UNT College of
ENGINEERING

Senior Design Day 2022

Department of

COMPUTER SCIENCE AND ENGINEERING

Senior Design Day 2022

COMPUTER ENGINEERING

Senior Design Day 2022

Advanced Spacecraft Lighting Control System

Team UNTitled

Team Members:

- Ali Hammoud
- Alejandro Bacallao
- Nicholas Tindle

External Sponsors/Mentors:

- George Salazar
- Dr. Tim Urban

Internal Sponsors/Mentors:

- Dr. Robin Pottathuparambil
- Alejandro Olvera

Abstract:

In space, crew members will not be able to maintain their circadian rhythm, so we are creating an advanced lighting system to help maintain that. In addition to maintaining human circadian rhythm, we are also creating profiles to aid growing plants on a spacecraft.

This advanced lighting systems will be part of a network bus to permit control from a central control station GUI and a tablet. We are achieving these goals by having an ecosystem of Raspberry Pi's to monitor the entire system. We will have a main Pi as our acting server, and the other pi's to send, receive data between sensors. A touchscreen LCD powers by lineage OS on a Pi4 will also be incorporated to communicate between the user and the server. This will also be app hosted on Android compatible devices.

Each part of the system is designed to work independently, which will provide advantage in case of any errors, malfunctions, or hardware failures. Also, having a main server communicate the information through a controller to the rest of the system will allow for better streamlining and free up resources for other data.

Senior Design Day 2022

Machine-Learning Human-Computer Interface System

Team HDS

Team Members:

- Chris Herzberg

- Jordan Shrum

- Elle-Marie DeFrain

External Sponsors/Mentors:

- NASA

- Texas Space Grant Consortium

- George Salazar

Internal Sponsors/Mentors:

- Dr. Robin Pottathuparambil

Abstract:

As we move closer to deep space exploration, the issue of communication times between a spacecraft and the control center makes human monitoring of the crew infeasible. As astronauts are away from home for long periods of time, the concern of performance degradation from both mental and physical ailments is a serious concern. As such, a system to detect degraded performance and notify the user by displaying warnings and offering guidance is necessary. In the case of critical, potentially life-threatening emergencies, the system will need to act quickly to avert serious injury or loss of life. Due to the complex nature of space exploration and unpredictable development of potential problems, the system must also be dynamic in order to adapt to new and changing circumstances. To address this issue, we will be designing a machine-learning human-computer interface system that will learn to properly monitor and if necessary, control the systems by learning how each crew member interacts with the computer systems during optimal conditions. The computer will then be able to detect and take measures to correct any degradation in crew performance without the need for outside human involvement.

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Water Monitoring System For Automated Inland Shrimp Production

Team Eagle Squad

Team Members:

- Fuad Salameh
- Joe Selvera
- Muna Nwosu
- Qiang Si

External Sponsors/Mentors:

- Dan Combe

Internal Sponsors/Mentors:

- Dr. Robin Pottathuparambil
- Alejandro Olvera

Abstract:

The US imports 90% of its shrimp, which is expensive. In 2016, the US imported 603,986 metric tons of shrimp, and in 2019 that amount increased to 698,358 metric tons. The average cost of these imports is around $8 per kg. The goal of this project is to build an automated system for raising shrimp, which in turn will help to reduce the amount of imports the US needs for shrimp, and decrease the cost per pound for imports over time. This project is unique, as currently in the US, there are only a few places that cultivate shrimp inland.

Senior Design Day 2022

Smart Door

Team Members:

- Jean Aaron Oyima
- Marshall Bothwell
- Mohammed Khan
- Srijan Singh
- Tyler Mccall
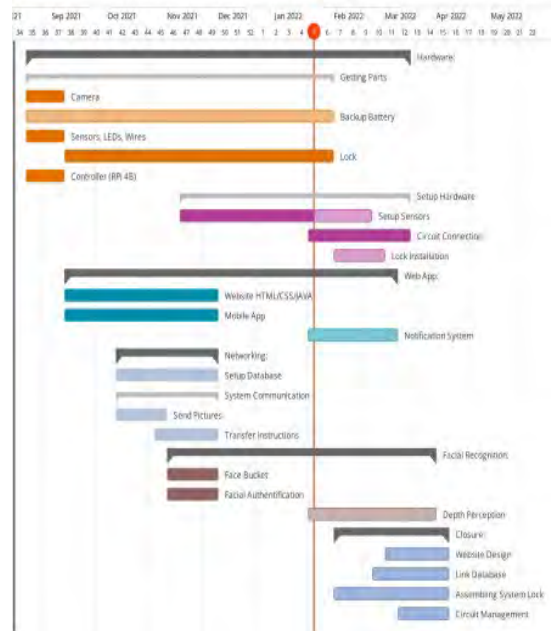
External Sponsors/Mentors:

- University of North Texas

Internal Sponsors/Mentors:

- Dr. Pradhumna Shrestha
- Alejandro Olvera

Abstract:

In this project, we seek to make the household security device "The Smart Door". The Smart Door is a modern alternative to the old lock and key. The system will use Facial Recognition to unlock doors instead of a physical key. The system will be integrated to smartphones through apps, through which the user can enjoy features such as looking at lock/unlock logs, checking photos of those who have entered, and use an override unlock in case a guest comes in. The system will have a battery backup and will be wirelessly connected to the internet.

Team Black Cat

Team Members:

Joshua Kramer
Jessica Nwachukwu
Enock Omweno
Yahriel Negrete
Arturo Lopez

External Sponsors/Mentors:

N/A

Internal Sponsors/Mentors:

Dr. Pradhumna Shrestha, Faculty Mentor
Alejandro Olvera, Lab Manager

Abstract:

The purpose of the Lawn Health project is to provide a low cost, but effective way for people to monitor their lawn. Many people who buy property do not know how to properly care for their lawn, so the Lawn Health system is created to bridge the knowledge gap and help those who already know a considerable amount to improve the health of their lawn even more.

The Lawn Care device is a cube about 6 inches on each side with probes coming out of the bottom that allows you to stake the device into your lawn. It is accompanied by 3 sensors; a temperature sensor, a humidity sensor and a pH sensor. These three sensors are connected to an online database that stores periodic measurements of your lawn. The database is then connected to an app that allows the user to view their most recent lawn health measurement on multiple Lawn Health devices that may be in the lawn. Additionally the app will send a daily notification to the users' phone that gives a basic summary of the lawns health. If at any point throughout the day a sensor reading falls out of range of a set standard, the app will send an alert to the phone that tells the user which device and which sensor needs attention from the user.

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Brain Drain Crew

Team Members:

- Richard Gallemore
- Johnson Nguyen
- Izundu Ngwu
- Michael Samatas

External Sponsors/Mentors:

University of North Texas

Internal Sponsors/Mentors:

- CSCE Department
- Professor Pradhumna Shrestha, PhD.
- Alejandro Olvera

Abstract:

Humans have practiced and developed agriculture for thousands of years to satisfy a critical need - food. Population growth, limited resources and innovation fuel the drive to improve agricultural technology. This report details how we incorporate a 21st century computing technology, Internet of Things (IoT), in agricultural science to aid the farmer.

Our IoT in agriculture project digitizes the concept of monitoring a field farm - the soil conditions, the crops' health, as well as the surrounding environment. This is achieved by placing sensor clusters that measure different characteristics of the system, such as temperature, moisture levels, pH levels, humidity and report this data to the farmer through a mobile app. Each sensor cluster(node) is an array of sensors connected to a Bluetooth-enabled node. Multiple nodes are strategically spread around the field to collect data about specific areas. This information is sent to a server running a program that analyzes the node data and determines recommendations that offer the best crop performance. These recommendations as well as any concerning statistics are then presented to the farmer via a mobile app.

Although our project is on a smaller scale, IoT in agriculture could be used on much larger farms to improve efficiency. Reducing harvest waste, maximizing resources, and expansive, real-time monitoring are some of the significant advantages this system offers the modern farmer.

IOT in Agriculture

NODE 1

Senior Design Day 2021

HEATMAP MONITORING AND ALERT
Team Heatwave

Team Members:

- Mohammed Alkahtani
- Yashira Crespo
- Nekhad Hossain
- Katharine Lee
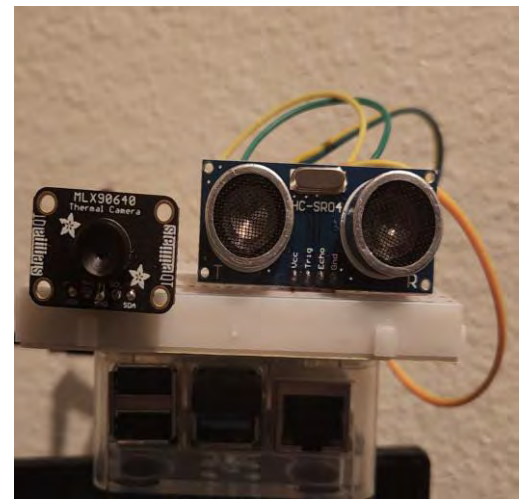- Hemnarayan Sah

External Sponsors/Mentors:

- Rocio Roman

Internal Sponsors/Mentors:

- Dr. Pradhumna Shrestha, Senior Lecturer
- Alejandro Olvera, Lab Manager

Abstract:

Due to the recent outbreak of Covid-19 and its surging variants, it's important to trace the symptoms of the virus, one of the most common being a high temperature. This can be difficult since implementations can result in complicated systems thanks to many variable factors. The specific goal of this project is to create a heat mapping system that utilizes thermal camera imaging to estimate the temperature of a person's exposed skin. By using a thermal sensor camera along with a microprocessor, any person exhibiting a Covid-19 symptom like fever, will be detectable on the camera. Once this detection has taken place, it will be flagged, and a notification will be sent to the administrators so that precautions can be taken to quarantine the area to limit the spread of the infection. This will keep the virus from spreading among the public in large numbers, since exposure in small areas increases the risk of contracting the virus. This system has been designed with privacy in mind and was not developed with any type of identification in mind making it safe for public spaces.

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Healthcare monitoring system No Signal

No Signal

Team Members:

- Owen Westfall
- Kerian Akamnonu
- Shankar Subedi
- Sushan Sainju

## External Sponsors/Mentors:

- N/A

Internal Sponsors/Mentors:

- Dr. Pradhumna Shrestha, Faculty Mentor
- Alejandro Olvera, Lab Manager

Abstract:

Our Project seeks to solve an issue for those in assisted care where their caretakers would have to always be nearby in order to care for their patients. The problems that result from this include caretakers only be able to take care of a few patients and little idea of what is going on when they aren't at the location. For us to tackle this problem we are creating a system that will allow the patients to wear a device that will in real time upload their health information to a server for the caretakers to view on an app. This way the caretaker does not have to be present to ensure the patients are healthy as well as they can check up on them if their vitals are not up to par.
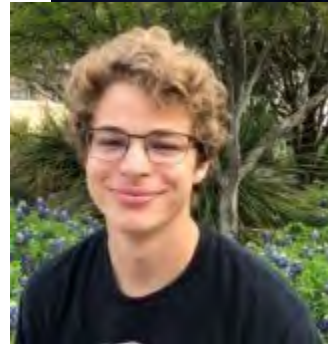
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COMPUTER SCIENCE

Research Project Manager Platform

Team Members:

Philip DeMeyer, Tommy Ngo, Brandon Fajardo, Pranav Venkateswaran, Michael Palacios, Erick Martinez, Anthony Zuniga, Isaiah Bugarin, Joseph Onuorah, Luis Mendoza
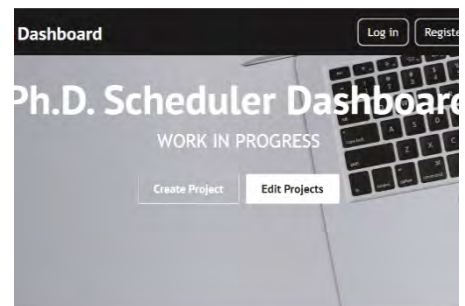
External Sponsors/Mentors:

- N/A

Internal Sponsors/Mentors:

- Aboubakar Mountapmbeme

Abstract:

PhD students work closely with their advisor on multiple projects/research throughout their program. Students and advisors keep track of progress by breaking up projects into tasks. They schedule meetings to discuss this progress and any issues. Currently, this management and collaboration process happens via a variety of tools such as email, Google Docs, and Trello.

The Research/Project management platform will provide a centralized system where professors and students can keep track of research projects. A professor shall be able to invite their students to the platform, add projects, schedule meetings, track progress of tasks added by the student, prioritize tasks etc. The student shall accept a professor's invitation, add tasks for a particular project, schedule meetings with the professor etc.

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Doodlebobs - Meet Me Halfway

Team Members:

Grayson Baker, Chris Williams, Jeff Matthews, Michelle Cabrales, Joey Raganit

Internal Sponsors/Mentors:

Aboubakar Mountapmbeme

Abstract:

If a user wishes to find a halfway meeting point between two separate addresses, this application will provide an easy means to do so. This application will generate an exact midpoint between 2 entered addresses and give listed popular destination for the user to choose in the specified area.

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Team Groot: MaHippo

Team Members:

Alejandro Munoz
Tarun Katta
Joshua Grangeno
Moustafa Abouseada (AJ)

External Sponsors/Mentors:

Internal Sponsors/Mentors:

Aboubakar Mountapmbeme

Abstract:

MaHippo is a web application that can be used by any adult but we are targeting students specifically. Students already have a tough time navigating college life and outside life as it is. MaHippo is created for students that want to make their life much simpler.MaHippo requires the user to create an account so that any information that they put on our application is saved. It allows for students to create events and add them to their calendar, there is a goal list used to keep track of a person's goals and have can input milestones that they have reached. We have a simplistic Dashboard view that shows upcoming tasks or assignments if Canvas calendar is synced with our application. MaHippo also allows for other users to share calendars with each other, which can help to see when your partner is available and when they will be busy. Our application also takes into consideration motivation of our users. We built in an optional "Daily Inspirational Quote" feature that gives users an inspirational quote at the top of their page to maybe give them that little push needed to continue being productive and accomplish their goals. MaHippo is privacy friendly, it does not ask for any information other than what is required to serve the user.

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TEAM HIMALAYA

Team Members:

- Gunjan Basnet
- Alisa Pandey
- Subighya Khanal

- Rahul Jha
- Sujan Chaguthi

External Sponsors/Mentors:

Internal Sponsors/Mentors:

- Professor Aboubakar Mountapmbeme
- Miss Shabbab Algamdi

Abstract:

Team Himalaya is dedicated to making an optimal solution to modern day parenting. Baby Tracker, A cross platform baby tracking app which connects parents to Nanny. The app includes features like: Registration, Baby Habit Tracking like breast feeding, diaper change, Eating habits among many other features. The app also includes features like Nanny/Parent Profiles and Nanny Finder. Parenthood in the modern world has become more demanding compared to the past. Being a parent is a joyful endeavor but can also be difficult if not done correctly. Most parents are overwhelmed by all the tasks they must perform and keep track of. Team Himalaya aims to eliminate major barriers in modern era parenting and provide users with a rather intuitive parenting experience. The app is based on Flutter for the Frontend, Laravel in the Backend and MySQL as the database

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Small Channel Shootout

Team Members:

- Taylor King
- Kyle Sikkema
- Michael Moser
- Logan Albritton
- Issac Acord

External Sponsors/Mentors:

- Dominik Keul

Internal Sponsors/Mentors:

Abstract:

With the dominance of Social Media, it has become harder and harder to stand out as a smaller channel. Our goal to is to provide an avenue in which these channels can advertise their quality content to an eager viewership that wants to support these smaller content creators.

This is unique because the suggestions are self sorting as any viewer can vote on the content to filter any low-quality content. This lets the videos speak for themselves and for what the community can decide on.

Baby Tracker Android App
Infinite Loop

Team Members:

- Collin Lyon
- Huy Nguyen
- Michael Bertucci
- Nathan Lenkiewicz
- Waleed Abdelhamid

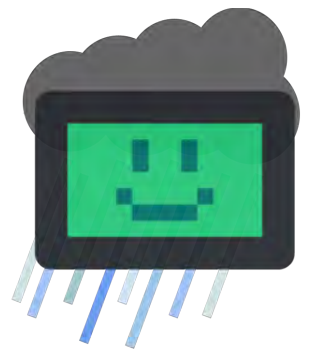## External Sponsors/Mentors:

- N.A.

Internal Sponsors/Mentors:

- Aboubakar Mountapmbeme

Abstract:

Team Infinite Loop is trying to make an easy and accessible application for parents that will allow them to ensure their baby's health and schedule. Everyone knows babies are a lot of work. They require constant around the clock care, but how do you really know what they need? Babies can not communicate, so when a baby cries, we are often left wondering why. When this happens most parents go through a checklist of things such as: When were they last fed? When was the last diaper change? Do they need a nap? And much more.

The solution to this is to have an application that will easily record your baby's activities. All the records will be transcribed into an easy-to-read report that will display overall health and metrics of the baby. This information could range from average bowel movements per week to the number of naps taken in a day. Once averages for your child have been determined they can be compared to a daily number to help easily determine what could be best for your child.

Stemming From Disaster

Team Members:

Camden Williams, Cameron Rosales, Chance Atkinson, Janna Duke, Justin Schultz, Andrew Ragland, David Bugbee, Jeffery Okhuozagbon, Mario Torres, Samin Yasar

External Sponsors/Mentors:

Dr. Aleshia Hayes

Abstract:

People are often unaware of the impact Natural Disasters can have on a community, and are even less aware of the processes involved to fix what was destroyed. In addition, kids are often told to go into STEM fields, but are often not given any direction or information about different jobs or career paths within STEM. To inform people about these issues, our team is developing a simulation in Unreal Engine 4 that immerses kids in the aftermath of a natural disaster. They will have the ability to view different environments that the disaster has affected, and they will be able to spend virtual money to fix some things that have been damaged by the disaster. The user's interests will be determined by what they observe and what they spend their virtual money on, and those interests will be translated into different careers and STEM disciplines the user might be interested in studying. The simulation will target Desktop and Virtual Reality platforms.

The team is working with the SURGE XR lab and the Department of Learning Technologies to bring this project to life.

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Course Management Application

Courses Management

Team Members:

Hira Sualeh
Asmaa Khaloua
Angel Jaramillo
Kha Nguyen

External Sponsors/Mentors:

Internal Sponsors/Mentors:

Mountapmbeme Aboubakar - Instructor

Abstract:

In this project we are motivated to create a course management application for use by students of all grade levels.This application will allow student to have a environment where they can keep track of their courses, assignments and help prioritize tasks so they are able to complete school work and assignments on time.

The problem we hope to solve is that of students losing track of time when it comes to assignments, appointments, and even class schedules. By consolidating many of the scheduling needs of students in one place we hope to improve the time management for students of all ages.
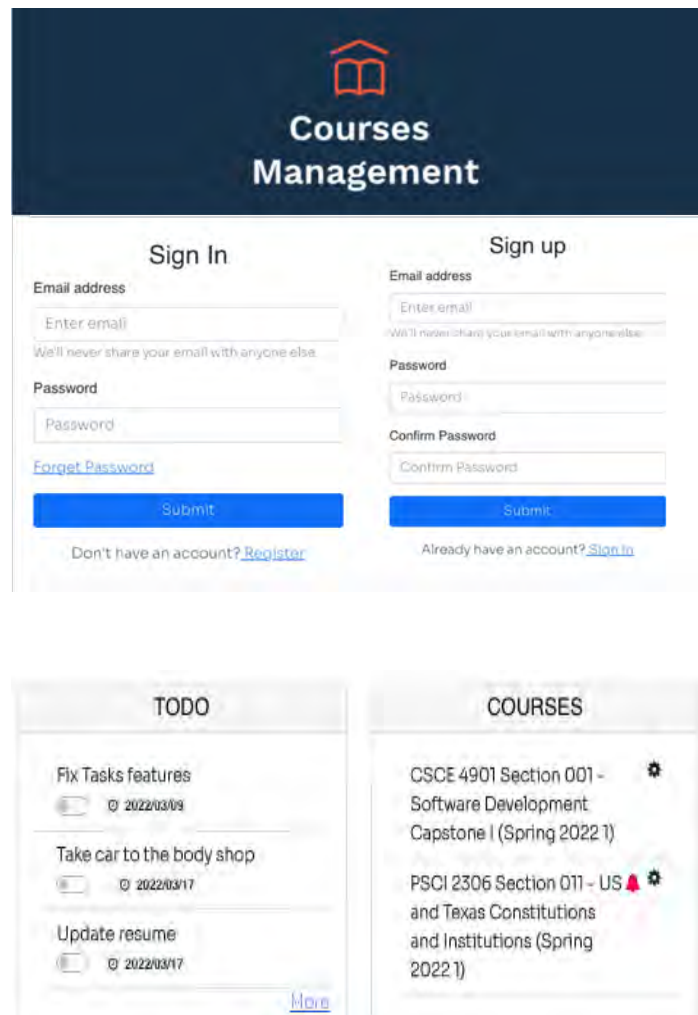
Voice app/ Team 1

Team Members:

- Nicholas Espinosa
- Bibek Napit
- Danielle Samuels

- Curtis Osawey

External Sponsors/Mentors:

- Zach Eisenhauer

Internal Sponsors/Mentors:

Abstract:

The purpose of the app is to deliver high quality singing lessons to the masses. This app will help anyone who is beginning to pursue lessons in singing and introduces them to any tools or features used in face to face singing lessons like tone analyzers and metronomes. The app should also benefit people who have experience with the tools and provide them with lessons that match their level of skill.

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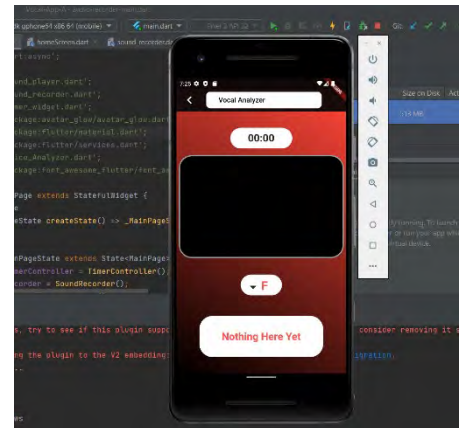
Meet in the Middle

Team Members:

- Cameron Smyrl
- Matthew Curtin
- Kalvin Garcia
- Wesley Glover
- Logan Wheeler

External Sponsors/Mentors:

N/A

Internal Sponsors/Mentors:

- Aboubakar Mountapmbeme, UNT

Abstract:

The rise of online dating apps and online resellers have led to many encounters that are unsafe. The idea of being able to find a safe public location that is halfway between two users without disclosing their address to the other person is what this app strives for. We want to create a way for people to meet that is safe, and fast.

Tools exist for users to find locations in the middle. The problem we're solving, is not letting the other party know your starting location. Each party only knows the meeting location. The meeting location is chosen from a list of safe places like fire departments, police stations, banks, etc.

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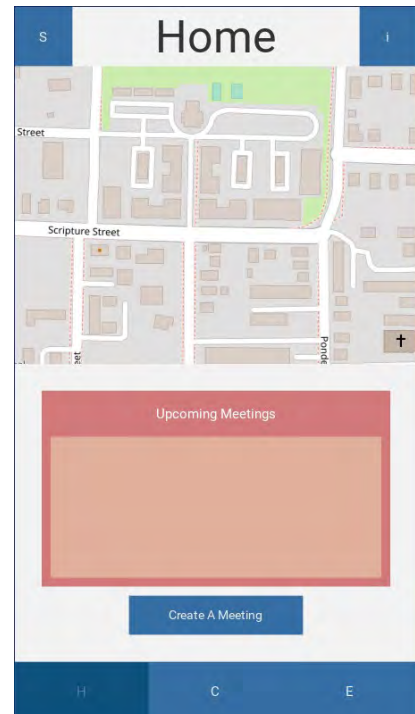
Mind Reader
We Don't Byte

Team Members:

- Kendrick Johnson
- Ryan Tolbert
- John Breaux
- Thomas Lane
- Pedro Alvarez

External Sponsors/Mentors:

- Dr. Stephanie Ludi

Internal Sponsors/Mentors:

- Aboubakar Mountapmbeme

Abstract:

Mind Reader is a tool that extends Visual Studio Code's accessibility to assist visually impaired people in Python Programming with LEGO® Mindstorms. The goal is to provide an accessible experience to those with visual impairment whilst not disrupting the editing environment and workflow for those without visual impairment. Python is distinct from most other programming languages, because the number of spaces changes how the code functions. By solving commonly overlooked accessibility problems, Mind Reader is pushing boundaries to make coding in Python easy for people with visual impairments.

WE DON'T BYTE

This project was inherited from a previous group containing: Jake Grossman, Cal Wooten, Josiah Moses, Sophia Drewfs, and Mason Bone

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Vocal App

Team Members:

Manisha Nallamotu, Raju Gajme, Yash Chulki, Troy Davenport, Luan Dang
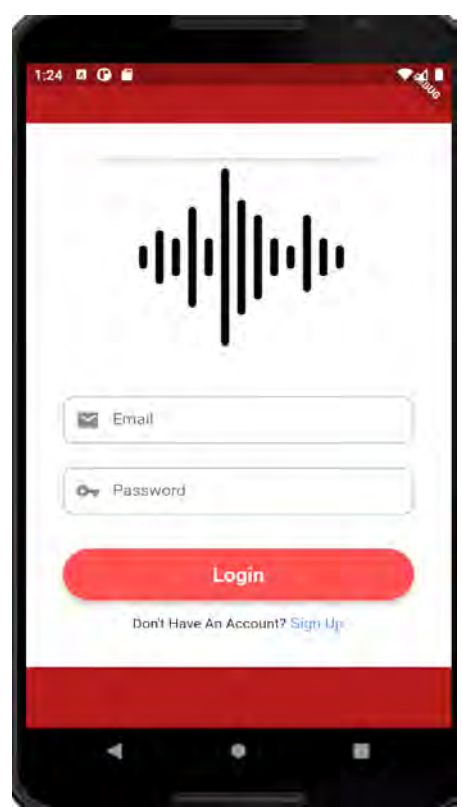
External Sponsors/Mentors:

Creatives Factory (Zach)

Internal Sponsors/Mentors:

Abstract:

This app is meant to make vocal lessons more accessible to singers of all levels by providing all the tools necessary to teach them how to sing. It is not limited to singers, but to all musicians of all skill levels.

Vocal training tools (metronomes, audio recorders, etc.) are often created and used as separate applications. The Vocal App combines these valuable tools, along with lessons to allow users to improve their vocal skills, to make them available in a single, cross-platform application.

Vocal App makes the musician life easier.

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Inventory Management Application

By: Brogrammers

Team Members:

- Nhan Tam Dang
- Jorge Guzman
- Anthony Do

- Raymond Mullikin
- Juan Sanchez

External Sponsors/Mentors:

- Soccer Post Keller

Internal Sponsors/Mentors:

- Aboubakar Mountapmbeme
- Stephanie Ludi

Abstract:

The problem that was brought to our attention is that the local soccer retail store, Soccer Post, did not have an efficient way to track inventory. The employees would have to manually track all orders and shipments by hand on paper. The project requested of us was to create a simple application that would allow employees to bypass the use of paper, and store inventory into a database. This would allow employees to be less reliant on paper, lessen the potential damage of lost documents, and ease tracking of inventory. With our mobile application, that allows the employees to easily input and store items, significantly boosts the company's productivity. This solution is innovative because it allows orders to be processed much quicker and allows a live count of every item they have.

The application was designed with the intent of keeping a relatively simple user interface with little restrictions. With our mobile application, that allows the employees to easily input and store items, significantly boosts the company's productivity. This solution is innovative because it allows orders to be processed much quicker and allows a live count of every item they have.

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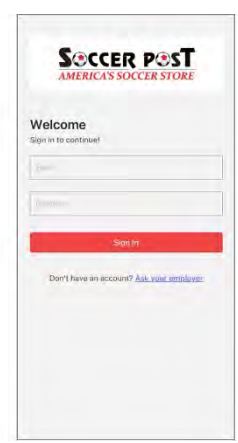
Glia Health

Team Members:

- Nathan Adams, Duncan Holloway, Jared Martinez, Carlos Ochoa, Kali Rossi, Danny Van, Daniel Morales, Rommel Mahabir, Zachary Smith, Matthew Lipsey, Christelle Ndaya, Autumn Scaife
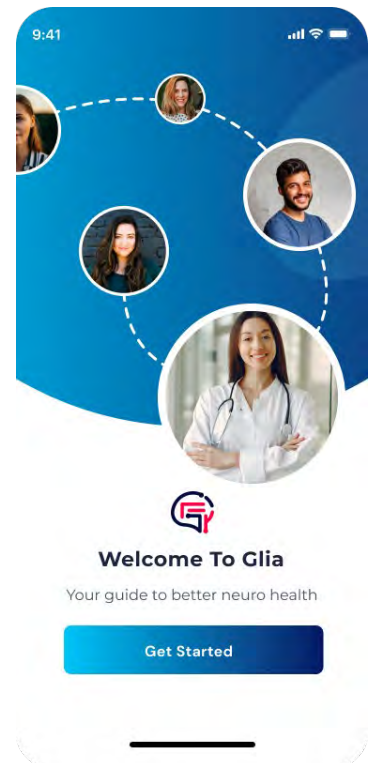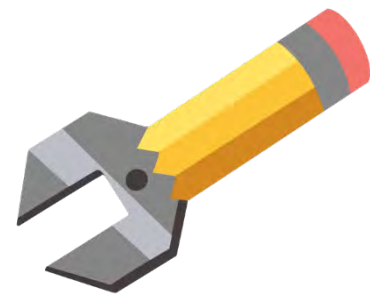
External Sponsors/Mentors:

- Andrew Denton

Internal Sponsors/Mentors:

Abstract:

Glia Health's application is designed to provide individuals and their healthcare providers with quick and accessible neurological health assessments. By using face tracking technologies and trained artificial intelligence, Glia Health's initial aim is to identify well known deficits in the third, fourth, and sixth cranial nerves. More specifically, by using a device's built in camera, the application aims to recognize extraocular palsies that occur following damage to the aforementioned nerves or brainstem. The application is also designed to track patients' symptoms in a diary, connect users to physicians, and offer repeatable mood assessments. Many of these services are difficult to access or prohibitively expensive through traditional means. As a result, Glia Health aims to solve these problems with one application.

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Teachers Toolbox
Capstone Coders

Team Members:

- Daniel Clement, Jay Hagar, Sarah Wainwright, Isabel Wells
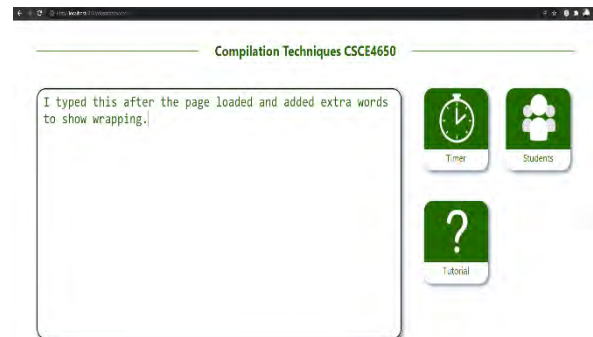
External Sponsors/Mentors:

- N/A

Internal Sponsors/Mentors:

- Dr Stephanie Ludi

Abstract:

Teachers have multiple daily responsibilities within their classroom. Examples of this include randomly assigning students to groups, forming an agenda/calendar, and creating seating charts. Many of a teacher's daily tasks may be automated or made easier with technology. With this website, teachers will be able to perform these tasks quickly and easily for a more efficient and enriching classroom experience.

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Ready Set Teach

Team Members:

- Afnan Alkhamis
- Alyissa Sanders
- Brianna Seisler
- Fiho Lee
- Sam Lucas
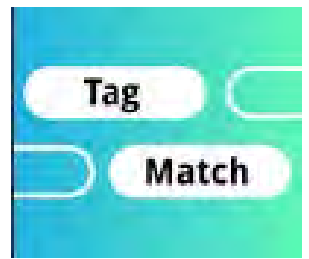
External Sponsors/Mentors:

- Dr. Stephanie Ludi

Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

Abstract:

Teachers use many tools for teaching purposes in the classroom that it can get a little confusing when everything is separate. So, the problem we are solving is for teachers to have one location or website that has all their necessary tools or websites needed for class time all in one spot. Having all their necessary needs for the class in one spot can significantly improve on how fast teachers can access something. Newer teachers might like the convenience of having everything in one spot, so it's easier for them navigate everything needed for class time. The idea behind our project is to allow teachers to have their lesson plans and curriculum in one spot for quick reference. With the website they can simply log in and find all of their documents, instead of searching for it through their desktop folder.

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Error {teamName !found}

Team Members:

- David Thompson
- Andrew Hooker
- Miguel Perez
- Mary Plana
- Peyton Thibodeaux

External Sponsors/Mentors:

- Agglo Corporation

Internal Sponsors/Mentors:

- Zachary Eisenhauer

Abstract:

The Goal of our Tag match Application is to create meaningful connections, share experiences, and end the loneliness epidemic that has grown since 2019.Traditional Social Interaction has been on the decline while Social Media has had a heavy correlation with feelings of loneliness and harming mental health.

This application provides a viable solution by bringing people with similar interests together and organize events/experiences to express their interests.

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OpenGym

Team Members:

Nile Barfield, Olufemi Olumaiyegun, Matthew Stieferman, Hao Bui, Ryan Dickman, Shea Frembling

External Sponsors/Mentors:

Jules Ryckebusch

Internal Sponsors/Mentors:

Abstract:

OpenGym is a software designed to track real time data for basketball athletes. The data gathered allows for objective feedback to be given to athletes to improve their shooting capabilities, and allow coaches to track the progress of their teams. The software was built using the Django framework to design the database and interact with the HTML elements. Optical tracking is done with raspberry pis with camera modules. Video data is sent to OpenCV for extracting information. OpenCv will track the trajectory of the ball with a red line.

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Incognito – Pump and GO!

Team Members:

- Deion Akunne
- Herbert Flowers IV
- Lee Pederson
- Jacob Robbins
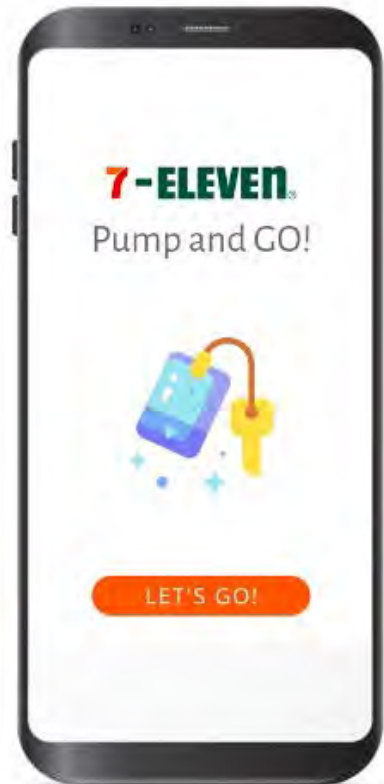
External Sponsors/Mentors:

- Kevin Jimenez Garcia
- Reece Challinor
- Elizabeth Gafford

Internal Sponsors/Mentors:

- Aboubakar Mountapmbeme
- Saba Yousefian Jazi

Abstract:

7-Eleven was interested in a way to implement a user-friendly contactless payment. They found that people were feeling less and less comfortable with using the card machines, especially in covid times. However, a lot of contactless payment methods require the user to be very involved. 7-Eleven is looking to streamline the process and make easy for any user to participate. This program will make it simpler, safer and quicker for 7-Eleven customers to get gas.

Thank you to the Stones of Cap team for working with us on this project.

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Baby-Tracker

Team Members:

Jeremiah Smith, Samuel Holsomback, Faruq Jimoh-Taiwo, Zachary Guidry, Mario Lopez, Muhammad Talha

External Sponsors/Mentors:

N/A

Internal Sponsors/Mentors:

Aboubakar Mountapmbeme
Dr. Stephanie Ludi

Abstract:

Being a mother has a steep learning curve, and once mothers are discharged from a hospital, many have questions about their baby's health and wellbeing. It's well known that babies are vulnerable and fragile, and if one aspect of their health is off-balance, it can be potentially life-threatening. Our goal with Baby-Tracker is to provide an interface where parents can enter essential data about babies and then receive a useful view based on entered data that ensures their baby is on track and healthy.

Senior Design Day 2022

Team Pubflare
Project place2be

Team Members:

- Michael Wade
- Stetson Wallace
- David Castricone
- Huy Vo
- Nicholas Johnson

External Sponsors/Mentors:

- Dorian Munoz

Internal Sponsors/Mentors:

- N/A

Abstract:

Loneliness and connection are modern epidemics that are too frequently treated as something that people are naturally able to navigate or are otherwise doomed to spend their lives struggling to socialize.

This is an entirely unnecessary problem that place2be seeks to solve. Whether a parent with unexpected time on your hands on a Saturday night or a fresh-faced college student looking for company in the cafeteria, place2be seeks to become the go-to app for organizing social events in a low-stress, user-responsive manner. By bundling and saving open invitations for events for users to review at their convenience, place2be will allow for everyone to be able to manage their social lives and never find themselves at home along when they would rather be out.

While not necessarily innovative or novel in itself, the current solutions for this situation are largely also ran ideas that do not make this activity the primary focus of the solution. place2be's innovation comes in isolating this specific organizing activity and giving it the frictionless flow that it so greatly demands.
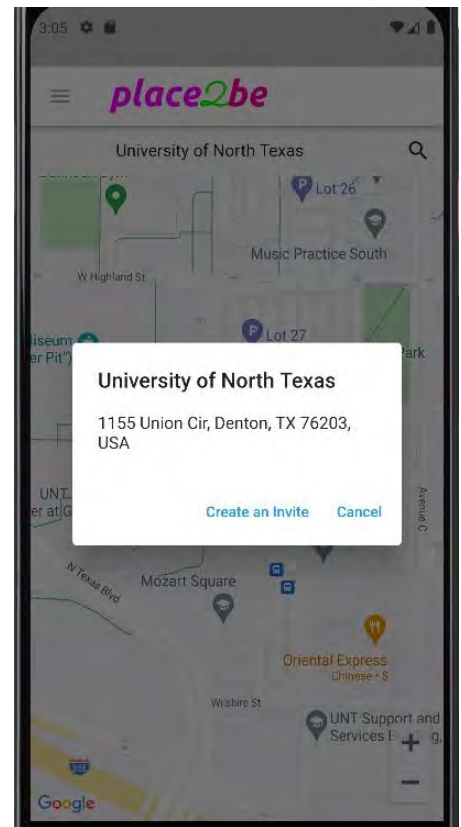
Trucking Website

Team Members:

|	
Mohit Patidar William Sarawichitr Chadrick Davis	John Villasenor Bryce Cain Cruz Gonzales

External Sponsors/Mentors:

Veronica Tarango

Internal Sponsors/Mentors:

Abstract:

Roadstar Trucking LCC is an old-school trucking company in need of a website. The goal of this project is to create a website with a database that Roadstar Trucking LLC can transfer their truck and contracting data into. The website should help them improve efficiency and productivity when customers and employees read trucking data forms. The user is able to apply to be a customer, a contractor, or apply to add a truck to the database.
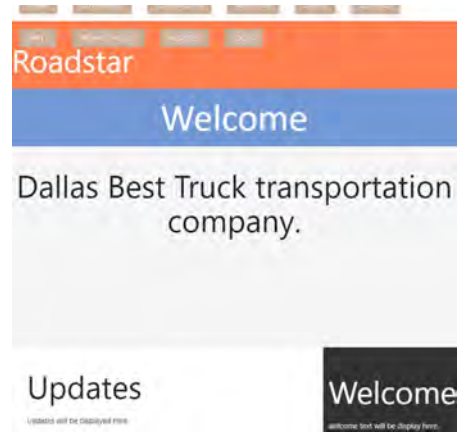
acknowledgements here

Senior Design Day 2022

ABET Course Assessment Tool

Team Members:

- Alexander Lambert
- Bryan Morris
- Chet Lockwood
- Sean Boden
- Stephen Bishop
- Christopher Chiechi
- Danish Faraz
- Jayden To
- Muhammad Ahmed
- Thien Pham

External Sponsors/Mentors:

- Dr. Stephanie Ludi

Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

Abstract:

UNT offers a wide arrange of STEM degrees that are **Accreditation Board for Engineering and Technology** (ABET) accredited. Part of the process for maintaining and ensuring this accreditation is the surveying of students after completing their major coursework courses. They are asked a series of questions gauging how effective the course was with respect to learning and outcomes expected for their respective discipline. This project is to develop a full stack application that can be housed and utilized by UNT to collect survey data from students as well as aggregate data and information for reporting purposes to ABET to maintain the university's accreditation.

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TagMatch (Services)/ TEAM SKARN

Team Members:

- Saru Bhandari
- Kiran Shrestha
- Ayush Shrestha
- Reza Shrestha
- Nischal Tiwari

External Sponsors/Mentors:

- Agglo, Zach

Internal Sponsors/Mentors:

Abstract:

As a team of TagMatch Services, we were given the Research and Development part or the backend part of app development. As working with the sponsor, last semester we were divided into three sections to work on API, TagList and TagMap. Working with API, we got data from the API of different sources like Spotify, Eventbrite etc. and taglist team had to help in converting list of tags into a json file. TagMap was a different web-based application built from an open-source Helium Explorer. This semester we have a common goal and we have been researching on NFT's of blockchain technology. We started by minting tokens from Solana using the Metaplex CandyMachine and implemented the same process to build a web app for minting NFTs on Solana. Completing these, we are looking forward to implement our knowledge on NFT's to contribute on TagMatch application.
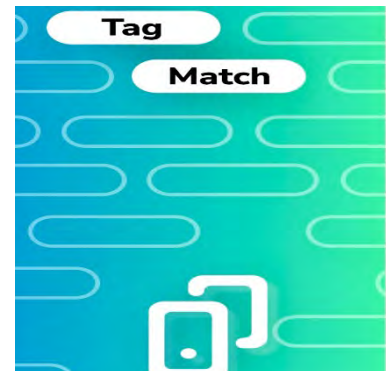
TeamStock/ Team SNBAD

Team Members:

- Aman Lama
- Dipesh Bhandari
- Sushant Budhathoki
- Nikita Thapa
- Bishesh Bhattarai

External Sponsors/Mentors:

- Bob Heere, TeamStock

Internal Sponsors/Mentors:

Abstract:

TeamStock,

IOS based app used to trade Games. We are trying to built interactive game that will let the people compete in an environment like stock market, where they can buy, sell, share experience, create a group of individual to invest. We are building this app for our Sponsor, Dr. Bob. We are trying to make this app as efficient as possible and try to fulfill all the possible requirement from our sponsor.

Senior Design Day 2022

Pump & Go!
Stones of Cap

Team Members:

Benjamin, Kabeya
Gabriela, Garza
Julyn, Cross
Lucas, De Castro

External Sponsors/Mentors:

7-11
Kevin, Jimenez
Reece, Challinor
Elizabeth, Gafford

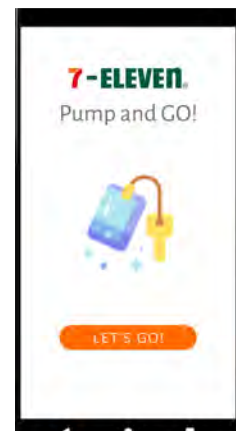## Internal Sponsors/Mentors:

N/A

Abstract:

Due to the ongoing COVID-19 pandemic, consumers are putting a high-price on health factors when interacting with organizations. To reduce the risk of infection, people are anxious to minimize physical contact and maximize contactless interactions.

7Eleven operates one of the largest fuel distribution networks in the world. However, US adoption of forecourt touchless payment technologies has not kept pace with market demand.

This form of contactless payment is not common in America, however Circle-K Sweden enabled this technology in 2021. This project not only brings a new form of contactless payment to gas stations across the U.S., but it also aids in the drive for a cleaner, more sanitary public environment.

Senior Design Day 2022

Capstone 4902
Syllabi Savers

Team Members:

- Rocko Bishop
- Olivia Gearner
- Khang Nguyen
- Kieron Yin

External Sponsors/Mentors:

- None

Internal Sponsors/Mentors:

- Stephanie Ludi
- Miranda Hogan

Abstract:

The previous solution for generating Syllabi based on course information is using a Microsoft Access database and antiquated web portal.

Our project as the Syllabi savers was to refactor and implement a modern solution to the Syllabi creation portal. Instead of using Microsoft Access, we're using a stack utilizing React.js and SQLite to manage the web portal and the back-end database.

Microsoft Access was initially released in 1992, while SQLite had its initial release in 2000. SQLite has multiple advantages over Access – most notably the ability to be used on any operating system and supports a myriad of languages more than Access can. This added flexibility allows for increased scalability in the future if needed.

Our aim is to provide a replacement for the existing solution that is more flexible, easy to navigate, easy to use, and has all the same functionality as the original implementation.

Senior Design Day 2022

Timely

Team Members:

Jordan Pitts, Bishnu Timalsina, Barrington Thorpe, Aman Dhakal, Bikram Dahal

External Sponsors/Mentors:

Internal Sponsors/Mentors:

Dr. Stephanie Ludi

Abstract:

This is a system intended to simplify 3rd party contracting for businesses or individuals who need a niche job done. Currently, most businesses must research and contact a contracting company when needing something done ie. plumbing, electrical or IT services. This is an inefficient system as the business has to call the contractor, schedule a time and specify the work done all over the phone. Our goal is to implement a web based solution that allows a business to submit a virtual ticket to the contractor of their choice.

A section will be provided for businesses to browse contracting companies that specify in the field needed, but if a contractor is found that the business likes really well, the contractor can be "hired". This will allow for a much simpler process of requesting work as someone can open the application and select the job they need done by using User Interface to create and manage events.

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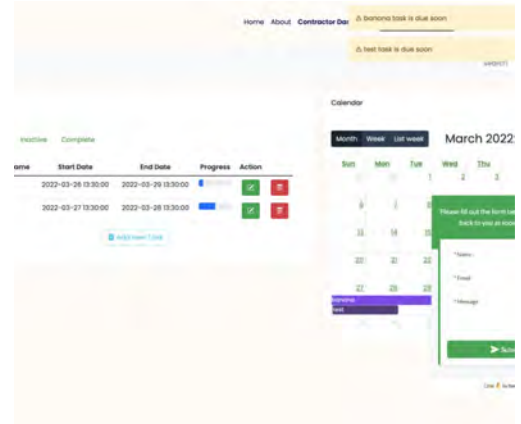
Teacher Toolbox

- Seyed Mohammad Hosseini Almadani
- Pragha Saha

- Hosea Nathaniel
- Sharmin Sefat
- Sally Ben

- N/A

- Dr. Stephanie Ludi

- Before the rise of technology and the widespread accessibility of the internet, teachers would use physical materials to teach their students. The subjects that were and are currently taught include Math, Science, Social Studies, Language Arts, Writing, Music, Art, and Engineering. Within the past decade, school districts have started to invest in technology, including SmartBoards for the classrooms and tablets/laptops for the students. With this, software engineers have needed to create programs to help teachers adapt to the access to new technology and internet in their classrooms. Since 2020, COVID-19 has changed the way students are being educated world-wide. Teachers have had to adjust to using computers and various software platforms to be effective in their teaching methods.

- This project has built on this trend- to use technology to promote interaction and assistance in the classroom. We created a web application containing various tools for teachers and students to use to interact with each other, regardless of what subject and grade they may teach.

Baby Tracker
A-Team

Team Members:

- Abdullah Kaddura
- Ahmed Salah
- Mahmood Aljeboory
- Natnael Teshome

- Kaleab Alemu
- Issac Acord
- Carlos Ochoa
- Alex Gage
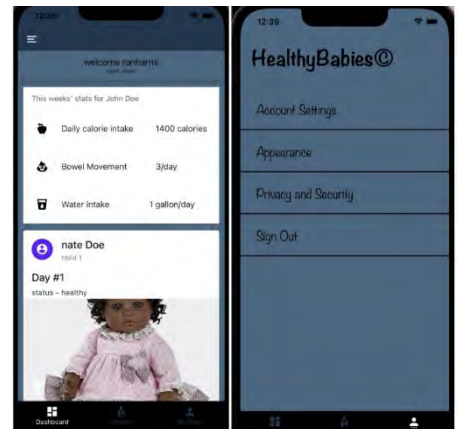
External Sponsors/Mentors:

- Not Applicable

Internal Sponsors/Mentors:

- Dr. Stephanie Ludi

Abstract:

The purpose of this application is to help its users (parents) with their newly born or young toddlers keep track of their daily activities and things that need constant attention and document it to monitor and track their babies' growth, health and overall progress, providing the user with a detailed insight into their kids. What makes the Baby Tracker's mobile application unique is the ability to connect the parents with their newly born children by the simplicity and straight forward steps of the application to allow the parent understand the health and overall development of their children.

Senior Design Day 2022

INFORMATION TECHNOLOGY

Senior Design Day 2022

UNTitled

Team Members:

- Erram Ali
- Miles Eggleston
- Megan Luthra
- Jordan Zamarripa
- Yevhen Prokopenko

External Sponsors/Mentors:

- Mark Williamson
    Ender Extender

Internal Sponsors/Mentors:

- Ian O'Casey
    BC Enterprise

Abstract:

Our task is to migrate the client from Dynamics NAV to Microsoft Business Central because NAV is no longer supported, somewhat outdated, and lacks user functionality. Our client Mark is currently using multiple tools for supporting his business which include QuickBooks, Excel Spreadsheets, and developed custom code to connect to NAV software. Additionally, NAV runs locally on a PC while Business Central is a SaaS which runs on Microsoft Azure Cloud.

Agenda:

- Introduce Ian and BC

- The functions of BC and why we thought it is a good idea to migrate Mark's business

- Our role in this project; and how to collect Mark's data and input it into BC

- The result of the migration

Ian O'Casey – deep knowledge in Microsoft Business Central and guidance along the way

Mark Williamson – familiarity with NAV functions and settings and how they are related to the functions in Business Central

C7HTC Website – Definitely Graduating

Team Members:

- Jack Henderson
- Bekonna Iheme
- Bikram Lamsal

- Maria (Mai) Maido
- Sandeep Thapa

External Sponsors/Mentors:

- Dennis Ozment – C7HTC

Internal Sponsors/Mentors:

- David Keathly - Professor

Abstract:

The problem that the C7 Human Trafficking Coalition faces currently is that their website is poor in both looks and functionality. It is difficult to update and doesn't easily provide information about their organization. We are constructing a new website for them entirely from the ground up, with an emphasis on its visual aesthetic, accessible information, and packaging it in such a way that non-technical C7 staff can update it. This way, the organizations flow of information can be better streamlined while simultaneously inviting clicks that will garner the organization more popularity, volunteers, donations, and raise awareness for their cause.

Makka Auto Sales / Team Numero Uno

Team Members:

- Jarrett Mahone
- Mohammad Khan
- Brian Chaffin
- Jacob Kariampally
- Lucas Fitzgerald

External Sponsors/Mentors:

- Makka Auto Sales

Internal Sponsors/Mentors:

- David Keathly

Abstract:

The purpose that we have for Makka Auto Sales is to build a system that can greatly help the company run as smoothly as possible in their day-to-day activities. To do this the team is building a few key points into the project.

- A database to hold all data being mentioned.
- Inventory tracking system.
- Customer profile system.
- A clock in/out system.

Team Laundris

Team Members:

- David Rowe
- Grayson Hardison
- Divin Sarthak
- Jason Durkee
- Kevin Lopez

External Sponsors/Mentors:

- Laundris
- Zihao Zheng

Internal Sponsors/Mentors:

- Professor Keathly
- Red Bull (unofficially)

Abstract:

Develop supply-chain and marketplace tools for different hotels and other lodging-based companies that can be used to automatically keep track of products within a room on a building-wide scale.

By using RFID tags inside of linens like towels, sheets, pillowcases, and even expanding into technology like televisions or landlines, Laundris aims to catalogue as many products as possible to cover various needs. These needs could range from loss prevention, to inventory assessment, to knowing when a replacement order needs to be made either due to low stock or lifecycle change.

The goal is to then take this information and develop a Supply Chain Marketplace that will support this functionality in a straightforward manner that will then be able to provide and take in data from an AI to autonomously detect consumer needs.

4TheOne Web Scraper

Team Members:

- Breanna Morrill
- Jake Everett
- Austin Fultz

- Andres Riopedre
- Tina Tinh

External Sponsors/Mentors:

- Dennis Ozment

Internal Sponsors/Mentors:

- Prof. David Keathly

Abstract:

The 4TheONE Foundation is a non-profit organization dedicated to locating and recovering missing, exploited, and sex-trafficked young people in the North Texas region. Currently, volunteers manually search through adult websites for images and other data to initiate their investigations. These are websites that are likely to or have had a history of exploiting these individuals.

We are building a web scraper that will automate this process by scraping and parsing data from a set of websites, and storing data for further analysis. The foundation will be able to use Paliscope's YOSE, an AI-driven search engine, to quickly analyze this scraped data. Volunteer time will be freed to more efficiently work on other aspects of their investigations, and more lives are saved in the process.

InStockGunDeals
Team C2MST

Team Members:

- Dominic Cason
- Isabel Chavez
- Daniel Sevilla
- William Taylor
- Daniel Mai

External Sponsors/Mentors:

- Mike Simmons

Internal Sponsors/Mentors:

- David Keathly

Abstract:

Instockgundeals is a website that acts as a marketplace for firearms, ammunition, and related accessories. Our website doesn't sell any products directly. Instead, once a customer finds a product that they wish to purchase, Instockgundeals redirects the customer directly to that vendor's product page. Our goal is to provide a website for those looking to buy guns and accessories at a reasonable price. We believe this project is innovative because it aims to use a database of products, sellers, prices, and reviews and provide the user with the best deal for the item they're looking for, unlike most storefronts whose aim to promote and sell their own products. We effectively take on the role of an online catalogue.

Rocket Monsters - Rogue Solutions

Team Members:

Alex Baker
Marco Aguilera
Michael Mendoza
Kalid Abdurahmen
Joseph McCoy

External Sponsors/Mentors:

Andrew Woodward

Internal Sponsors/Mentors:

David Keathly

Abstract:

A display poster that displays the Rocket Monsters drops.
RareBears.io and RMBearCraft.io. The poster will include
background information about RM and the dependencies
faced through Tezos. Screen shots from the websites and
the game itself will be included.

Eat Like The Rainbow by InITtowinIT

Team Members:

- Olivia Jones
- Ime Ekpo
- Mitchell Heinold

- Mason Petersen
- Zelvin Sandoval

External Sponsors/Mentors:

- Chef Cathy Zeis
- Eat Like The Rainbow

Internal Sponsors/Mentors:

- Professor David Keathly

Abstract:

The Eat Like the Rainbow App was created to help people understand what ingredients are in the foods that they are eating. The main feature of this application is the scan feature which will show the ingredients on the food item scanned and show in a separate list if the ingredients including any dyes, preservatives, good and bad sugars. There are other things in the application able to be used such as the budget page which shows a rough price point for an ingredient list to get while at the store. This same budget page has several links to Chef Cathy Zeis' website showing different recipes to use including the ingredient clicked on. There are also several lists on the application showing all the different kinds of vitamins, minerals, healthy fats, food dyes, preservatives, sugars, and protein filled food items. Under the about page, there is lots of information on what ELTR is, who Chef Cathy Zeis is, and many different articles to read. There is an account page where you can add any condition you have; on top of any allergies, you must further develop how the scan feature works for you. In the child mode, there is even a mini game able to be played to see if you pick the healthiest option at a fast-food restaurant.

We would like to thank WinCo Foods and us.openfoodfacts.org

@UNTEngineering

www.engineering.unt.edu
940.565.4300