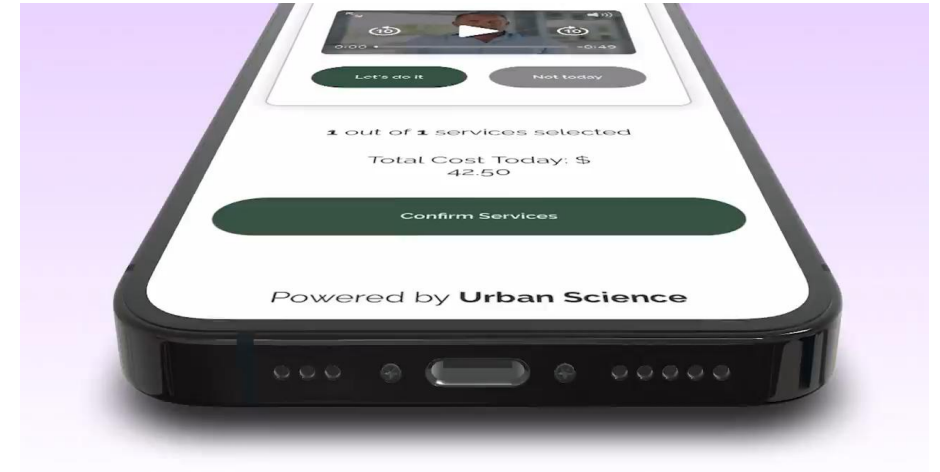


TRAVIS WRIGHT
COMP SCI - AUDIO - DATA
PORTFOLIO

MSU CAPSTONE: SERVICE ADVISOR ASSISTANT

- 🚗 Partnered with Urban Science as the project sponsor to develop a cross-platform mobile application built with C# and .NET MAUI to further personalize the automotive dealership experience.
- 📷 We leveraged Azure OCR (Optical Character Recognition) to automatically extract characters from vehicle images, enabling VIN matching to customers and mileage-based service recommendations.
- 🧠 Built a web app delivered via SMS, allowing customers to view personalized service recommendations, receive AI-generated explanations tailored to their vehicle's needs through synthetic media, and purchase services.
- 📊 Created an interactive dashboard displaying real-time customer engagement data, service recommendation stats, and key performance indicators to support data-driven decision making using LiveCharts.

visit our website: <http://www.capstone.cse.msu.edu/2025-01/projects/urban-science/>



CSE435: ACTIVE PARK ASSIST

- 🚗 Designed and developed the Active Park Assist system, a safety-critical feature enabling vehicles to identify parking spaces and perform automated parallel or perpendicular parking maneuvers.
- 📄 Created a detailed Software Requirements Specification (SRS) document by eliciting customer feedback, gathering and refining system requirements, and outline project constraints, details, and goals.
- 🔧 Developed comprehensive Use Case, Class, State, and Sequence diagrams to model system behavior, design, architecture, and interactions providing varying perspectives for ourselves and our customer.
- 🎮 Built an intuitive and interactive prototype in Unity, simulating the Active Park Assist functionality to demonstrate system capabilities and user experience.

visit our website: <https://cse.msu.edu/~przyby44/>

[Home](#) [Original Project Description](#) [SRS](#) [Prototype](#) [Bibliography](#) [Team Login](#)

CSE 435 Project Team APA3





The project assigned to our team is to go through the design and prototyping process for an Active Park Assist (APA) system in consumer automobiles.

The design process involves making a Software Requirements Specification (SRS) which is linked at the top of the page. This document houses a detailed documentation of the resources, design, and development of our APA system. This includes use case diagrams, class diagrams, state diagrams, and other background information.

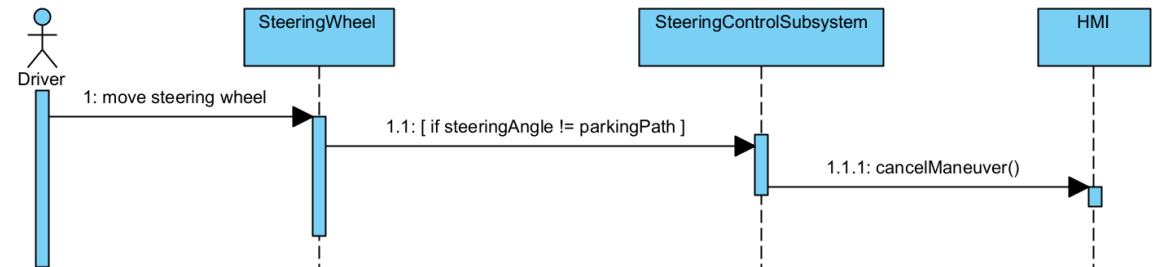
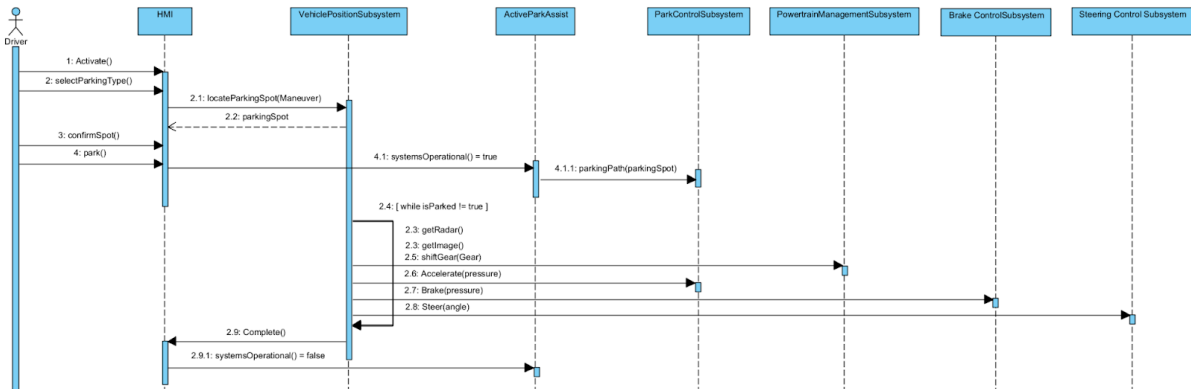
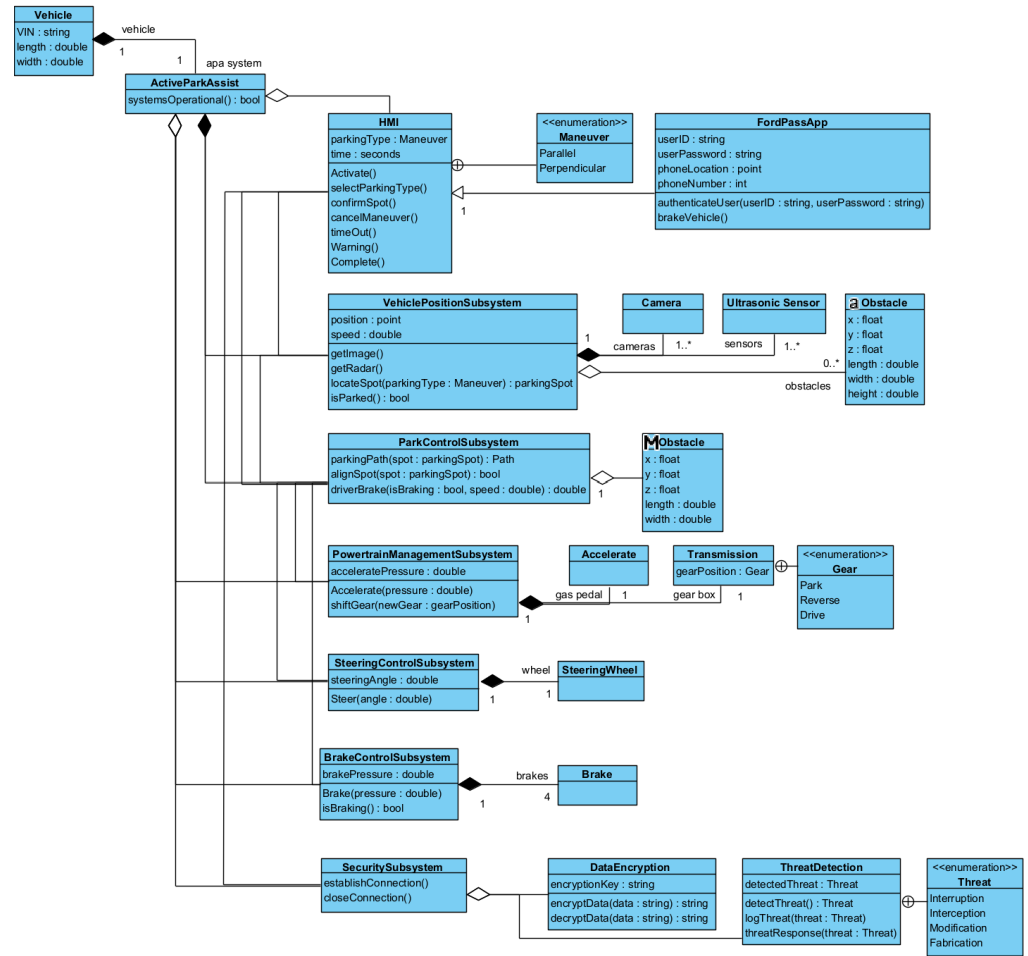
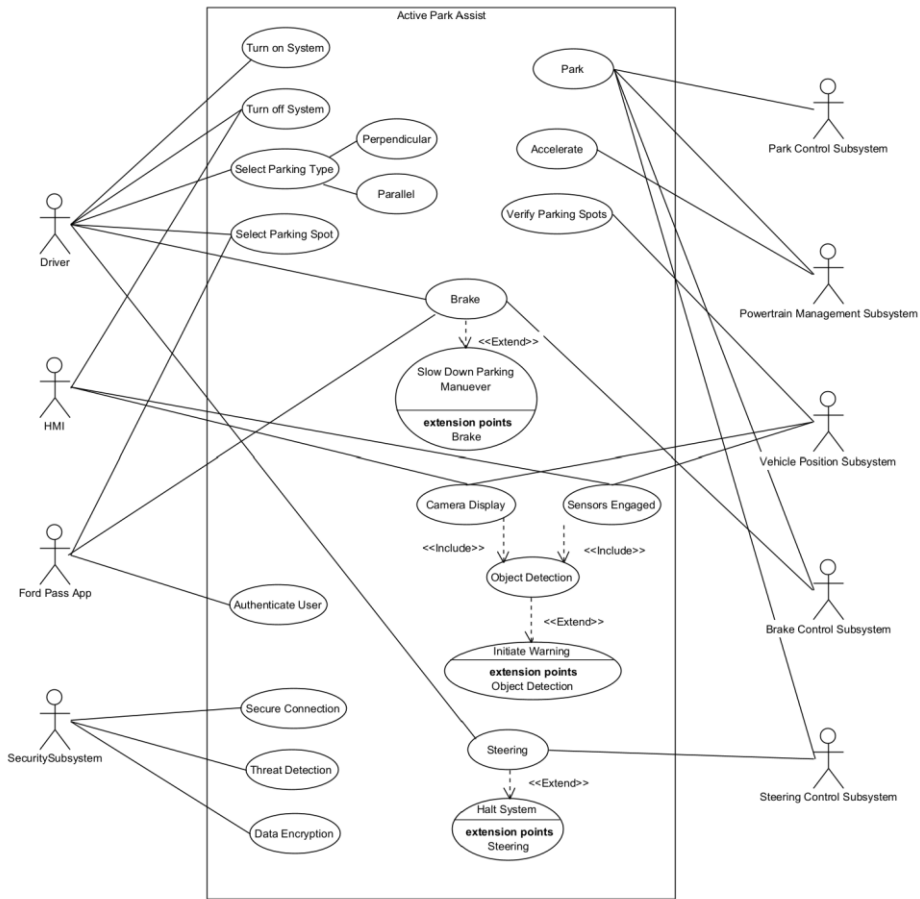
Through this process, we also created a prototype of the APA system. This prototype includes the Human Machine Interface (HMI) that users would use to activate the APA system. The prototype also goes through the process of finding and selecting parking spaces through the HMI. After a user selected a parking spots, the car will park itself correctly in the spot by using the various sensors and cameras equipped on the vehicle.

Throughout this project we hope to gain a better understanding of documentation of the design and prototyping process used in industry.

Our Team:

Project Manager Rahul Baragur baragurr@msu.edu 	Project Facilitator and Security/Assurance Manager Jordan Jones jones597@msu.edu 	Domain Expert/Customer Liaison Travis Wright wright829@msu.edu 	Artifacts Manager Tyler Przybylo przyby44@msu.edu 
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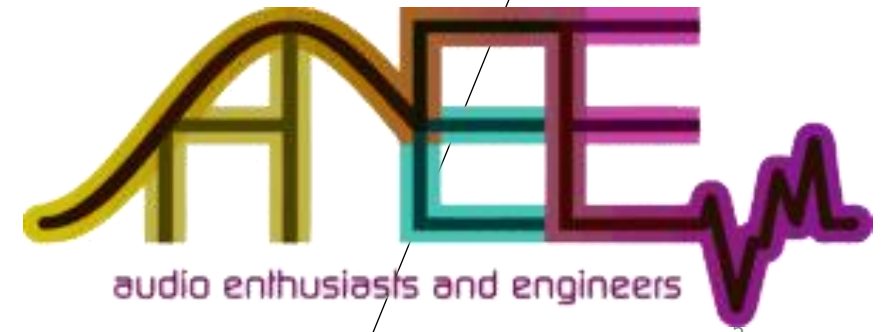
C++ EQUALIZER



JUCE

AEE Software Project Team-Leader

- Utilized the JUCE framework, an open-source C++ library for audio application and plugin development.
- Led a team of audio enthusiasts coordinating tasks and ensuring a timely delivery while maintaining and teaching coding standards.
- Implemented user interface components for real-time audio adjustments, enabling seamless interaction and precise control over sound input and output.
- Conducted thorough testing and debugging to ensure stability and performance across various audio environments and platforms.



C++ Equalizer

The plugin seamlessly integrates with Windows AudioFilePlayer and JUCE's Plug-In Host, enabling users to effortlessly select and play their desired tracks while unlocking a suite of advanced features:

- Real-time Spectrum Analyzer
- Custom Visual Sliders
- Bypass Buttons

Adjustable Parameters:

LowCut Filter

- Adjust slope (12, 24, 36, 48 dB/Oct)

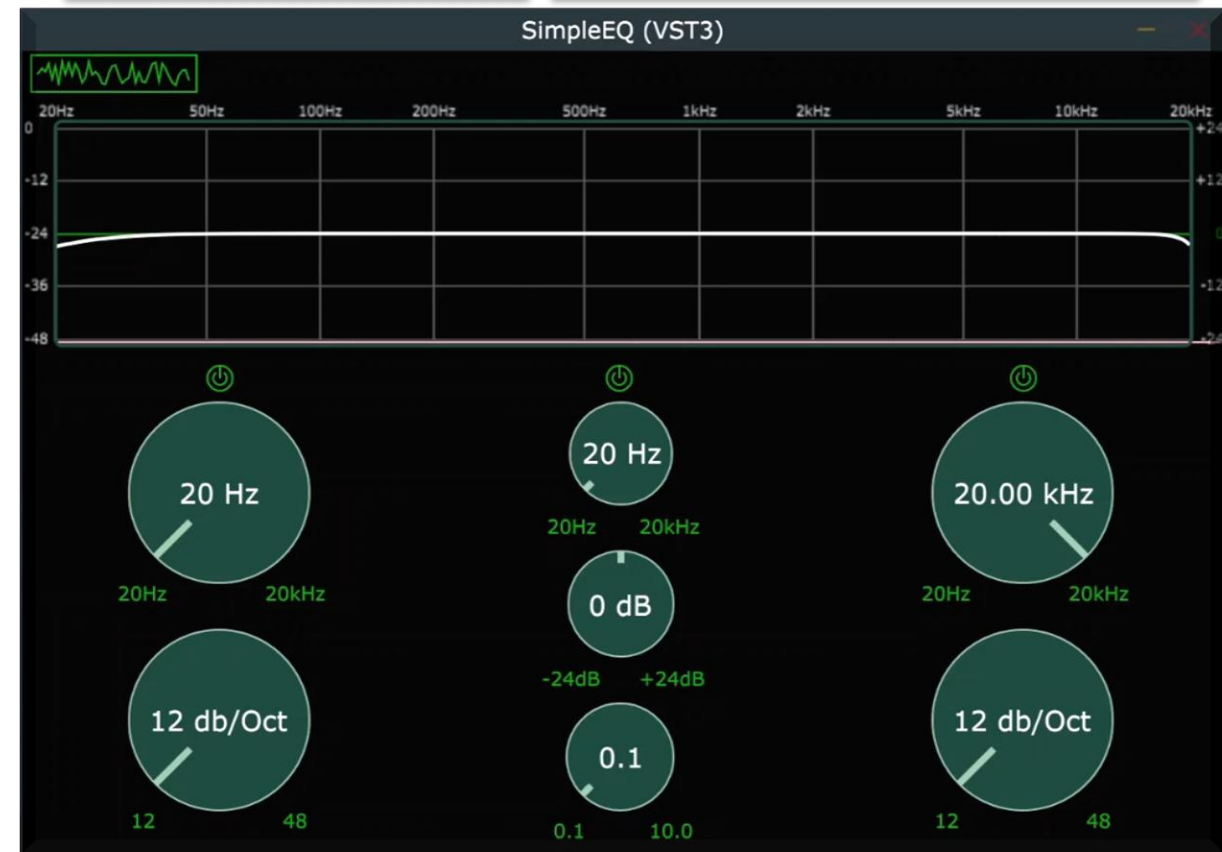
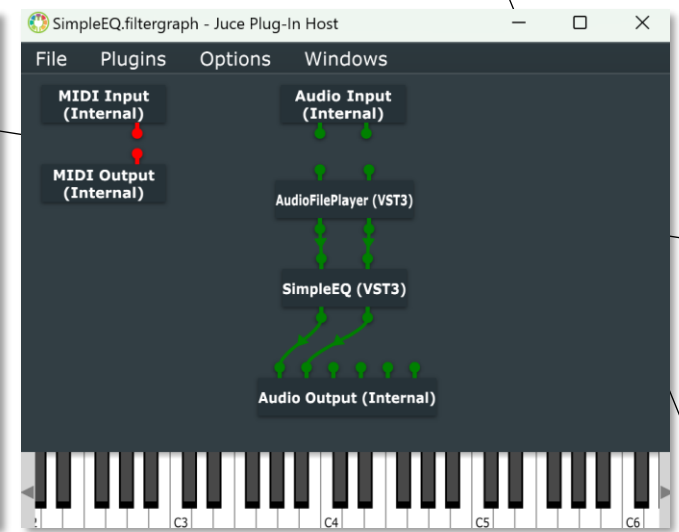
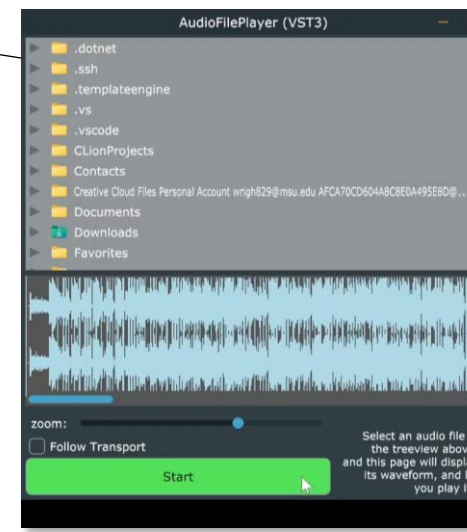
HighCut Filter

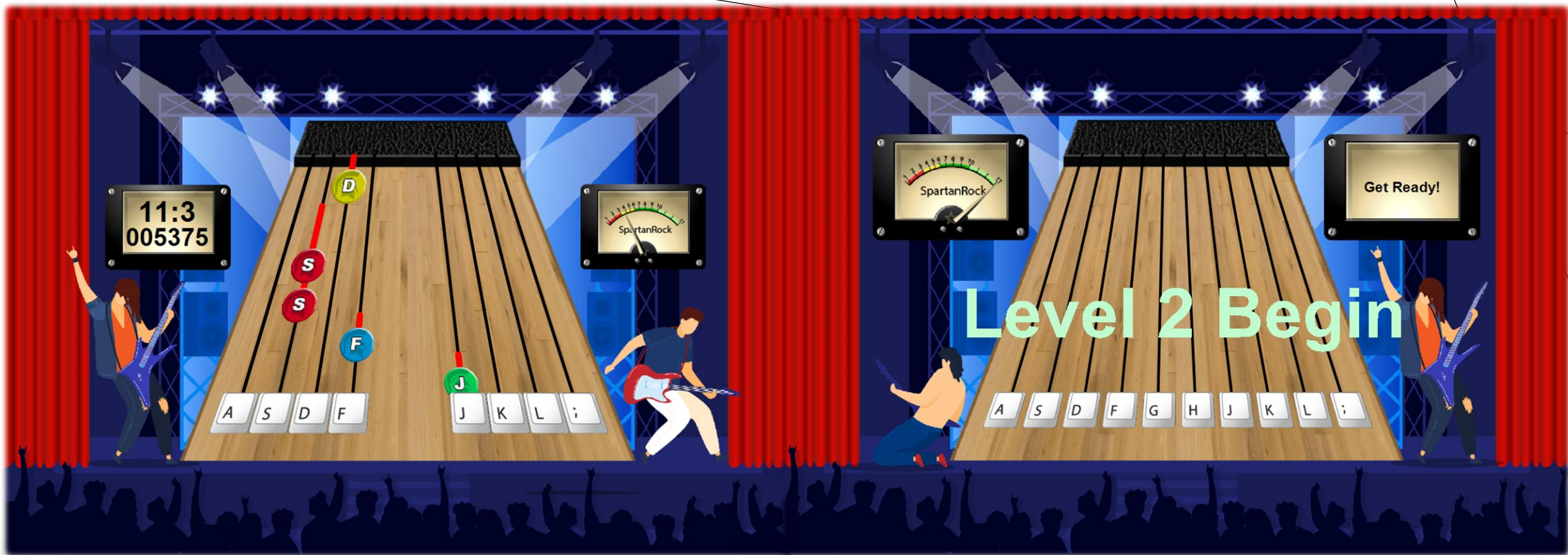
- Adjust slope (12, 24, 36, 48 dB/Oct)

Peak Frequency

- Select specific frequency (20hz – 20kHz)
- Increase/decrease gain (-24dB - +24dB)
- Adjust quality factor (0.1 – 10.0)

demo video →





CSE335: SPARTAN HERO

Designed and developed an interactive music game reminiscent of Guitar Hero, featuring multiple levels and intricate mechanics. Created in C++ using 'wxWidgets' and 'miniaudio' libraries to manage audio playback, user interactions, scoring, and ensuring a fluid, immersive experience.

The month-long project was constructed using SCRUM techniques to manage sprints and hold regular team meetings, ensuring effective task coordination with an emphasis on robust testing and debugging:

- Utilized Trello for team-productivity management
- Adhered to Google's testing standards
- XML file load and save compatibility

NOISE REMOVAL SCRIPT - PYTHON

Project

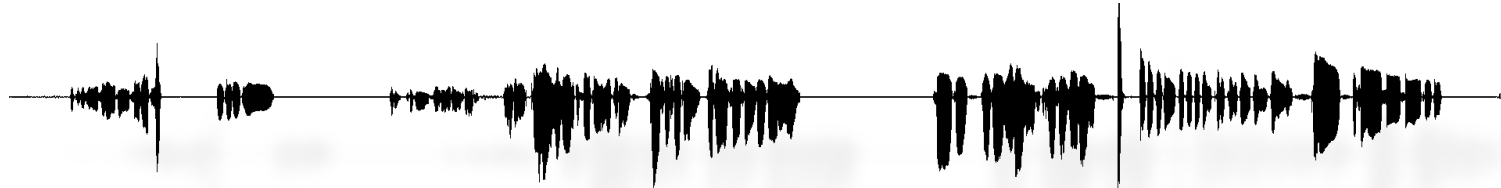
- Developed a Python script using Pydub and Numpy to manipulate audio files and enhance the workflow at WLNS-TV Channel 6 News.
- The script intelligently identifies and removes background noise by dynamically detecting silence based on a customizable dB threshold, with buffer extensions to prevent abrupt cuts in audio.
- Ensures only meaningful audio is retained by defining minimum segment length and merging overlapping segments, enhancing the clarity and continuity of the final output.
- Utilized by news reporters and on-air anchors when recording long audio segments in the field. The script aims to assist in the final editing process of news casts, stories, and voice overs.

BEFORE:



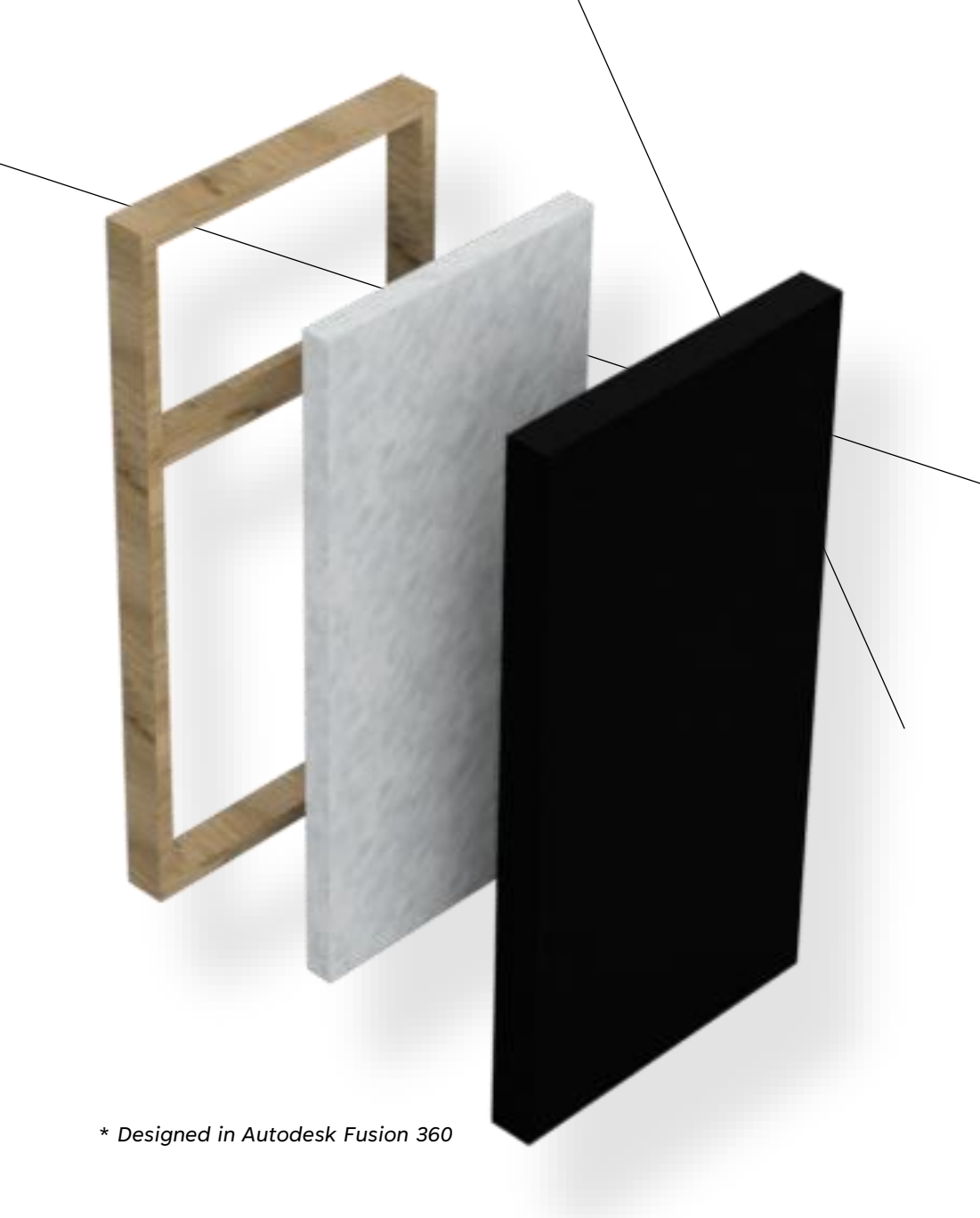
Pydub 

AFTER:



 NumPy





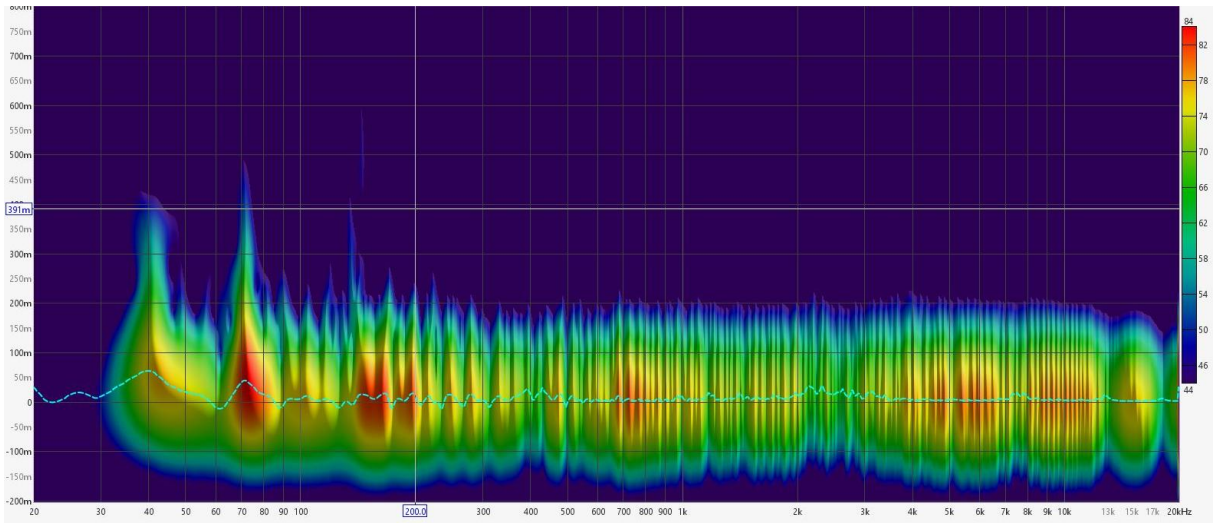
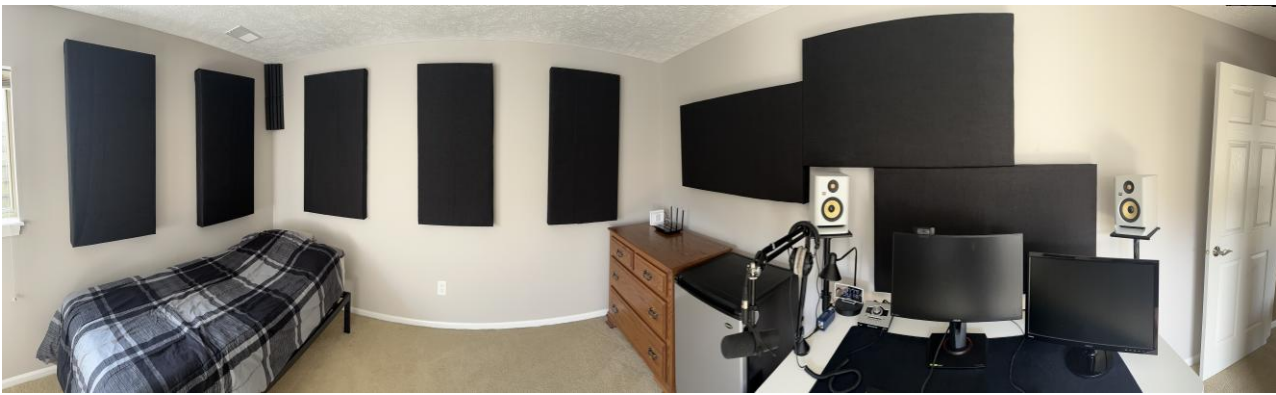
* Designed in Autodesk Fusion 360

ACOUSTIC PANELS

I designed and **hand-crafted eight** custom **acoustic panels** using Nu-Wool ECOCELL blankets: a **sustainable** product made from at least **70% recycled materials**, including post-consumer recycled newspaper, which helps reduce waste in landfills. Each panel measures **4ft x 2ft x 4in** providing excellent **sound absorption**. The construction includes a sturdy pine frame and black burlap fabric.

After installing the panels, I utilized **Room EQ Wizard (REW)** to assess the effectiveness of the acoustic treatment. Using a **Behringer ECM8000** condenser microphone, I **conducted detailed measurements** of the room's acoustics, focusing on decay time and reflections.

This process allowed me to quantitatively validate the impact of the panels and fine-tune the setup for optimal acoustic performance, and gaining valuable experience in **data analysis** and **data acquisition**.



GOOGLE DATA ANALYTICS



Overview:

Completed the Google Data Analytics Certificate, mastering essential **data analytics** concepts and techniques. This comprehensive program provided **hands-on experience** in **preparing, processing, and analyzing** large datasets to uncover actionable insights.

Skills:

Developed expertise in **data cleaning, analysis, and visualization**, with a focus on **data-driven** storytelling and interpreting **trends** to support business objectives. Enhanced ability to create impactful **dashboards** and reports that drive **informed decision-making**.

- Excel: data analysis and organization using *formulas* and *pivot tables*
- SQL: *queried, analyzed, and managed* data in Google's BigQuery
- R: *manipulated and displayed* data using the *tidyverse* package
- Tableau: developed interactive *dashboards* and compelling *visualizations*

THANK YOU



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[in/travisdwright/](https://www.instagram.com/travisdwright/)