


Department of
**COMPUTER SCIENCE
AND ENGINEERING**

Senior Design Day 2020



COMPUTER SCIENCE



Degree Plan App Cache Money & Nerd Herd

Team Members:

- Sweta Gautam, Dalton Kerbow, Tate Moiser, Travis Nguyen, Nicole Tran
- Ricardo Barroso, Stephen Ho, Aazrim Mirza, Kabonzo Ramanzani, Ngan Tran

External Sponsors/Mentors:

- Dr. Nandika D'Souza

Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

Abstract:

Our project sets out to help alleviate the confusion that incoming and current students struggle with while planning their degree path. Our goal is to provide students attending the University of North Texas with a system that will allow them to generate a custom degree path based on their preference and completed coursework in a preferred timeline. Our system is unique in the sense that allows students to determine how many credit hours they want to take each semester and still efficiently generate an appropriate degree plan in a timely manner. Our system makes custom degree plans accessible and flexible to students without waiting for advising appointments. Additionally, our system allows advisors to update or remove any degree plan from colleges within UNT. Academic advisors are also relieved from the burden of common routine questions that most students have.



Event-full: Realms of Arcadia, Unite!

Team Members:

- Carissa Barrett
- Sarah Richards
- Derek Rogers
- Ryan Gerard
- AnneMarie Sabatini

External Sponsors/Mentors:

- Realms of Arcadia Gaming Lounge

Internal Sponsors/Mentors:

- Stephanie Ludi

Abstract:

With this application, Ctrl Alt Elite aims to streamline the scheduling and viewing of events for Realms of Arcadia, as well as make event creation more interactive and comprehensive for customers. Through account creation and other new features, the application will provide more information for each event (such as who is attending and how many players are wanted for that particular event) and it will also provide real-time updates to table availability when scheduling an event. These are features not provided by the current Arcadia site, and the addition of them will greatly boost customer interaction and satisfaction.



We would like to acknowledge Dr. Stephanie Ludi for stepping in as our proxy sponsor and helping us continue moving forward with our project.

Research and Project Portal Team Campd

Team Members:

- Colton Estes
- Parker Hansen
- Maira Rivera
- Ashley Torres
- Dominic Whiting

External Sponsors/Mentors:

Internal Sponsors/Mentors:

- Dr. Mark Albert

Abstract:

The Research and Project Portal is a website that has a list of research and projects that are either active or completed by UNT students and faculty. The primary goal of this website is to have a resource that allows students to connect with opportunities for independent projects or research within the computer science department. In providing for these mechanics, considerations were made to allow for other additional benefits. The first benefit is the ability for professors and students to spread awareness of what they are currently working on (without a constant active effort.) The second benefit is that projects can be registered while the idea is still in the formulation phase. Students could collaborate with the professor to come up with a final idea that best suits both parties. The third benefit is that if a student has an area of study they are interested in, they can search to see which professors are doing work in that area and might be best suited to advise them.



Laundris Analytics

') DROP TABLE Grades

Team Members:

- Natalie Drewfs
- Zachary Harte
- Christopher Panko
- Connor Crossland
- Casey Kinnamon

External Sponsors/Mentors:

- Don Ward CEO of Laundris

Internal Sponsors/Mentors:

- Stephanie Ludi

Abstract:

Laundris is a laundry as a service company aiming to collect analytics related to labor and linen costs. Our software will collect analytics from RFID chips implanted in linen to identify supply chain behavior and customer demand. By analyzing the usage of laundry, we will forecast demand and identify hidden behaviors within the supply chain. This will in turn be used to optimize costs for customers.



Partnered with IT Team: The Mean Green Programming Team



UNT Campus Explorer

My Gown, No Cap

Team Members:

- Ibrahim Alkuwaifi
- Aladdin Shihabeddin
- Ahmed Mostafa
- Christian Chairez
- Parker Tuck

External Sponsors/Mentors:

- Laurea Irving
- Eva Garza

Internal Sponsors/Mentors:

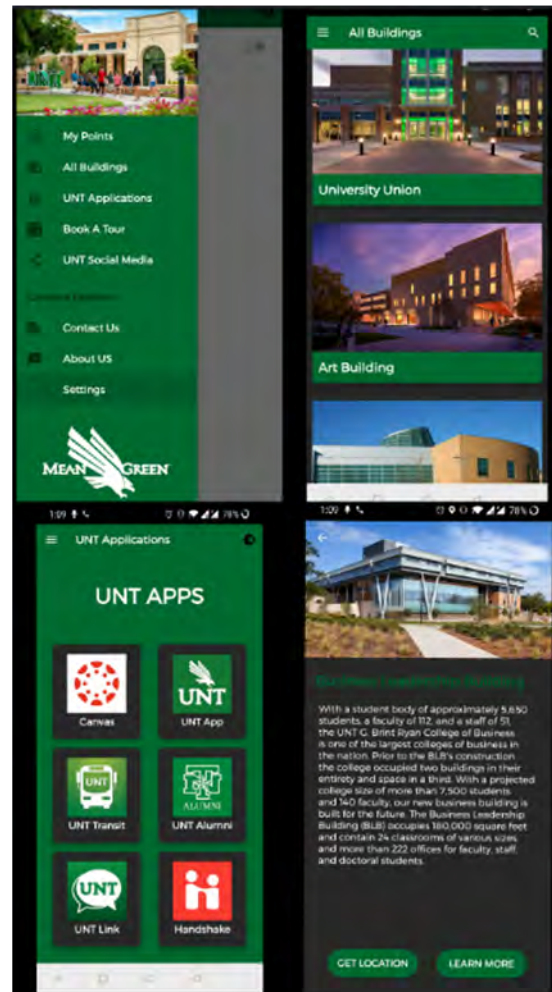
- N/A

Abstract:

UNT Campus Explorer is currently only an Android application that will allow potential and new students to tour the main UNT campus on their own. In doing so, the student can collect points from each building they visit. After the student reaches a certain number of points, they can exchange them for a gift from the UNT Welcome Center.

How to get points: When a student selects a specific building to visit from the list, they will be given a picture of the building, a short description of the building, an official link to that building, and a map that will navigate the student to that building. To get a point, the student will be required to have the map to that building opened. When the student gets within 150 meters of the building, the building will become visited and a point will be added to the students profile.

How the app works: Most of the information gathered by the app is stored internally in the Android device (such as the number of points and user's name). The buildings' information is stored in DynamoDB on AWS and is dynamically updated into the app so an app update is not required when a building is changed, added, or deleted from the database.



STUDENT TRACKING SYSTEM TEAM PENTAGON



Team Members:

- Amit Pathak
- Jenita Kawan
- Samikshya Luitel
- Summit Khatiwada
- Umanga Mulmi

External Sponsors/Mentors:

- Diana Bergeman
- Melanie Dewey

Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

Abstract:

Student Tracking System is designed as a student database management system for new student applications. It is specifically developed for the Computer Science department for data entry of application information of new students and store it within multiuser management by replacing the existing MS Access platform with new easy-to-use user interface applications which supports the storage of image and files and communication between multiple users of the system.





Helo Flight Safety/Pentagrammers

Team Members:

- Muhammad, Daniyal
- Wassim, Lagnaoui
- Sangita, Moktan
- Roshan, Mainali
- Manish, Sukhupayo

External Sponsors/Mentors:

- Andre Lavalle, AT Systems LLC

Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

Abstract:

Helo Flight Safety is a training system for helicopter pilots. It aims to prevent accidents caused by deteriorating weather conditions in which pilots lose horizon references, sometimes accompanied by loss of visual contact with the ground.

Our system will allow the pilots to train themselves in these different settings to be better equipped with experience to navigate in such conditions, which in turn, will decrease the number of accidents.





Saturn V: Management App for Glr Transport

Team Members:

- Jose Arbaiza
- Jobert Cabuslay,
- Carl Trautwein
- Peter Menchu,
- Joe Niu

External Sponsors/Mentors:

- Glr Transport Inc.

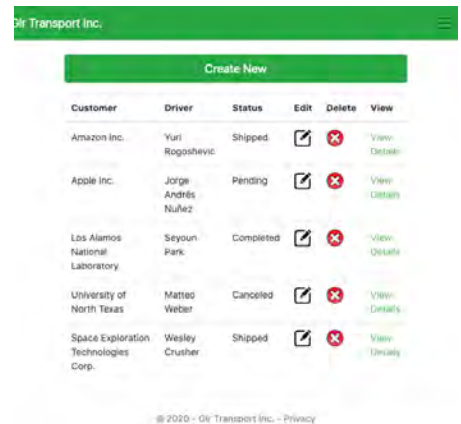
Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

Abstract:

This application was requested by Glr Transport Inc. for the purpose of managing freights and employees. Our approach to completing their request involves the creation of a responsive web application that runs on both desktop and mobile. This project was originally started by a different group last year in the form of a mobile app, however due to the company's need for access on both desktop and mobile, the use of a responsive web app has made the mobile app unnecessary. In terms of development, we are utilizing .NET Core with Razor MVC.

The current scope of the app is to provide a way for employees to create, edit, and view freight bills, manage all employees, and provide calendar and map data for freight bills. Since Glr Transport does not already have any form of website, this app can also provide customers, or other external users, basic information about the company. Although not required, we may implement a way for managers to post company announcements or news so employees can stay up to date, as well as post meetings or events on the calendar.





Trail Terrain Detection using Machine Learning – Spare Parts

Team Members:

- Anthony Carr
- Brice Brosig
- Cameron Donner
- Ephraim Jackson
- Alexandra Triampol

External Sponsors/Mentors:

- Ed Pichon – Saddleeye

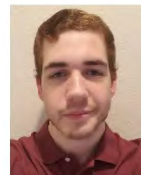
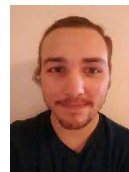
Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

Abstract:

Many cyclists out on the roads are being blind sighted due to car accidents and lack of awareness behind them. Team Spare Parts has collaborated with Saddleeye to aid in producing a product that uses machine learning to help cyclists be more aware of objects behind them as they ride their bicycles. This product is a computer vision model that can identify objects behind the cyclists along with trail boundaries and terrain classification.

Spare Parts has worked on the terrain classification feature by visiting different trails all around Texas, creating a tool that labels all trail data by converting MP4 files into JPEG frames, and training a machine learning model that will learn the difference between gravel, asphalt, sidewalk and off-trail terrains.





Team 406 Not Acceptable

Team Members:

- Mohamed Rahaman
- Jacob Roquemore
- Samuel Smetana
- Khang Tran
- Natnael Tsegaselassie

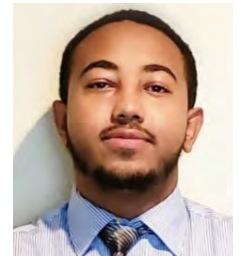
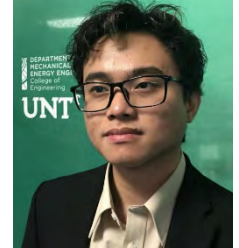
External Sponsors/Mentors:

Internal Sponsors/Mentors:

- Stephanie Ludi

Abstract:

The primary goal for our team is to develop a responsive, cross-platform, web application which organizations can use to manage their inventory and view sales statistics for multiple types of fundraisers. While inventory and sales tracking can be performed for current fundraising seasons and individual events, an organization can also view historical data for previous seasons and events when the application is given a specific timeframe. Additionally, this app will allow organization leaders to set sales goals for both their entire group and individual members, allow members to make inventory requests, and there will be a delegation of authority between administrator(s), group leaders, and individual organization members. The app will be easily deployable and scalable, and the primary focus is for the app to be used by organizations at a local or regional level. This application will be helpful for our sponsor because they are a troop leader for a local branch of the Girl Scouts of the United States of America, and fundraisers are an integral part not only to the organization's financial success, but also for the personal success and fulfillment of a troop's scout members.





Team 404 - RePlan Add on

Team Members:

- Armando Cardona
- Michael Moore
- Francisco Ramirez
- Benson Phillips
- Jose Castro

External Sponsors/Mentors:

Dr. Armin Mickler

Internal Sponsors/Mentors:

Dr. Stephanie Ludi

Abstract:

The problem that our project aims to solve is the disagreement on region boundaries within health planning. Often times a county planner will have conflicts with a city planner's area. This can result in an overlap of coverage or a lapse in coverage in certain areas. Also, once the planners have decided on an agreeable area, they will often have to recalculate their population and vulnerability data for their new region. Our project aims to solve both of these issues.



Accountable / Team Alpha

Accountable

Team Members:

- Sam Autrey
- Devin Teidor
- Lisa Malnak
- Matthew Iyere
- Victoria Akanbi

External Sponsors/Mentors:

- Colton Gunter

Internal Sponsors/Mentors:

- Dr. Ludi

Abstract:

Everybody deals with habits in some way. Whether it's trying to break a habit such as smoking or create a habit such as going to the gym, sometimes we need help keeping us on track. The purpose of Accountable is to combine the usual task reminder app with a social aspect to have either a friend or anonymous person to communicate with and therefore hold you accountable if you miss a day of your habit. It helps to have someone there to help motivate you and talk with if you are struggling with your habit. With Accountable, you not only add as many habits as you want, you can also add friends and message them congratulatory messages or some support if they are having a hard time.



The Fantastic Five



Team Members:

- Weston Lopez
- Bassam Metwally
- Karla Rodriguez
- Joshua Hobbs
- Bryson Sharp

External Sponsors/Mentors:

Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

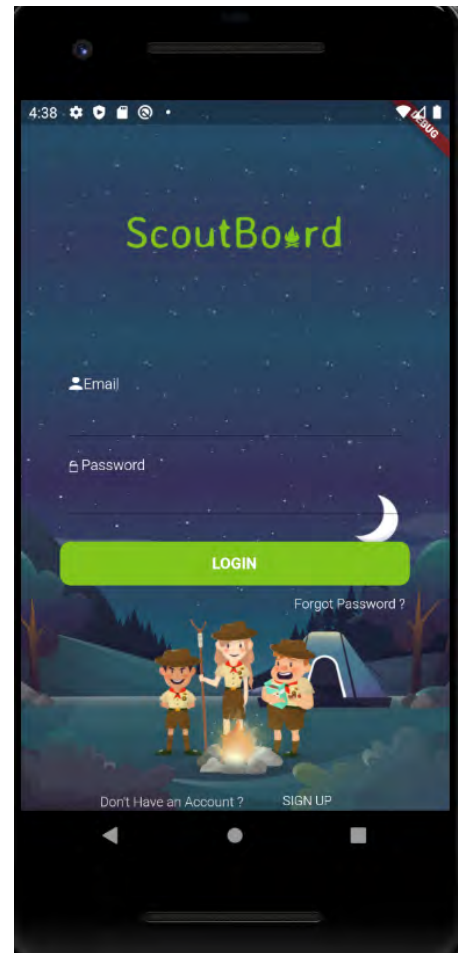
Abstract:

There is a need for an application that can cater to the managerial needs of fundraising campaigns for scout groups. We have found that there is an absence of such an application, which we intend to fill.

We believe that our application will help scout leaders as it will allow them to conveniently manage different aspects of the fundraising campaign. It will allow the management of the inventory of products, the sellers, and the money raised throughout the fundraising campaign.

Our application will be innovative and unique because it will present the features in flexible and convenient ways. We will implement an easy-to-understand dashboard in which the user may navigate to specific sections. These sections would include a customizable inventory list, a scheduling calendar, and a scout group manager. On top of that, our application will allow for other convenient features such as offline capabilities, data recovery, online user accounts, auto deduction from the inventory, and the ability to import Excel spreadsheets.

We hope that our application serves our users well!



Sharp Frame Media WordPress Plugin/Bits Please

Team Members:

- Joshua Kim
- Caleb Ebers
- Jesse Sainz
- Zachary Bordelon
- Andrew Schlein

External Sponsors/Mentors:

- Jaime Garza (SharpFrameMedia)

Internal Sponsors/Mentors:

- Dr. Hyunsook Do (University of North Texas)

Abstract:

Our team was responsible for the customization and integration of a custom WordPress Plug-In for our sponsor Mr. Garza. Our development team utilized PHP, JavaScript, HTML, and CSS for our applications, in addition to editing the WordPress framework for the sponsor's pre-existing live website. The project was divided into two main features: Geo-Map fencing and a rating system. By creating these two plugins for our sponsor, we are able to fulfill the limitations of his current website. Mr. Garza is now able to create improvement plans for photographers using the review system and show prospective clients of past client experiences. In addition, the geo-fencing Plugin is able to improve efficiency in coordinating and deploying employees to serviced areas within their range of ability to work. For clients, it clarifies which employees are able to service desired areas. The project gave our team a unique opportunity to gain experience in WordPress development. The understanding of this content management system gives us the ability to work with a framework that powers 32.3% of websites on the Internet.





Saddleye Trail Detection

Team Members:

- Nathan Sutphen
- Ethan Kolkmeier
- Jawad Ahmed
- Filimon Gebrekidan
- Luke Holman

External Sponsors/Mentors:

- Saddleye/Ed Pichon

Internal Sponsors/Mentors:

- Do Hyunsook

Abstract:

There are two teams assigned to this project. Our team is developing a machine learning model to detect trails. We have gathered training data in the form of video taken from the rear of a bicycle. Our model will use masking and machine learning for lane and trail detection.





Computer Science Goons/ JMRJM

Team Members:

- Rory Spralls, Logan Falkensten, Jorge Hernandez, Basil Holloway, James Durflinger, Lida Raina, Megdelawit Woldeselassie, Matthew Harris, Elton Wee, Matthew D

External Sponsors/Mentors:

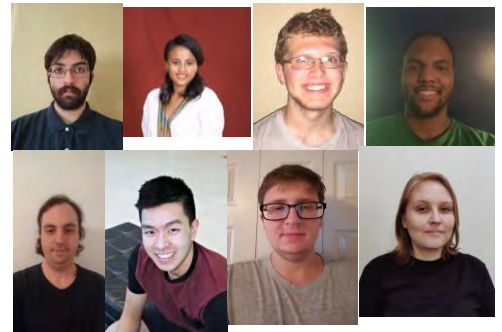
- none

Internal Sponsors/Mentors:

- Stephanie Ludi
- Diane Bergeman

Abstract:

The problem that we are trying to solve is to create a new ABET system for the teachers, administrators, and TA's to use for UNT. This will help the University by making a better organized ABET system that is easier to use and easy to learn how to use and visually better to look at. This is innovative because it will be the same system just easier to understand where everything is and easier to follow the flow of the system.





Project Perennial/Team Full Steam

Team Members:

- Avery Clariday, Joe Maggio, Tii Pham, Peyton Pritchard, Pedro Sanchez

External Sponsors/Mentors:

- Kenneth Maggio

Internal Sponsors/Mentors:

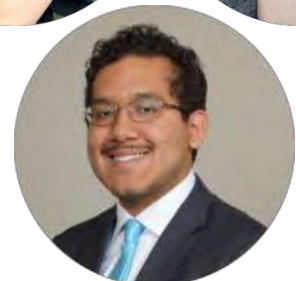
- Hyunsook Do
- Kaushik Madala
- Aashish Pandey

Abstract:

Having real plants in your living space is known to increase the quality of air that you breathe, and passive exposure to greenery can lower symptoms of depression and anxiety. However, keeping plants alive in order to reap those benefits can be challenging for individuals whose expertise or lifestyles prevent them from being able to care for plants.

Project Perennial is an automated watering system that measures the moisture in the soil and automatically adjusts the watering schedule of the plant. It includes a web application that allows the user to interact with their plants from any location with internet access.

Project Perennial differs from other automated plant care services in that it has a web app component for remote care, and in that it requires very little assembly or guesswork from the user.





Blue Team Unreal Engine Game

Team Members:

- Peyton Broussard
- Michael Wilson
- Derek Strickland
- Curtis Lee
- Joshua Garrett

External Sponsors/Mentors:

- N/A

Internal Sponsors/Mentors:

- Ian Parberry
- Curtis Chambers

Abstract:

We as a team are currently building a dungeon crawling game, based off the five levels of grief. We are working on questing, skilling, inventory, and an economic system. We have implemented a network to connect multiple accounts at any computer. The end goal of this game is to progress the game and beat the story line.



Graphical User Interface for a Safety Analysis Tool / Jelly-Jam



Team Members:

Juan Hernandez
Martin Sanchez
Jeremiah Inyang
Muhammad Ansari
Abdulaziz Al-Shehhi

External Sponsors/Mentors:

Internal Sponsors/Mentors:

Kaushik Madala
Dr. Hyunsook Do

Abstract:

A front end GUI for a safety analysis tool. The GUI will walk the user through defining a system with multiple components. The motivation for this project is to create a GUI safety analysis tool. That matches the front-end to back-end in an aesthetic manner. We will be using this implementation to make the environment safer for humans in the presence of autonomous systems such as robots and self-driving cars. The client has implemented a safety analysis tool to identify safety issues with autonomous systems. Our client developed a safety analysis tool to identify overlooked safety issues. However, it is not currently usable for researchers and practitioners. In this project, we address the limitation of the tool by providing a web-based user interface to the safety analysis tool that allows researchers and practitioners to identify overlooked safety issues. We believe our project provides a means to analyze safety of the intended functionality (SOTIF).



Bookse

Bookse / Team Know Nothings

Team Members:

- Huy Le
- Luke Simpson
- Chase Kent
- Todd Thompson

External Sponsors/Mentors:

- WoCash LLC

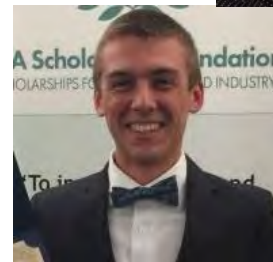
Internal Sponsors/Mentors:

Abstract:

Now that mobile phones are ubiquitous, it has become easier and faster to snap pictures of things. However, using the phone's camera to identify objects and query info about that object is still a work in progress.

To this end, we intend to demonstrate the convenience of using a mobile phone camera to identify an object and provide relevant results back to the user.

The user will take a picture of a book cover in the mobile application, automatically send the picture to a server-side web application to identify the ISBN using a trained artificial neural network of book covers, then retrieve the corresponding metadata and recommendations from a database. Finally, the web application will send the results back to the mobile app which will show the user various recommendations of similar books, movies and merchandise.



My Coder Academia

Team Members:

- James Arnold, Jon Kleehammer, Phillip Merritt, Lupe Rivera

External Sponsors/Mentors:

- N/A

Internal Sponsors/Mentors:

- Kaushik Madala

Abstract:

Natural language processing is a rapidly expanding field as companies work to develop ever more sophisticated audio and text-based interfaces for their AI assistant and customer service systems. In order to train these new systems well annotated datasets are needed, but current NLP annotation software (like GATE) have limitations in portability and lack many quality of life features for annotators.

Creating a completely web-based NLP annotator app will make it possible to annotate from anywhere in the world on any system with a basic web browser. By working closely with real experienced NLP annotators to include sorely sought-after annotation tools, the productivity of annotators could also be improved. This web-based system will also allow NLP annotators to access/manage the annotated datasets they create from anywhere they choose.



Pixel Pals

Team Members:

- Mat Thompson
- Tristan White
- William Baker
- Jose Ramirez Garza

External Sponsors/Mentors:

- Nicole Owens

Internal Sponsors/Mentors:

- Hyunsook Do

Abstract:

Our project creates a one stop shop for computer part tracking. Using innovative data collection methods we collect data and display price graphs for the user. These graphs consist of long term price information and allow the use to quickly visualize price trends for the computer components they're interested in. Our system is designed to gather product data from Amazon.com and Newegg.com, two of the largest online computer component retailers.

OvE (Orcs vs. Elves) - 2D Strategy Game Slightly Less Nice Green



Team Members:

- Mark Dockendorf
- Isaac Thomas
- Luci Tran
- Thomas Truong
- Ryan Vo

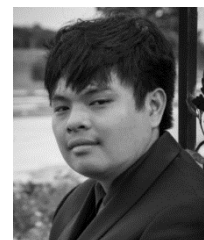
External Sponsors/Mentors:

Internal Sponsors/Mentors:

- Dr. Ian Parberry
- Curtis Chambers

Abstract:

This project will produce a 2D strategy game that makes the user use logic and critical thinking to win the game. The sponsors require a working game that catches the players attention that is functional without any crashes. The problem we are solving is to create a game that is loosely based on a famous franchise (Fire Emblem) that incorporates different elements that appeal to the team. This project will create a niche game that solves the desire to have certain combat mechanics outside officially produced games. It will be an enjoyable mini game accessible to everyone. What is unique with this game is that we are able to develop an endless wave mode to constantly prolong possible combat that level up as waves continue and challenge the player on their critical thinking to have their characters survive as long as possible.



Thank you to Dr. Ian Parberry, Curtis Chambers, Dr. Hyunsook Do, Kaushik Madala, Aashish Pandey, and Cameron Donner.



Dashboard for displaying unsafe instantaneous & cumulative sound level exposure by team TBD

Team Members:

- Adam Spinhurn
- Jovanny Frias
- Lance Wahlert
- Jorge Martinez
- Dai Nguyen

External Sponsors/Mentors:

- N/A

Internal Sponsors/Mentors:

- Mark Albert
- Kris Chesky

Abstract:

The Dashboard will be used to provide educators with a simple software tool for measuring sound energy levels at various frequencies in order to help music students, and music educators, avoid hearing loss by being aware of their instantaneous sound energy levels. The dashboard displays an easy-to-understand instrument cluster that notifies the user when noise in the room could cause hearing loss. The dashboard will feature a live display to show in real time when noise in a room is reaching a harmful level. A cloud service will be implemented to store user sound data to provide sound metrics over time for each session. We hope the dashboard will be used by educators to perform simple analytics on sound data collected during their student's lessons.

TBD

Biomarkers for Parkinson's Disease

Team Members:

- Uzair Akram
- Thien-An Vu
- Cooper Vick
- Mark-Anthony Andrade
- Paris Estes

External Sponsors/Mentors:

- Dr. Yousefzai
- Dr. Gaynes

Internal Sponsors/Mentors:

- Dr. Mark Albert
- Dr. Ting Xiao

Abstract:

The goal of our project is to create a tool to aid in the research of Parkinson's disease. Parkinson's disease can be indicated by the way a patient's pupil responds to a light stimulus, particularly how the pupil dilates after the stimulus is applied. The program we are working on will automate the process of finding the size of the pupil over the duration of the test, and potentially even analyze the relevant data automatically. This will greatly increase the speed of research and give staff more time to work on other issues.



The project was forked from Julia Adamski's github.

<https://github.com/j-adamski/Pupil-Dilation-Tracking-GUI>

Mirai

Team Alpha



Team Members:

- Derek Williamson
- Tyler Carey
- Anthony Nguyen
- Anna Pikus

External Sponsors/Mentors:

- Rick Amstutz (ExponentHR)

Internal Sponsors/Mentors:

None

Abstract:

In the realm of organization and planning, no solution exists that compiles the quality, simplicity, and capability of the most in-demand applications to achieve an intuitive platform for better organization. Mirai is a free-for-personal-use web application that aims to solve the headache of using complicated scheduling, tasking, and planning applications by introducing a new yet familiar interface. Mirai's integrations and metrics are perfect for the everyday personal-users and any organizational-users. With Mirai, users can create dashboards for personal use, team use, and project use while maintaining reporting of what's due and what's done. Our system aims to avoid a user experience that's vague, unfamiliar, and clunky like other competitors while still providing a straightforward interface based on cards and folders.





TNMA Mobile App

Team Members:

Abiral Pandey
Anil Poudel
Rabi Gurung
Robert Hill

Siddharth Murali

External Sponsors/Mentors:

Prince Shrestha
Texas Nepalese Medical Association (TNMA)

Internal Sponsors/Mentors:

Johnathan Doran

Abstract:

We are developing an Android Application to expand the reach of TNMA, a non-profit health organization based in DFW.

The purpose of the app is to provide extra exposure to the organization through functionalities that allow guests to become a member of the organization and stay updated with upcoming events of the organization. Guests can also enroll in free health camps, ask questions to the doctors and view blogs. Students and doctors can communicate from within the app itself using direct messaging feature.

