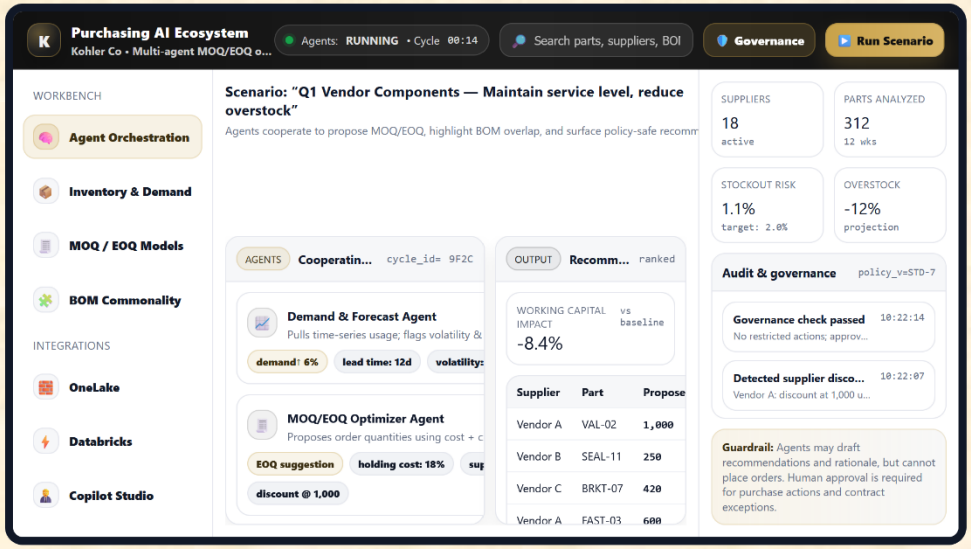
Detroit, Michigan

Team Kohler Co

Project Overview

Multi-Agent AI Ecosystem to Optimize Purchasing

- Functionalities
  - Make Inventory Management Seamless
  - By Dynamically Ordering Materials
  - Utilizing Agentic AI Models
- Features
  - Analyze Buying and Selling Trends
  - Develop Multiple Agentic AI Models That…
    - Coexist and Communicate
    - Work Together
    - Identify the Ideal Order Quantities
  - Visualize Purchasing Trends Over Time
  - Design an Intuitive Web App
- Technologies
  - Microsoft Azure OneLake
  - Microsoft Copilot Studio
  - DataBricks



KOHLER®

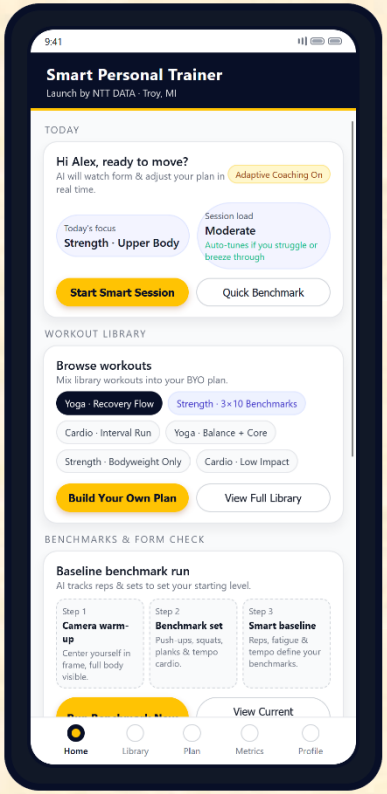
Kohler, Wisconsin

Team Launch

Project Overview

Smart Personal Trainer

- Functionalities
  - Help Users Manage Their Health
  - By Facilitating Personalized Workout Regimens
  - With Camera Tracking
  - And an AI Trainer
- Features
  - Model Proper Form with AI-Generated Images
  - Evaluate User's Performance
  - Offer Full Customization of Workout
  - Incorporate Smart Watch Metrics
- Technologies
  - Generative AI
  - Unity / C#
  - Computer Vision



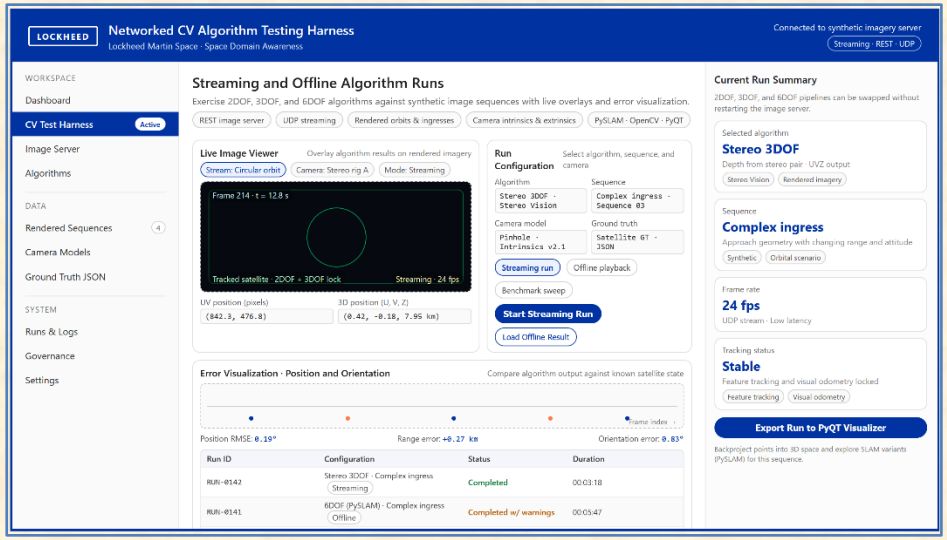
Launch
by NTT DATA
Tory, Michigan

Team Lockheed Martin Space

Project Overview

Networked CV Algorithm Testing Harness

- Functionalities
  - Identify and Track Objects in Space
  - Utilizing Computer Vision Technologies
  - Within an Intuitive Framework
- Features
  - Analyze a Variety of Space Entity Images
    - Utilize Different AI Algorithms
    - Determine Location, Size, Orientation
  - Design a Robust Web App
  - Visualize Algorithm Results in Real Time
  - Track Algorithm Results and Errors Over Time
  - Replay Object Motion and Algorithm Results
- Technologies
  - Python
  - Flask
  - OpenCV, PySLAM, PyQT

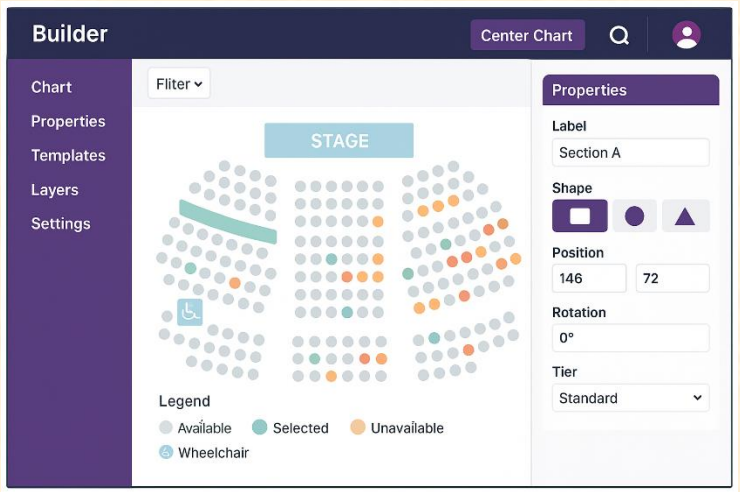


Team Ludus

Project Overview

Real-Time Seating Chart API, Builder, and Viewer

- Functionalities
  - Update and Modernize Seat Charting System
  - By Creating a Robust Charting Manager
  - Deployed On a Web-Platform
- Features
  - Implement Seating Chart Renderer and Viewer
  - Build a Robust and Adaptable Charting API
  - Implement Compatibility with other Ticketing Platforms
  - Develop an Embeddable Front-End Widget
- Technologies
  - Node.js
  - PostgreSQL
  - SVG Tools
  - Vue.js
  - Jest / Vitest / etc



Ludus

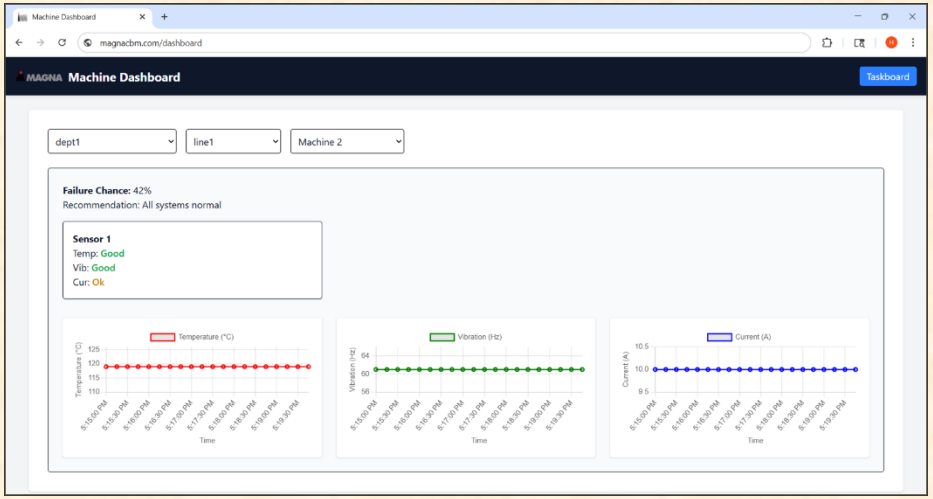
Holland, Michigan

Team Magna AI4CBM

Project Overview

ML/AI Pipeline for Condition-Based Maintenance 2.0

- Functionalities
  - Improve Magna Manufacturing Efficiency
  - By Predicting when Maintenance is Needed
  - Before Machinery Failure Occurs
- Features
  - Collect and Preprocess Automotive Data
    - Install Sensors on Location
    - Ingest Data From Placed Sensors
  - Implement Multiple Models
  - Deploy and Visualize Results from Models
  - Containerize and Deploy Final Solution
- Technologies
  - Robot Operating System 2
  - Python
  - MQTT



MAGNA

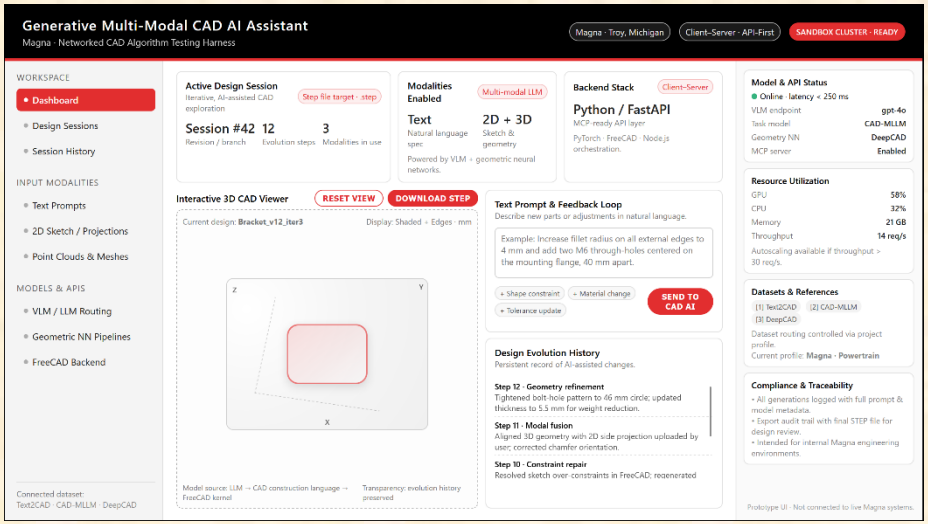
Tory, Michigan
Aurora, Ontario, Canada

Team Magna CADAIA

Project Overview

Generative Multi-Modal CAD AI Assistant

- Functionalities
  - Refine Magna's CAD Design Process
  - With an Interactive AI Assistant
  - To Edit and Create CAD Models…
  - Facilitating Easier Design
- Features
  - Interface CAD Design with AI Model
  - Enable Iterative Design Via AI
  - Export CAD Models for Use in Other Projects
  - Offer Insights and Annotations
- Technologies
  - FreeCAD
  - Python
  - Large Language Models





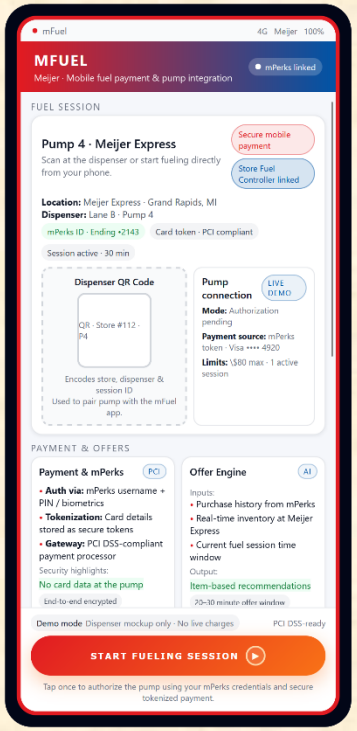
Tory, Michigan
Aurora, Ontario, Canada

Team Meijer

Project Overview

mFuel Application Development and Dispenser Integration

- Functionalities
  - Enhance Customer Fueling Experience
  - Through a Payment and Promotions Management System
  - Deployed over a Mobile Application
- Features
  - Implement Robust and Secure Mobile Payment Systems…
  - Using PCI-Compliant Payment Tokenization
  - Develop a Dispenser Interface
  - QR Code Identification for Dispenser-Specific Information
  - Integrate mFuel System within Existing mPerks Platform
    - Display Promotions at the pump
    - Consolidate mFuel Purchase History to mPerks System
- Technologies
  - Azure DevOps
  - SQL
  - Java / .NET



meijer®

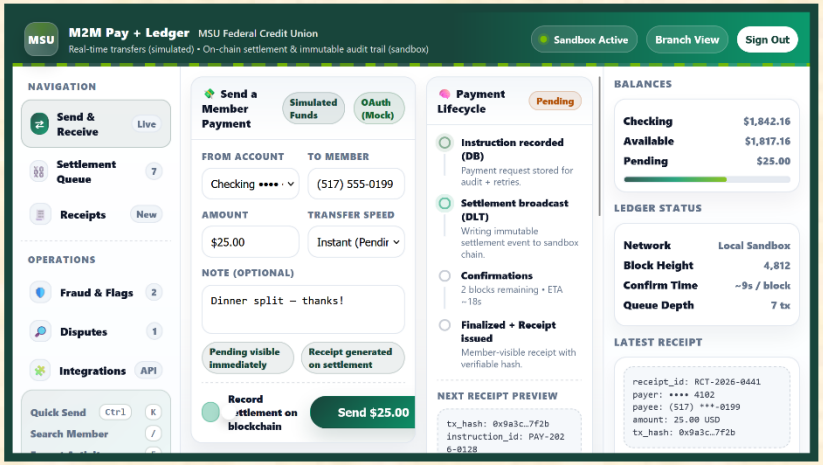
Grand Rapids, Michigan

Team MSUFCU

Project Overview

Member-to-Member Payments with Blockchain Settlement

- Functionalities
  - Enhance Payment Transparency and Speed
  - Through Blockchain-Based Solutions
  - Deployed within a Sandbox Environment
- Features
  - Implement Secure Blockchain-Based Settlement
  - Deploy a Sandbox Environment with Web-Interface
  - Host a Database Platform for Payment Records
  - Deploy a Web-Based or Mobile Application
- Technologies
  - FastAPI / Flask / etc
  - React Native / React.js
  - PostgreSQL / MongoDB / etc
  - Oauth 2.0 / Firebase Auth
  - Blockchain Technologies



msufcu

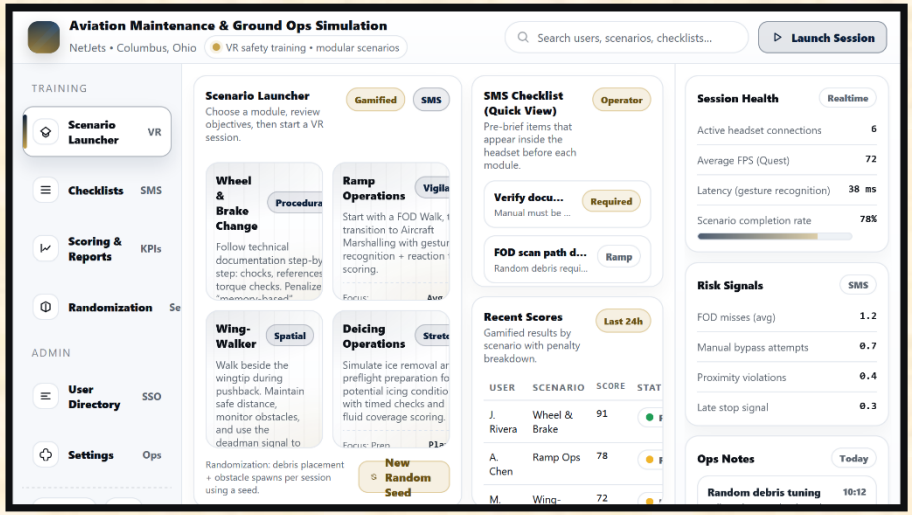
East Lansing, Michigan

Team NetJets

Project Overview

Aviation Maintenance & Ground Ops Simulation

- Functionalities
  - Enhance Airline Safety
  - By Training Operators
  - Through a Robust VR Training Simulation
- Features
  - Design Realistic VR Scenarios
  - Train Employees to Interact with Virtual Aircraft
    - Analyze and Inspect Aircraft Before Takeoff
    - Remove Hazardous Debris from Tarmac
    - Assist in Directing Aircraft
    - Remove and Clear Ice from Aircraft
  - Randomize Scenarios for Realism
  - Track User Scores and Completion
- Technologies
  - Unity
  - Meta Quest



NETJETS®

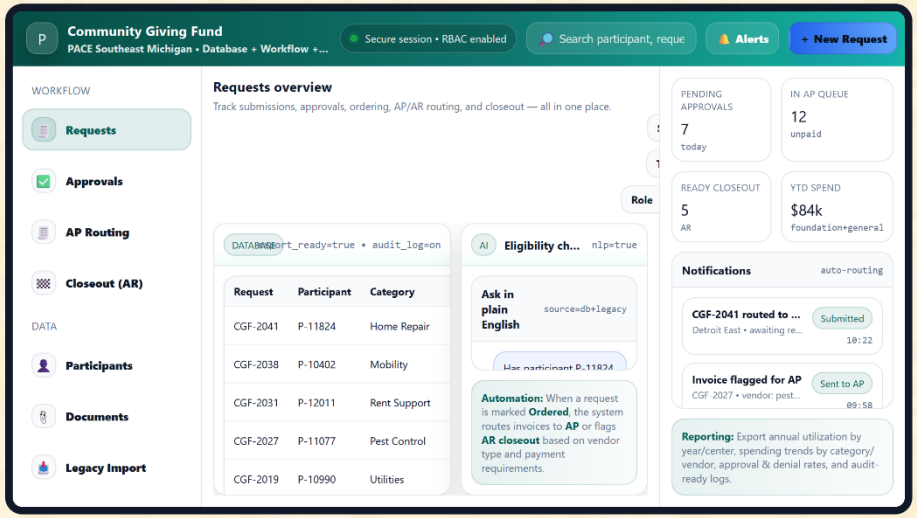
Columbus, Ohio

Team PACE

Project Overview

Community Giving Fund Database and AI Workflow

- Functionalities
  - Help People Get Care
  - Verifying Patient Eligibility
  - Through an Easy-To-Use Web App
- Features
  - Create a Searchable Database
  - Design an Intuitive User Interface
  - Develop a Dynamic Fund Application Form
  - Approve Critical Applications
  - Close out Financial Applications
  - Visualize Key Insights On a Central Dashboard
- Technologies
  - Database Technologies
  - OpenAI API
  - Python
  - PostgreSQL



PACE SOUTHEAST MICHIGAN

Detroit, Michigan

Team PS Technology

Project Overview

Shoving Moves

- Functionalities
  - Improve Safety of New Train Mechanics
  - With a VR Training Simulator
  - To Train Mechanics to Safely Perform Shoving Moves
- Features
  - Simulate a Variety of Real-World Scenarios
  - Automatically Grade Performance
  - Provide Freedom to Interact and Learn
  - Model Many Configurations
- Technologies
  - Unity / C#
  - Meta Quest 3
  - SCORM



PST™

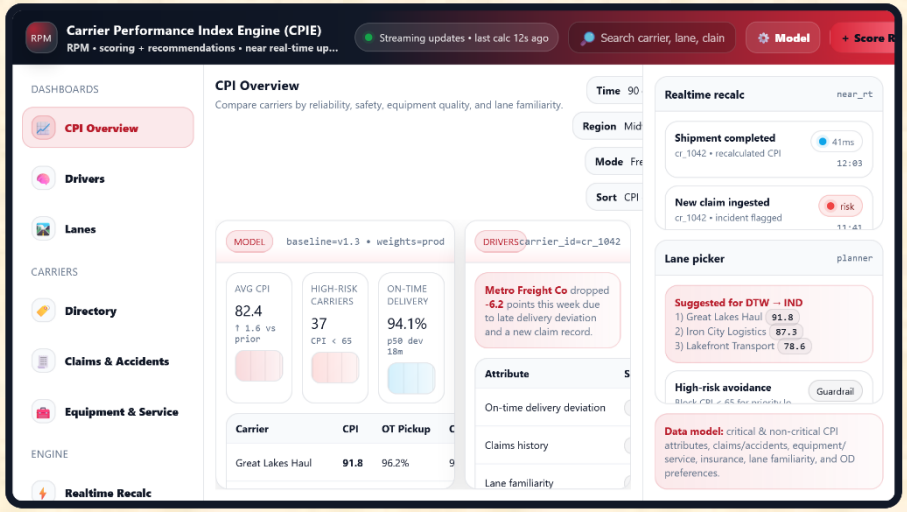
Louisville, Colorado

Team RPM

Project Overview

Carrier Performance Index Engine (CPIE)

- Functionalities
  - Optimize Carrier Efficiency and Customer Satisfaction
  - By Evaluating Carrier Reliability
  - With a Data-Driven Recommendation Model
- Features
  - Ingest Large Amounts of Logistics Data
  - Model the Data with an Adjustable AI
  - Automatically Identify High-Risk Carriers
  - Visualize Analysis on a Dashboard
- Technologies
  - Python
  - SQL
  - TensorFlow



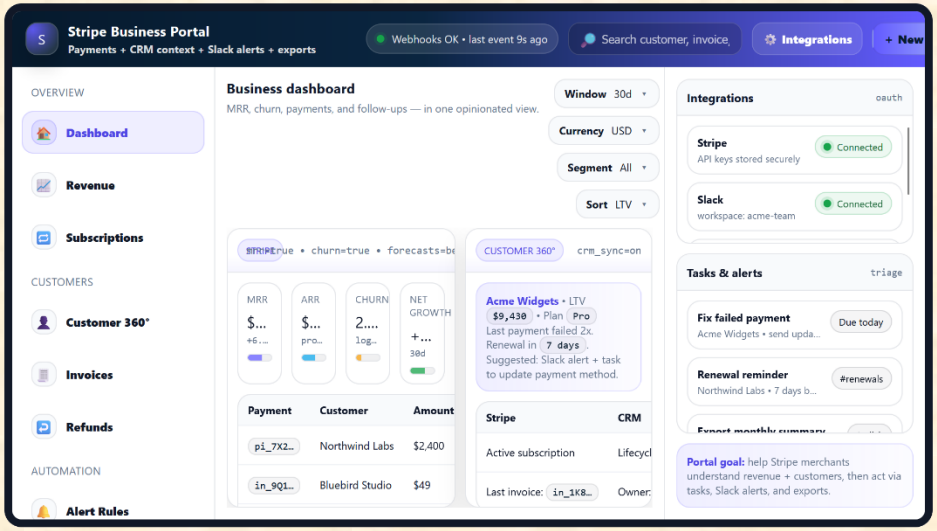
Royal Oak, Michigan

Team Stripe

Project Overview

Stripe Business Portal

- Functionalities
  - Make Finance Easy
  - By Tracking Payments and Data
  - Within One Central Portal
- Features
  - Design an Intuitive Banking Dashboard
  - Create Secure Connections with Stripe Accounts
  - Ingest and Analyze Multiple Data Sources
  - Visualize Account Data and Trends
  - Send Out Alerts With Customizable Rules
  - Generate Custom Financial Reports
- Technologies
  - Python / Django
  - RESTful API Design
  - Stripe API and Webhooks
  - CRM API
  - Slack



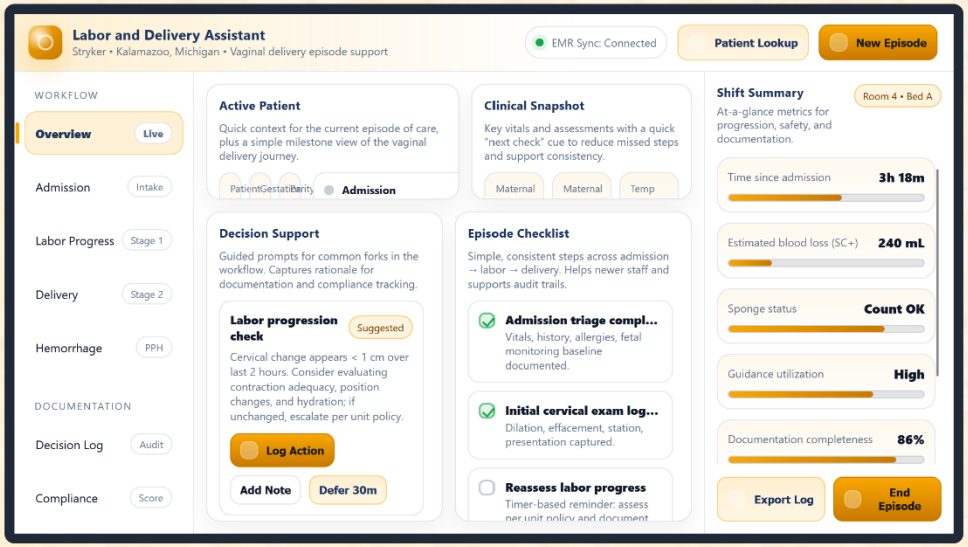
San Francisco & Dublin

Team Stryker IST

Project Overview

Labor and Delivery Assistant

- Functionalities
  - Guide and Aide Labor and Delivery Nurses
  - With an AI Virtual Assistant
  - To Expedite the Learning Process
- Features
  - Suggest Alternative Actions
  - Track Every Stage of the Delivery Process
  - Provide Helpful Suggestions
  - Manage Sponge Usage
  - Visualize Data in a Dashboard
- Technologies
  - Swift / iOS
  - Amazon Web Services
  - CSS / HTML



stryker

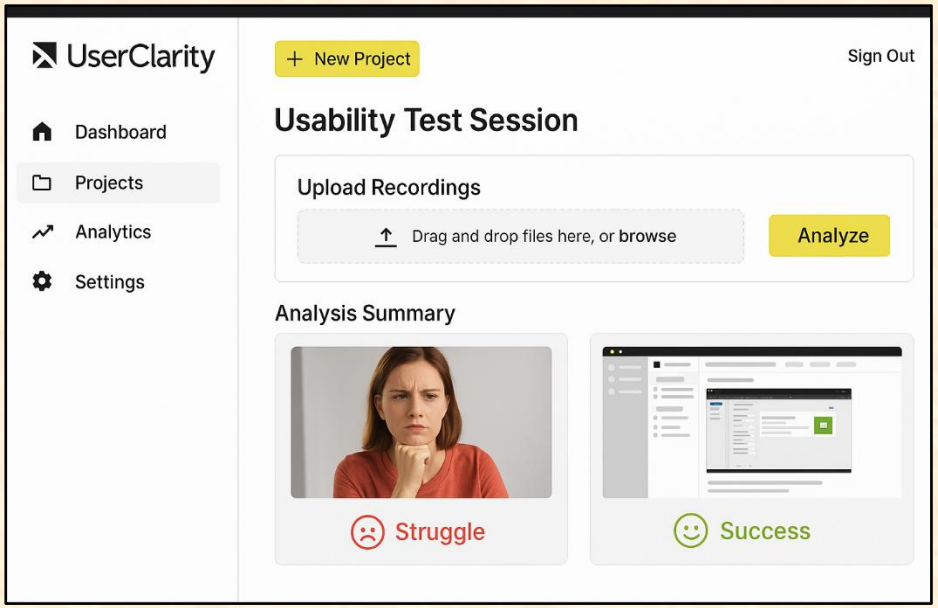
Kalamazoo, Michigan

Team TechSmith

Project Overview

UserClarity

- Functionalities
  - Enhance Software Quality
  - By Analyzing Software Testing Footage
  - Using AI Tools
- Features
  - Design a Custom Web App
  - Ingest Raw Screen and Webcam Recordings
  - Create a Robust AI Mode
  - Analyze Footage for Key Moments
  - Identify Trends in the User Experience
  - Visualize Insights Across Multiple Users
  - Generate Summary Reports
- Technologies
  - Microsoft Azure Services
  - React
  - FFmpeg



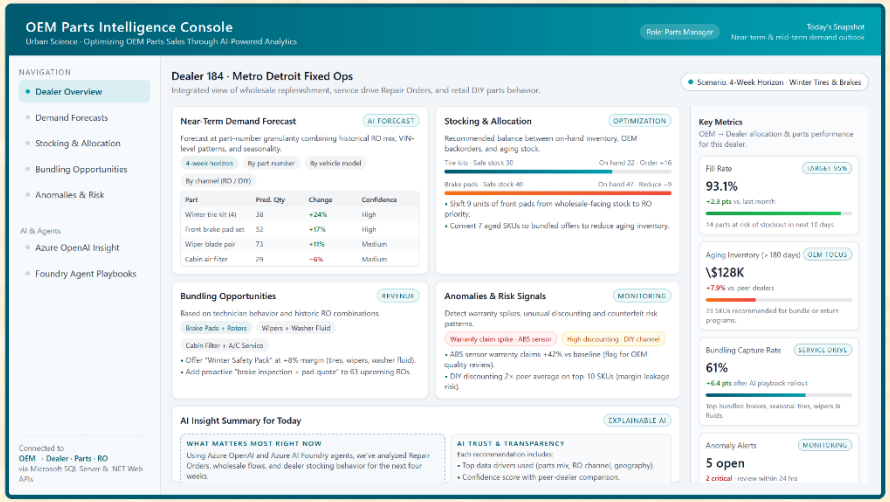
TechSmith®
East Lansing, Michigan

Team Urban Science

Project Overview

Optimizing OEM Parts Sales Using AI-Powered Analytics

- Functionalities
  - Optimize Automotive Part Sales
  - By Predicting Demand at Multiple Levels
  - With an Intuitive AI-enabled Web Dashboard
- Features
  - Track Flow of Inventory and Pricing of Parts Via…
    - Seasonal Trends
    - Demand Forecasting
    - Vehicle Age
    - Etc.
  - Detect Anomalies
  - Summarize Statistics using AI
  - Provide Explanations for Market Changes
- Technologies
  - MySQL
  - Visual Studio
  - .NET



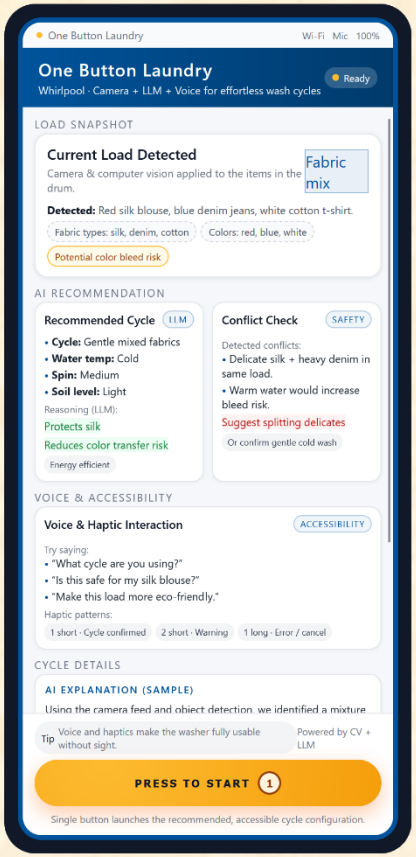
URBAN SCIENCE
Detroit, Michigan

Team Whirlpool

Project Overview

One Button Laundry

- Functionalities
  - Simplify the Laundry Process for Customers
  - Using a Smart Washer
  - That Can Do Laundry in a Single Button Press
- Features
  - Identify Proper Laundry Settings Using Camera
  - Automatically Detect Soil Level, Fabric Type, etc.
  - Support Voice Commands
- Technologies
  - Large Language Models
  - Python
  - HTML / CSS
  - React



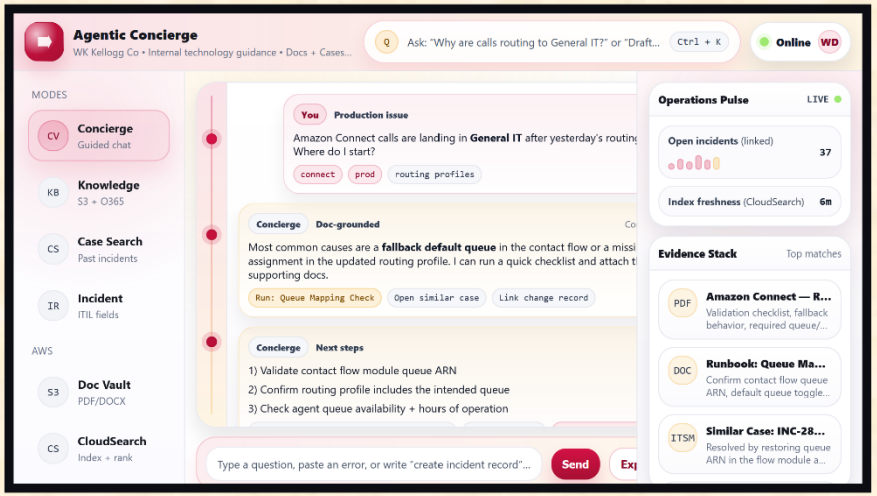
Whirlpool

Benton Harbor, Michigan

Team WK Kellogg Co

Project Overview

Agentic Concierge



- Functionalities
  - Improve Internal Technology Consultation
  - Through an Automated Chat-System
  - Hosted on a Cloud-Based Platform
- Features
  - Configure and Utilize AWS Chat Toolset
  - Implement Document-Based Context Retrieval
  - Develop Data Management for Past Cases
  - Pull solutions from similar cases solved previously
  - Configure and Deploy an Interactive UI
- Technologies
  - AWS Q
  - AWS S3
  - AWS Amplify / Other Frontend Tools
  - AWS ControlTower

WK Kellogg Co

Battle Creek, Michigan

Attendance Today

- Get out your laptops.
- Open browser.
- Log into Google with MSU credentials.
- Go to www.capstone.cse.msu.edu.
- Click on…
  - + Other Links
  - > Downloads
  - First Meeting Attendance: Google Form
  - URL: https://forms.gle/3gvH3wPBWUH5fYux7

Team Member Survey

[1 of 2]

- Check Student ID
- NetID
  - Yes: dyksen
  - No: dyksen@msu.edu
- Use Upper and Lower Case
  - Yes: Lansing, Michigan
  - No: LANSING, MICHIGAN
- Hometown Country, NOT County
  - Yes: USA, China
  - No: United States, Ingham, Wayne
- Use Floating-Point Numbers Only For GPAs
  - RegEx: ^[0-4]\.[0-9]{2}$
  - Yes: 3.7, 2.8
  - No: 3.1415926, 3.5-3.7, ~3.5, About 3.5

Team Member Survey [2 of 2]

- Log into Google with MSU credentials.
- Go to www.capstone.cse.msu.edu.
- Click on…
  - + Other Links
  - > Downloads
  - Team Member Survey: Google Form (https://forms.gle/AXEFPGW6VczLSmM18)

First Assignments

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

What's ahead? [1 of 3]

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

What's ahead? [2 of 3]

- Team Photos
  - Coordinated by Dr. J.
  - Friday, January 30, 9:00 a.m. – 5:00 p.m.
    - Every Team Member Required to Attend
    - On-Time Attendance Required
    - Put on your calendar now. ← Note
  - Scheduled via Google From
    - Email From Dr. J.
    - Look for it. Respond to it as a team ASAP.
    - Give Times When Available. Not Just When Desired.

What's ahead? [3 of 3]

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

Questions?

Capstone Overview

✓Course Logistics

✓Client Projects

➢Course Logistics (Continued)