College of Engineering

R&D Expo

University of North Texas

SENIOR DESIGN

Spring 2026

COLLEGE OF ENGINEERING
Department of Computer Science & Engineering

COMPUTER SCIENCE
Senior Design Abstracts
Spring 2026

Team: 404 Found

Team Members

Chris Motte
Ryan O'Dell
Soul Ahmad
Sadikshya Dani

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly
Avijeet Shil

Abstract

One of the most common issues parents run into when raising a child is finding a way to keep them motivated and on track. To combat this, we created NextSteps: a unique, user-based website meant to help both children and adults keep themselves accountable and enthusiastic about their goals. By utilizing a calendar and reward system backed by psychological research, users are encouraged to stay up-to-date to maintain streaks and show off to their friends. Whether a user wants to create a brand new habit or break a harmful habit, NextSteps helps users stick to these plans by breaking them down into smaller steps, being rewarded for progressing and maintaining their streaks.

NextSteps directly involves both parents and children in creating goals and designing a plan that works for them. Parents can assign habit plans for their children, and each step will automatically appear on the child's dashboard, providing a one-stop place for children to stay on track. By creating a system where children are excited to complete their tasks, parents are more easily able to manage their childrens' daily tasks amongst their busy lifestyle. Additionally, children are able to make great use of NextSteps by becoming invested in seeing their streaks grow and being physically rewarded by both a parent and the website for accomplishing their goals.

AlergiAI

Team Members

Rosie Nguyen
Jiya Singh
Stuti Patel
Krishna Reddy
Jeffry Sanchezdelacruz

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

AlergiAI is a cross-platform mobile application built with React Native and Expo that helps individuals with food allergies tracking, analyzing, and managing their dietary health. Users can log meals through text input or camera-based food label scanning, powered by the Google Gemini 2.0 Flash API for real time AI ingredient and allergen detection. The app correlates logged meals with reported symptomps using a severity-weighted risk scoring algorithm, providing personalized insights into allergen exposure patterns over time. Built on an offline-first architecture with Firebase Firestore synchronization, AlergiAI supports features including multi-tier allergen severity tracking, symptomp correlation analytics, customizable push notification reminders, emergency contact management, and medical report exports in CSV format for healthcare providers, all within a bilingual English and Spanish interface across IOS and Android.

Project ARETE / CTRL-ALT-ELITE

Team Members

Gavin Francisco, Diego Davila, Eddie Lim, Ethan Wallis, Joowon Chung

External Sponsors/Mentors

Michael Barnett

Internal Sponsors/Mentors

David Keathly

Abstract

Cognitive tests are designed to measure how well a patient is functioning, however it's proven difficult to determine how much effort is being given during a test. Project ARETE is designed to be a performance validity Python application designed to measure effort through the use of a simple computer game. The simple gameplay loop consists of jumping over changing obstacles across changing backgrounds, becoming progressively more difficult, before ending with a small memory quiz based on what the patient saw during gameplay. After the test data is stored for the test proctor to view, the patient is provided a score for how well they performed during the game, encouraging them to try to score higher on subsequent attempts.

UNT COLLEGE OF ENGINEERING

Team Members

Jesselle Ballesil
Jack Crawford
Chet Hefton
Leann Kahal

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

Neurodivergent individuals, specifically those with ADHD or autism, may struggle with executive functioning, task management, and maintaining consistent eating habits. This project develops an Assistive Task Web App to improve both task and nutrition management for users with these needs. The app includes a WCAG-compliant UI, customizable reminders, AI-assisted task breakdowns, and integration with the USDA FoodData Central for nutritional information. The frontend is built with HTML, CSS, and JavaScript; backend and data storage use Firebase (Authentication, Firestore, Cloud Functions); external services are accessed via API calls to Google Gemini and USDA FoodData Central. Offline support are provided by a service worker and a web app manifest. In a 30-day pilot with 10 participants, we expect a 50% improvement in task productivity and in food-management habits. The Assistive Task Web App demonstrates the potential to increase user independence; future features will add personalized adaptive assistance and broader accessibility feature sets.

UNT COLLEGE OF ENGINEERING

Attendance Manager

Team Members

Rodolfo Noguez
Safwat Khan
Damien Dishman
Zohaib Siddiqui

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

Managing classroom attendance is an important but often an inefficient task to manage manually. To resolve this issue, our project presents a classroom attendance tracking system which simplifies the process of recording a student's attendance without having to sacrifice time or accuracy. The application is implemented as a web-based system, which allows teachers to create QR codes which students would use to submit their attendance. The attendance would be logged in a database which the teacher can access at any time. Some features include secure student login verification to prevent duplicate entries, automatic timestamping, real-time reporting, making attendance tracking both efficient and reliable. By automating attendance recording, the system reduces the likelihood of errors and will save the instructor a significant amount of time, while being able to reliably provide a record of student attendance for reporting. Developed using modern web technologies and database integration, this solution streamlines attendance management and improves overall efficiency.

UNT COLLEGE OF ENGINEERING

Because We Care Caregiving

Team Members

Jarod Moore
Ethan Pham
Joseph Cardoza
Paulina Sanchez
Everardo Velasquez

External Sponsors/Mentors

Nora Wilson
Because We Care Caregiving

Internal Sponsors/Mentors

Abstract

Our group wanted to provide a website for a small business in need, providing them with a functional website that could help them grow and run their business more effectively. “Because We Care Caregiving” is a caregiving business that provides care for people and their loved ones in our community. In building this website, we’re providing them with a webpage that can both serve as a point of contact for questions or consultation.

Additionally, the website will provide them with the tools and services that they need to run their business, such as scheduling, employee shift check-ins, and a customer portal that allows the customers to view the caretaking appointments, and schedule specific times and locations.

UNT COLLEGE OF ENGINEERING

Career-Coach

Team Members

Derya Ari
Burak Cakir
Selim Maral
Dario Dias
Dmitriy Pak

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi
Saba Jazi

Abstract

Career-Coach is a full-stack web application designed to help students and job seekers improve their career readiness through personalized, AI-supported tools. The platform combines resume analysis, keyword matching, and mock interview practice in one system to give users practical feedback for the job application process. Users can upload their resumes, compare them with job descriptions, and receive insights on how well their skills and experience align with employer expectations. The application also includes a mock interview feature that allows users to practice responding to interview questions and receive feedback on their performance. Built with a React frontend and Flask backend, the system focuses on usability, accessibility, and meaningful feedback. In addition, the project explores local large language model integration to support more flexible and private AI-assisted evaluation. Overall, Career -Coach aims to provide an interactive and supportive environment that helps users strengthen their resumes, build interview confidence, and better pre pare for real-world career opportunities.

UNT COLLEGE OF ENGINEERING

CircuitSimVR

Team Members

Christian Smith
Jakob Smith
Aydan Warren
Morgan WIlliams
Mason Willy

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

CircuitSimVR is a virtual reality circuit simulation game designed to teach basic circuit concepts to high school students through immersive, hands-on learning. Users explore concepts like current flow, Ohm's Law, and RC charging by building functional circuits from interactive components such as DC sources, resistors, LEDs, switches, and capacitors.

The simulation uses the SpiceSharp circuit analysis library to run real-time electrical models within Unity. A custom CircuitManager tracks changes in circuit topology, updates node connections, and runs transient simulations while maintaining stable performance in VR. Components can be manipulated directly, and electrical parameters can be adjusted in-game to observe how changes affect circuit behavior.

Overall, the system provides an interactive way to explore and understand circuits, giving students a safe virtual space to experiment with basic electronics concepts.

UNT COLLEGE OF ENGINEERING

Classroom Connect

Team Members

Tanner Holmberg
Matthew Lopez
Noah Marsh

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

Classroom Connect is a web application where parents and teachers can buy, sell, trade, and donate supplies and educational materials. Users can post listings for items they want to sell, which are all found on an interactive map. Teachers can be searched for based on their school and school district, and teachers can post links to wish lists they've made to show what supplies they need to others. Classroom Connect was made using JavaScript and the React library.

UNT COLLEGE OF ENGINEERING

Code Innovators

Team Members

Gautam Aryal
Rezwanur Rahman
Allen Pandey
Aasmi Joshi
Sworup Bohara

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi
Indira Devi Siripurapu

Abstract

People with disabilities often rely on fragmented, expensive tools that are poorly designed for their requirements. AccessAid is a free mobile application that unifies voicedriven navigation, real-time text extraction using optical character recognition, an AIpowered health assistant, and a community space for users to connect, chat, and share experiences with others facing similar challenges. Built on a serverless cloud architecture for scalability and reduced maintenance overhead, the app supports screen readers, dynamic text scaling, haptic feedback, and safety features such as an SOS emergency button, all in compliance with WCAG 2.2 AA accessibility standards. Through seven iterative development sprints and continuous user feedback, our team refined AccessAid into a practical tool that helps users to complete daily tasks more independently.

UNT COLLEGE OF ENGINEERING

CodeTime

Team Members

Ethan Kilpatrick, Linal Lad, Nur Mahi, Emmitt Singh

External Sponsors/Mentors

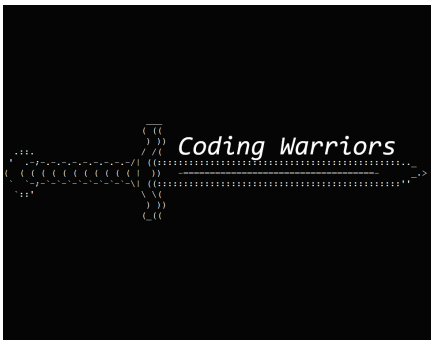
Internal Sponsors/Mentors

Dr. Jacob Hochstetler

Abstract

CodeTime is a Visual Studio Code extension designed to enhance programming education by transforming code evolution into an interactive learning experience. The system provides two primary modes: Instructor Mode and Student Mode. In Instructor Mode, educators can import a repository, capture a timeline of commits, and enrich each stage with annotations, walkthroughs, and multimedia content such as audio and video. In Student Mode, learners can import these lessons in a read-only environment, where they can navigate commit timelines, view code changes, follow guided walkthroughs, and interact with an integrated AI assistant for code explanations.

UNT COLLEGE OF ENGINEERING



Coding Warriors

Team Members

Aashishpal Reddy Kandala
Laurel Igiehon
Sebastian Cervantes Lopez
Uriel Moreno
Vincel Novelo

External Sponsors/Mentors

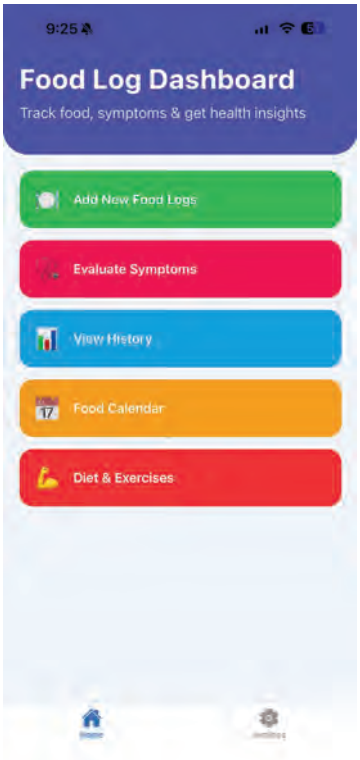
Internal Sponsors/Mentors

Professor David Keathly

Abstract

The Food Log App is an application meant to track user's health by measuing their meals via the USDA FoodData Central API. Users start by either logging in or registering a new account. The Food Log App is cross-platform, allowing users to access their account information and logs via any mobile device. To start logging food, users can simply search for it or can use the barcode scanner. Optionally, if the user felt any symptom, this can also be logged and reported. As well as logging a variety of food, users can also evaluate their risk of allergies and intolerences to certain foods based on symptoms they log. Users can easily track their meals and caloric intake using the calendar feature, which allows users to easily view which days they missed meals, if they reached their calorie goal, or just to view previous logs. Similarly, the log history can also view previous logs, but can allow users to edit, delete, and filter their logs. For users interested in dieting or exercising, the Food Log App can gives suggestions for specific diet and exercise plans.

Some settings and accessiblities include exporting logs, logging out, deleting log data, and deleting the user's account.



UNT COLLEGE OF ENGINEERING

Synergy Solutions
Project Janus - VR neuropsychology implicit memory game

Team Members

Aaron Nguyen
Lethan Nguyen
Rithvik Kuthuru
Kyle Schoby

External Sponsors/Mentors

UNT Neuropsychology Lab:
Dr. Michael Barnett
Brooke White

Internal Sponsors/Mentors

David Keathly

Abstract

Project Janus is an immersive virtual reality platform developed in collaboration with the UNT Neuropsychology Lab to revolutionize the assessment of implicit memory in patients with dementia and other cognitive impairments. Traditional diagnostic tools often struggle to replicate the complexities of daily life, but Janus bridges this gap by placing subjects within a high-fidelity virtual home environment. As participants navigate the space, they encounter specific environmental "triggers"—such as an ignited stove or a running faucet—designed to test their subconscious awareness and reactive capabilities. By scoring how effectively a subject identifies and resolves these hazards, the system provides clinicians with a data-driven evaluation of a patient's functional memory and real-world safety. This innovative approach offers a controlled, repeatable, and empathetic method for measuring cognitive health in older populations, ensuring that memory care is both accurate and grounded in practical, everyday scenarios.

UNT COLLEGE OF ENGINEERING

DBS Group

Team Members

Giovanni Rebosio
Seth Perry
Brenton Bales
Daniel Prum

External Sponsors/Mentors

N/A

Internal Sponsors/Mentors

David Keathly

Abstract

Brick Binder is an AI-powered application which allows users to count and catalogue their LEGO collection by simply taking a picture. The categorizing includes color, shape and size of the brick added to your collection. It is all run locally on your phone, so there is no need to be online while organizing your collection. Alongside an AI counting your collection, we also allow the user to manually change the information to allow for custom pieces that may not be recognized to be added to your list.

UNT COLLEGE OF ENGINEERING

Do-Bee

Team Members

Yubina Acharya, Kyathi Uyyala, Brooke Mesch, Mia Enamorado

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

What if productivity felt less like a chore and more like something you actually enjoy? Do-Bee is a web and mobile application designed to transform the way people manage their daily tasks, habits, and goals. Instead of overwhelming users with complex tools, Do-Bee introduces a simple, engaging, and motivating experience that helps users stay consistent and focused in their everyday lives.

What sets Do-Bee apart from other to-do list apps is its blend of productivity and engagement. The app goes beyond traditional to-do lists by incorporating gamified elements, progress tracking, and collaboration. Users are not only able to organize their responsibilities, but also build positive habits, and track growth over time.

Do-Bee introduces smart, user-friendly features such as personalized task organization, visual progress insights, and seamless synchronization between web and mobile platforms. The goal of Do-Bee is a cohesive experience that adapts to the user's lifestyle, rather than force them to adapt to the app. Do-Bee's scalable architecture ensures efficient performance, secure data handling, and adaptability for future enhancements.

By combining simplicity, motivation, and innovation, Do-Bee reimagines productivity as an experience that is not only effective, but enjoyable!

UNT COLLEGE OF ENGINEERING

EchoCode

Team Members

Chad Reardon
Cullen Houghton
Basleale Solomon
Fnu Abdullah
Jacob Villarreal

External Sponsors/Mentors

Internal Sponsors/Mentors

Professor Moshen Amini

Abstract

EchoCode is a Visual Studio Code extension engineered to dismantle the barriers visually impaired programmers face in modern IDEs. By synthesizing voice commands while using natural language processing principles and AI-driven semantics, EchoCode translates complex code structures into intuitive audio-spatial cues and conversational feedback. Built to support both students and professionals, the extension operates across multi-language environments, providing voice-activated navigation and real-time debugging assistance alongside hot-key support for all functions. Available for macOS and Windows, EchoCode transforms the programming experience from a visual-first task into an inclusive, multimodal workflow that restores developer autonomy.

UNT COLLEGE OF ENGINEERING

Event App

Team Members

Bisesh Rana
Joshua Martin
Kevans Sublet
Kevin Soto Carrera

External Sponsors/Mentors

Able Faith

Internal Sponsors/Mentors

Abstract

This project is a mobile application developed using React Native and Expo to support the community engagement efforts of Able Faith. The app provides users with an interactive event page featuring a calendar interface that displays upcoming activities and allows users to view event details for selected dates. Users can enable of disable reminders for specific events through a toggle system, with notifications scheduled to alert them at the appropriate time. The application is designed with a clean, user-friendly interface and integrates core mobile features such as navigation and real-time updates. Overall, the app aims to improve accessibility to event information and increase participation by keeping users informed and engaged.

Go-to Grocery App

Team Members

Olajumoke Kupoluyi, Elsa Joy, Mikal Debesay, D'yanna Grey, Saubhagya Bhandari, Subol Dhital

External Sponsors/Mentors

Internal Sponsors/Mentors

UNT

Abstract

The Go-to Grocery App is a cross platform mobile solution designed to address rising food costs, dietary restrictions, and increasing food waste. The app is motivated by the need to help users "shop smarter and healthier" by using technology to help them to compare prices, avoid allergens, and track expiration dates. The system is developed by Team D.O.M.E as part of the Capstone project and targets users aged 13 and above. Core functional requirements include registration, grocery search with filters, barcode scanning, quick add, shopping list management, pantry management, and personalized notifications. Non-functional requirements emphasize security, reliability, usability, accessibility, and cross platform compatibility. By integrating features like price comparison, allergen filtering, and automated reminders, the Goto Grocery App aims to create a more affordable, health conscious, and environmentally responsible grocery experience.

HerdSync

Team Members

Ethan TenClay
Cooper Wiethoff
Enzo Mello
Brandon Rubio
Quinn Branum

External Sponsors/Mentors

Clean Chickens and Co.
Rebecca Wierschke

Internal Sponsors/Mentors

David Keathly

Abstract

HerdSync is an automated livestock management solution that pairs custom-built edge hardware with a high-performance grading engine. At its core, a Raspberry Pi 4 controls three 16MP Arducam cameras to capture high-quality, multi-angle imagery for precise animal evaluation. Designed for reliability in harsh climates, the system features an automatic heating control loop to ensure 24/7 operation in extreme weather.

The platform includes a comprehensive web application where users can monitor live camera streams, access detailed animal and customer records, and review grading results. By analyzing goats from three synchronized angles, the system provides objective grades based on quality and potential yield. All data and remote access are protected by industry-standard encryption and a secure, hardware-isolated identity management framework.

Ideation For All

Team Members

Liam Conner
Ryan Flint
Humza Khan
Caleb Ntende

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

In any project, the design process can oftentimes be as difficult as the development process. In the brainstorming phase, ideas clash with each other, are disregarded, are misunderstood, or sometimes go unheard entirely. We, the Brainstormers, wanted to create an application that will centralize the brainstorming phase and make it possible for everyone's voice to be heard. Ideation For All is what we came up with. Users are able to create a board that others can collaborate on. Users have several methods at their disposal for putting forward ideas and sharing insights. Convenience, accessibility, and security are priorities for the user, allowing everyone to have the best experience possible.

UNT COLLEGE OF ENGINEERING

I'm a Bit Rusty 4902.003
Mutation-Enabled Toolchain in Rust

Team Members

Cannon Fenton
Joseph Smith
Kiyana Baghbadrani
Noah Stromberg

External Sponsors/Mentors

Jacob Hochstetler

Internal Sponsors/Mentors

David Keathly
Avijeet Shil

Abstract

Mutation testing assesses the foundation of a test suite by creating minor syntactic alterations, or mutants, into the source code, and subsequently verifying if the tests successfully identify these modifications or not. Although this method proves useful, its application within the Rust programming language is computationally expensive. This is primarily due to the fact that existing tools rely on repeated source code modifications and complete recompilations.

Our Capstone project presents the Rust Mutation Enabled Toolchain, a specialized rustc-based toolchain that integrates mutation functionalities directly within the compiler's pipeline. Through the extension of the High-level Intermediate Representation, the toolchain facilitates the effective generation and assessment of mutants during standard build processes, eliminating the need for external source code changes.

All major innovations include selective mutations, smooth cargo integration, and incremental testing capabilities. This project demonstrates the design, implementation, and evaluation of the toolchain, highlighting its potential to reduce the overhead of mutation testing while providing deeper integration with the Rust ecosystem.

Initcode

Team Members

Nforninwe Nformi
Alvin Qin
Hriday Bhavsar
Godswill Kekombe
Josue Reyes

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

The main goal of this project is to create an app that helps parents find their missing child quickly. In today's world, where everything is connected, every second counts, and having the right information ready can make a big difference. Parents can keep important information about their kids in one place with the app, which makes it easy for them to share it with the police and their community right away. It will also help families find helpfu groups and get support during a hard time. The main goal is to make it easier, faster, and less overwhelming for parents to get help and respond when they need it most.

UNT COLLEGE OF ENGINEERING

Team Members

Michael Romero, Jorge Sandoval Ruiz, Andres Ojeda, Saiyam Bhakta, Ibrahim Chaudhry

External Sponsors/Mentors

Carlos Romero

Internal Sponsors/Mentors

David Keathly

Abstract

Currently, individuals in need of roadside assistance face long, frustrating wait times due to the delays caused by traditional hotlines and third-party insurance processes. The Express Towing App is desgined to solve this problem by eliminating the unnecessary middlemen and establishing a direct connection between stranded customers and towing service providers.

The application provides a fast and user-friendly platform where users can request various servicds, including towing, lockouts, fuel delivery, tire changes, and jump starts. Key features include real-time GPS tracking of driver ETAs, driver service requests, secure in-app payments, and direct communication between users and drivers. To achieve this, the system is built using a modern tech stack featuring React Native for cross-platform mobile support and a Node.js backend. Ultimately, the Express Towing App aims to provide customerms with faster, more reliable support while allowing towing providers to operate more efficiently.

EVOmegabytes
LearnToType

Team Members

Kenneth Kharel
Kevin Kharel
Riyan Shrestha
Andreas Paramo

External Sponsors/Mentors

Internal Sponsors/Mentors

Raushan Pandit

Abstract

LearnToType is a full-stack web application developed by team EVO MegaBytes for the University of North Texas Capstone course. The platform addresses the widespread need for modern, engaging typing education by combining structured progressive lessons with gamified learning experiences and real-time competitive features.

Built with Next.js, React, Tailwind CSS, and Firebase, the system supports secure user authentication via email/password and Google OAuth2, real-time multiplayer 1v1 typing duels powered by Firebase Realtime Database, and offline typing games including a ninja-themed bot racing experience. An analytics dashboard tracks each user's performance over time, displaying WPM trends, accuracy rates, and personal bests through interactive Chart.js visualizations.

Key technical achievements include a Gemini API integration that generates language-appropriate code snippets for competitive WPM battles, an onDisconnect() cleanup mechanism that eliminates ghost players from the matchmaking queue, and a WPM chart spike fix that ensures accurate performance data from the very start of each test. The platform supports multiple visual themes, dynamic audio feedback across all games, and a global leaderboard updated in real time.

LearnToType was designed to serve students, professionals, and competitive typists seeking a modern alternative to outdated typing tools, delivering an experience that is both technically robust and genuinely enjoyable to use.

The team would like to thank the UNT College of Engineering faculty and capstone instructors for their guidance throughout this project.

UNT COLLEGE OF ENGINEERING

Lego Brick Detector

Team Members

Sidharth Nair, Sravan Vallepalli, Bishal Thapaliya, Yesh Salapu

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

Our Lego Brick Detector is an interactive application designed to help users identify, organize, and make better use of their Lego's. Using image scanning, our application detects individual bricks and classifies them by color and dimensions, then stores the results in a digital inventory. The application then recommends different Lego sets the user can build based on the user's available bricks.

UNT COLLEGE OF ENGINEERING

LoopedIn
Team Eat, Sleep, Full Stack, Repeat

Team Members

Carlie Reynoso
Madison Westbrook
Emily Warren
Alec Holland
Sierra Yang
Sualeha Irshad

External Sponsors/Mentors

Michael D. Barnett
Joel A. Zamora

Internal Sponsors/Mentors

David Keathly

Abstract

LoopedIn is a craft-oriented social media mobile app designed to help crafters and hobbyists connect with others, discover resources, and stay organized. The core features of LoopedIn allow users to track progress on projects, share those projects with their community, and support each other throughout the creative process. Unlike existing platforms, LoopedIn prioritizes an intuitive design, a high variety of compartmentalized features, and mobile app accessibility.

UNT COLLEGE OF ENGINEERING

Magnify Rush

Team Members

Wayne Halliburton, Elisabeth Nguyen, Trinh Tran, Simeon Childress

External Sponsors/Mentors

Scott Childress (Magnify Dental Marketing)

Internal Sponsors/Mentors

David Keathly

Abstract

Magnify Rush is an internal customer relationship management (CRM) system designed for Magnify Dental Marketing to manage and organize client practice information and services in a centralized platform. The system allows Magnify employees to track dental practices, view services such as website management, social media, SEO, and AI tools, monitor Gmail communications, access important dates and contacts, and review past client interactions. Integrated AI features enable users to quickly retrieve client information from the database, thereby improving workflow efficiency. Magnify Rush helps streamline communication, enhance organization, and support better decision-making across the company. The platform is built with Angular in the frontend and FastAPI + PostgreSQL in the backend, enabling real-time data access and seamless interaction, including AI-powered read and write capabilities through Gemini integration

Name, Image, Likeness

Team Members

Precious Nwachokor
Kailebe Hayes
Brock Mordecai
Micheal Landsbaum
Alex Boettcher
Adrian Lopez

External Sponsors/Mentors

Michael Campbell

Internal Sponsors/Mentors

Abstract

This web application provides legal NIL (Name, Image, Likeness) services, financial literacy, and a social media aspect. The primary users are Athletes, which are initially onboarded onto the application via access codes. Athletes can upload and request review of their NIL contracts with our lawyer clients for a fee. They can also create a profile, explore our library of financial literacy videos, and upload posts with their own highlights/clips. Coaches can also browse the application, look for top talent, and make their own offers.

UNT COLLEGE OF ENGINEERING

Null Pointers

Team Members

Kelly Pierre
Vedansh Tembhre
Dylan Graham
Aarya Shrestha

External Sponsors/Mentors

Internal Sponsors/Mentors

Abstract

Convox is a chrome extension for Canvas aimed at assisting blind and visually impaired students. Currently, there are several limitations in Canvas since most of the content can only be accessed via mouse and keyboard inputs. Our Convox bridges this gap by integrating a screen reader and voice-command navigation system, allowing users to access Canvas entirely through audio and speech input/output. Our extension also offers additional features such as voice log in, content summarizer, and completing regular functions such as replying to a discussion post via voice input. From a design standpoint Convox is has a robust architecture with enhanced command parsing, dynamic course detection, and reliable multi-command execution. Overall, Convox's mission is to create a more accessible digital learning environment by enabling hands-free, voice-driven interactions on Canvas.

UNT COLLEGE OF ENGINEERING

NutriFit

Team Members

Abdul Abubakar
Micahel Egboh
Mathias Mulat
Uche Achilefu

External Sponsors/Mentors

Internal Sponsors/Mentors

Abstract

NutriFit is a cross-platform mobile application for nutrition and fitness tracking, developed as our senior capstone project. Many people struggle to keep consistent eating and activity habits because food logging feels repetitive, tools are split across apps, and nutrition information is not always tied to authoritative sources. We designed NutriFit so users can log meals against standardized nutrient data, set personalized calorie and macro goals, and review progress in one place.

The client is built with React Native using Expo and TypeScript, which supports iOS and Android from a single codebase and keeps the project maintainable through static typing. Navigation uses Expo Router with file-based, typed routes so the structure stays clear as features grow. Food search and nutrient details come from the USDA FoodData Central REST API, which keeps presentation separate from external data access. Accounts use Firebase Authentication with email and password, and persistent data is stored in Firestore. AsyncStorage supports local caching where it improves responsiveness. The app provides dashboards for daily intake, water tracking, and historical views, along with custom meals, streak tracking, and profile editing. Personalized energy and macro targets use a TDEE estimate based on the Mifflin-St Jeor formula so recommendations reflect established nutrition science rather than arbitrary defaults.

In sum, NutriFit applies software engineering practice to a practical problem by combining a public nutrition API, a managed cloud backend, and a cohesive mobile client that users can rely on for everyday decisions.

UNT COLLEGE OF ENGINEERING

PetFinder

Team Members

Bibek Pandey
Ojaswi Subedi
Kimberley Juarez
Anjali Fernando
Tanvi Biswal

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

Losing a pet is upsetting, and the lack of a centralized structure may worsen the situation. PetFinder is an app that addresses this issue by securely storing pet data in the cloud and enabling users to rapidly develop and distribute structured missing pet notifications. During an emergency, the system ensures that data is persistent, accessible across several devices, and communicates effectively. In addition to emergency assistance, PetFinder offers daily pet management features such as reminders, safety resources, and contact information to help owners care for their pets more successfully.

UNT COLLEGE OF ENGINEERING

Plantify

Team Members

Addison Nally
Azeezat Akinboro
Chase Wright
Ian Jackson
Thien Thanh Truong

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

Plantify is an AR mobile app designed to help kids with learning about plants and their parts. It is supposed to encourage learning of plant parts by adding AR and fun elements to the learning process. By allowing the user to learn in this way, it can keep the kid engaged and more excited to learn.

UNT COLLEGE OF ENGINEERING

Polish

Team Members

Walid Esmael, Matthew Norman, Arnav Verma, Mohamed Babiker

External Sponsors/Mentors

Internal Sponsors/Mentors

Abstract

Polish is an AI powered resume builder developed for the Microsoft Imagine Cup by four University of North Texas students. For most job seekers, putting together a strong resume means bouncing between word processors, AI chatbots, and online templates with no single tool that does it all. Polish changes that. Users get a clean, intelligent editor with AI assistance built directly in, helping them write, refine, and export a professional resume in one place with no setup required. The team is actively expanding the platform with job tailoring, cover letter generation, and multi resume management to make Polish the go to tool for anyone navigating the job search.

UNT COLLEGE OF ENGINEERING

Project Clara

Team Members

Abeer Syed, Abraham Abebe, Douglas Borovina, Hayat Dahraj, & Jacob Gallagher

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi
Indira Siripurapu
Saba Jazi

Abstract

Project Clara is a cross-platform mobile application built for real-time school communication between parents and teachers. Clara provides role-based portals where parents can track their children's attendance, grades, schedules, and receive live updates, while teachers can manage classrooms, take attendance, post announcements, and communicate directly with guardians.

Built with React Native and Expo for iOS, Android, and Web. Powered by a serverless AWS backend with real-time GraphQL subscriptions. By integrating academic tracking with direct messaging in a single platform, Clara fosters effective collaboration between educators and families.

UNT COLLEGE OF ENGINEERING

Quad Net - MYRA: AI-Powered Smart Wardrobe Assistant

Team Members

Priteesh Madhav Reddy Karra
Rishi Raj Kanukuntla
Snehitha Paruchuri
Aashish Thapa Magar

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

MYRA is an AI-powered wardrobe assistant designed to simplify the outfit selection process. It suggests clothing based on factors like weather, location, and personal style preferences, helping users save time and reduce decision fatigue. By learning from user choices, MYRA continuously improves its recommendations, offering more personalized suggestions over time. The app also allows users to manage their wardrobe digitally, discover new outfit combinations, and make the most of their existing clothing. Overall, MYRA combines convenience, style, and practicality, offering a smarter, stress-free way to enhance personal style every day.

In addition, MYRA tracks a virtual wardrobe and recommends outfits for different occasions. Its intuitive interface makes choosing outfits quick and easy, saving users time.

UNT COLLEGE OF ENGINEERING

Blueprint Botanica
To be determined

Team Members

Connor Johnson
Corinna Martin
Jake Gonzales
Isaiah Geesey
Adrian Pedraza

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

Blueprint Botanica is a garden planning tool that helps users design and organize their garden in a simple, visual way. Users can draw garden beds, place plants within them, and see how everything fits together on a grid-based map. The app also includes a calendar view to help track planting schedules, along with a search feature that allows users to filter plants by attributes such as sun exposure, watering needs, and plant type. As users build their garden, the app provides feedback to help prevent common mistakes. It can flag issues such as plants that are incompatible with the selected hardiness zone, planted outside their appropriate season, paired with incompatible plants, or placed in beds with unsuitable conditions like incorrect soil or sun exposure. Overall, Blueprint Botanica makes it easier to plan, adjust, and manage a garden while supporting more informed decision-making.

UNT | COLLEGE OF ENGINEERING

Artha Network
Team Tylenol Plus

Team Members

Sampada Dhungana
Bijay Prasai
Tanchhopa Limbu Sanba
Birochan Mainali

External Sponsors/Mentors

N/A

Internal Sponsors/Mentors

Dr. Stephanie Ludi
TA: Indira Devi Siripurapu

Abstract

Peer-to-peer transactions, such as used-car sales on platforms like Facebook Marketplace, often lack trust and security. Fraud, false documentation, and payment disputes make these transactions risky for both buyers and sellers. Artha Network addresses this problem by building a decentralized, AI-powered escrow platform on the Solana blockchain. Funds are held securely on-chain using USDC (SPL Token-2022), and users authenticate through Solana wallet connections (Phantom/Solflare). The system features a complete escrow lifecycle like deal creation, funding, release, and dispute resolution with an integrated AI Arbiter service that evaluates submitted evidence and generates cryptographically signed verdicts for on-chain execution. The backend is built with NestJS, Prisma ORM, and Supabase (Postgres), while the frontend uses Next.js with Tailwind CSS. Key capabilities include wallet-based authentication, multistep escrow creation, email invite flows, reputation scoring, evidence submission, and AI-driven arbitration. Artha Network demonstrates how blockchain and AI can be combined to create a trustless, transparent, and automated dispute resolution system for everyday peer-to-peer commerce.

We would like to thank Dr. Stephanie Ludi and TA Indira Devi Siripurapu for their guidance and support throughout this project. We also thank the University of North Texas College of Engineering and the CSCE 4901/4902 Capstone program for providing this opportunity.

UNT COLLEGE OF ENGINEERING

Team Members

Yogesh Ayer
Yam Kumar Karki
Diya Chataut
Abhie Koirala
Ashish Pudasaini

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

PlantAR is an iOS-based augmented reality (AR) educational application designed to improve plant biology learning through interactive experiences. Users can scan plant reference cards to visualize 3D plant models in real-world environments using ARKit, with interactive structures, educational content, and quizzes.

The system integrates Firebase Authentication and Firestore for secure user management, real-time data synchronization, and teacher-student interaction. Teachers can monitor student progress and engagement through a dedicated dashboard.

Development focused on system stability and usability, including AR model scaling, bug fixes, secure Firestore and implementation. All features were tested on physical devices, resulting in a stable, classroom-ready application that enhances science education through immersive, hands-on learning.

UNT COLLEGE OF ENGINEERING

Career-Coach

Team Members

Derya Ari
Burak Cakir
Selim Maral
Dario Dias
Dmitriy Pak

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi
Saba Jazi

Abstract

Career-Coach is a full-stack web application designed to help students and job seekers improve their career readiness through personalized, AI-supported tools. The platform combines resume analysis, keyword matching, and mock interview practice in one system to give users practical feedback for the job application process. Users can upload their resumes, compare them with job descriptions, and receive insights on how well their skills and experience align with employer expectations. The application also includes a mock interview feature that allows users to practice responding to interview questions and receive feedback on their performance. Built with a React frontend and Flask backend, the system focuses on usability, accessibility, and meaningful feedback. In addition, the project explores local large language model integration to support more flexible and private AI-assisted evaluation. Overall, Career -Coach aims to provide an interactive and supportive environment that helps users strengthen their resumes, build interview confidence, and better pre pare for real-world career opportunities.

UNT COLLEGE OF ENGINEERING

CircuitSimVR

Team Members

Christian Smith
Jakob Smith
Aydan Warren
Morgan WIlliams
Mason Willy

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

CircuitSimVR is a virtual reality circuit simulation game designed to teach basic circuit concepts to high school students through immersive, hands-on learning. Users explore concepts like current flow, Ohm's Law, and RC charging by building functional circuits from interactive components such as DC sources, resistors, LEDs, switches, and capacitors.

The simulation uses the SpiceSharp circuit analysis library to run real-time electrical models within Unity. A custom CircuitManager tracks changes in circuit topology, updates node connections, and runs transient simulations while maintaining stable performance in VR. Components can be manipulated directly, and electrical parameters can be adjusted in-game to observe how changes affect circuit behavior.

Overall, the system provides an interactive way to explore and understand circuits, giving students a safe virtual space to experiment with basic electronics concepts.

UNT Alumni Networking Tool

Team Members

Sangam Bartaula, Sachin Banjade, Abishek Lamichhane, Shrish Acharya, Niranjan Paudel

External Sponsors/Mentors

UNT College of Engineering - Dean's Office

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

The UNT Alumni Networking Tool addresses a major challenge for the UNT Dean's Office: the slow and manual process of connecting with alumni. Currently, staff must search for graduates individually, which makes it difficult to maintain consistent long-term relationships. Our solution is a custom web application that builds an organized and searchable directory of alumni information. The platform provides a centralized tool to browse, filter, and analyze data to drastically reduce the time and effort required for outreach. By offering data-driven insights and statistics, the system helps the Deans Office improve alumni engagement and create better mentorship opportunities for current students.

UNT COLLEGE OF ENGINEERING

Gait Analysis Clinical Tool with ML Parsed Video Input

Team Members

Michael Hill
Srinivasa Chivukula
Bracken Conner
Aghomi Dickson
Richard Wang

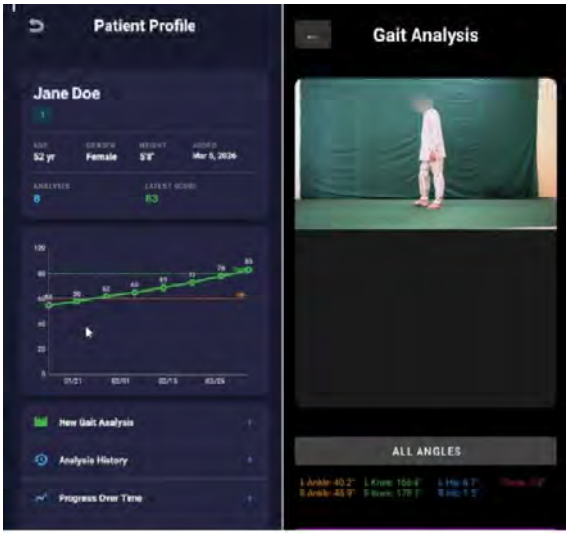
External Sponsors/Mentors

Dr. Mark V. Albert
Dr. Rita Patterson
Guna Sindhuja Siripurapu

Internal Sponsors/Mentors

Abstract

Gait impairments are common in patients recovering from injury or managing agerelated decline, but thorough gait analysis tools are often too costly for underfunded clinics.
This tool accepts pre-recorded or live video of patient gait and uses Google MediaPipe Tasks for pose extraction, producing skeletal wireframe visualizations, graphs, and a composite gait score computed via an autoencoder model. All inference, analysis, and storage run on device, enabling full offline operation and HIPAA compliant data handling. A relational patient database supports longitudinal tracking across sessions, and results export as PDF or CSV for clinical records and research use. The application is built on Kotlin Multiplatform targeting Android, with iOS through Compose Multiplatform. Pose extraction must succeed on at least 80% of frames for analysis to proceed. The intended users are clinicians in low resource settings who need an interpretable, reliable alternative to expensive commercial gait analysis systems.



UNT COLLEGE OF ENGINEERING

Parapest / Chore Xplorer

Team Members

Ethan Isaacs
Sinan Cakir
Metin Cakir
Faik Gokturk

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

Household chores can be complicated and frustrating to organize without an intentional procedure. Our solution to this problem is a simple game where children can take responsibility for getting things done around the house. Animals scattered around a forest themed platformer environment represent chores and rewards that are managed by the parents. Exploring the world and interacting with these animals is a fun way for children to explore their options and have ownership over how they are helping and what they can get in return.

As children use the game world to select the chores they do and the rewards they get, parents see it all with a behind-the-scenes dashboard. Parents have the capability to add and manage chores, confirm successful completion before points payout, approve reward requests, and much more. All information and power remains in the hands of the parents, yet the responsibility and fun is still retained by the children.

Phiktion

Team Members

Janiyah Wright
Breeana Page
Habeebat Adeyemo
Brianna Jackson
Comfort Teke

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr.Stephanie Ludi

Abstract

Habitat is a cross-platform mobile application designed to support habit formation and task management in children ages 6–13 through gamification and parental oversight. Modern distractions and a lack of structured reinforcement at home make it increasingly difficult for children to develop consistent routines. Habitat addresses this by offering a dual-interface system: a child-facing experience built around gamified task completion, a points system, and rewards, and a parent dashboard for task creation, reward creation, progress monitoring, and account management. Parents approve completions and define reward thresholds tied to a star-based point system, while children engage through icon-driven navigation and a customizable avatar that evolves with points gained. Built on React Native and Firebase, a unified codebase powers both iOS and Android, streamlining deployment, scalability, security, and cross-platform consistency.

Unplugged: Digital Detox

Team Members

Justin Zeller
Macie Maranto
Mario Onofrio
Austin Wilson
Parth Patel

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Ludi

Abstract

For individuals overwhelmed by constant digital distractions and seeking healthier tech-life balance, who struggle to reduce screen time and disconnect meaningfully, the “Digital Detox App” is a wellness and productivity tool that empowers users to reclaim focus and mental clarity through guided detox challenges, mindful notifications, and personalized usage insights. Unlike generic screen-time trackers, our product provides science-backed detox programs, community accountability, and habit-forming nudges to create lasting digital well being.

UNT COLLEGE OF ENGINEERING

Team Members

Jesselle Ballesil
Jack Crawford
Chet Hefton
Leann Kahal

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

Neurodivergent individuals, specifically those with ADHD or autism, may struggle with executive functioning, task management, and maintaining consistent eating habits. This project develops an Assistive Task Web App to improve both task and nutrition management for users with these needs. The app includes a WCAG-compliant UI, customizable reminders, AI-assisted task breakdowns, and integration with the USDA FoodData Central for nutritional information. The frontend is built with HTML, CSS, and JavaScript; backend and data storage use Firebase (Authentication, Firestore, Cloud Functions); external services are accessed via API calls to Google Gemini and USDA FoodData Central. Offline support are provided by a service worker and a web app manifest. In a 30-day pilot with 10 participants, we expect a 50% improvement in task productivity and in food-management habits. The Assistive Task Web App demonstrates the potential to increase user independence; future features will add personalized adaptive assistance and broader accessibility feature sets.

UNT | COLLEGE OF ENGINEERING

EagleGuide
Group 7

EagleGuide
UNT

Team Members

Ricardo Retana, Andrea Le, Tanis Morgan, Armando Valdez

External Sponsors/Mentors

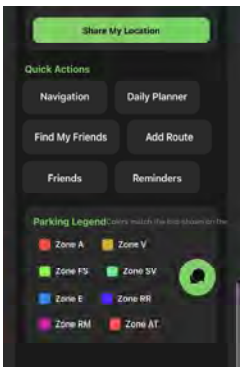
N/a

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

EagleGuide is a mobile application that focuses on navigation inside of UNT's campus. UNT is a large campus, which can be hard to navigate through for students. Our application aims to visualizes these specific buildings, its entrances, and specific accessibility entrances into one place that users can interact with. Furthermore, our application offers a feature to save specific navigation routes in between buildings for users to find directions between buildings they may navigate through often. This feature ties into our daily planner and reminders feature, which shows planned route schedules and sends notifications to users on when to start navigating throughout the day.
Additionally, our application has a friends feature that can show schedules of other people. In some cases, remembering friends' schedule may be tedious. This feature helps people plan meet-ups with their friends based on schedule availability.



UNT Marketplace/Gold Team

Team Members

Daniel Echevarria
Akeel Hanchard
Jeffery Holmes
Justin Nguyen
Julian Ondrey

External Sponsors/Mentors

Internal Sponsors/Mentors

Indira Siripurapu

Abstract

Whether you're a freshman just starting out their first year at UNT, a senior that's closing in on graduation, or even a professor teaching another semester, purchases are required from all parties at a university for a successful semester. The UNT Marketplace is an online platform that allows current students and faculty to buy and sell items to each other, similar to Facebook Marketplace, Craigslist, and Offer-up. However, access t< the marketplace requires a current and valid UNT email address. A verified UNT e-mail address may provide a higher sense of security given the fact that you are a current university student or instructor.

UNT COLLEGE OF ENGINEERING

Climbr
Team Git Rich

Team Members

Aymen Beshir
Kaden Mcclung
Clinton Nguyen
Kathryn Sheahen
Thane Tate

External Sponsors/Mentors

Internal Sponsors/Mentors

Saba Jazi
Dr. Stephanie Ludi

Abstract

Existing apps that help rock climbers track progress are often clunky, complex, and inefficient for quick use during a climbing session. This project presents a minimal, user friendly mobile application designed to make tracking climbing progress quick and easy. This app allows users to log climbs, gain insights through analytics and attach photos and videos to document performance over time. With a focus on clean UI/UX design, this app provides intuitive progress tracking to help climbers monitor improvement and stay consistent ir their training.

AlergiAI

Team Members

Rosie Nguyen
Jiya Singh
Stuti Patel
Krishna Reddy
Jeffry Sanchezdelacruz

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

AlergiAI is a cross-platform mobile application built with React Native and Expo that helps individuals with food allergies tracking, analyzing, and managing their dietary health. Users can log meals through text input or camera-based food label scanning, powered by the Google Gemini 2.0 Flash API for real time AI ingredient and allergen detection. The app correlates logged meals with reported symptomps using a severity-weighted risk scoring algorithm, providing personalized insights into allergen exposure patterns over time. Built on an offline-first architecture with Firebase Firestore synchronization, AlergiAI supports features including multi-tier allergen severity tracking, symptomp correlation analytics, customizable push notification reminders, emergency contact management, and medical report exports in CSV format for healthcare providers, all within a bilingual English and Spanish interface across IOS and Android.

UNT COLLEGE OF ENGINEERING

Plantify

Team Members

Addison Nally
Azeezat Akinboro
Chase Wright
Ian Jackson
Thien Thanh Truong

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

Plantify is an AR mobile app designed to help kids with learning about plants and their parts. It is supposed to encourage learning of plant parts by adding AR and fun elements to the learning process. By allowing the user to learn in this way, it can keep the kid engaged and more excited to learn.

UNT COLLEGE OF ENGINEERING

Project Clara

Team Members

Abeer Syed, Abraham Abebe, Douglas Borovina, Hayat Dahraj, & Jacob Gallagher

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi
Indira Siripurapu
Saba Jazi

Abstract

Project Clara is a cross-platform mobile application built for real-time school communication between parents and teachers. Clara provides role-based portals where parents can track their children's attendance, grades, schedules, and receive live updates, while teachers can manage classrooms, take attendance, post announcements, and communicate directly with guardians.

Built with React Native and Expo for iOS, Android, and Web. Powered by a serverless AWS backend with real-time GraphQL subscriptions. By integrating academic tracking with direct messaging in a single platform, Clara fosters effective collaboration between educators and families.

UNT COLLEGE OF ENGINEERING

VR Blocks

Team Members

Jack Coker
Drew Daffern
Jabari Freeman
Harriet Mangum
Nathaneal Pape

External Sponsors/Mentors

Internal Sponsors/Mentors

Stephanie Ludi
Saba Jazi
Indira Devi Siripurapu

Abstract

Learning to code presents a significant barrier for many first-time programmers, particularly when instruction relies on abstract, text-based interfaces. VR Blocks addresses this challenge by embedding programming education within an engaging virtual reality environment that prioritizes tangible, visual interaction. Two interaction modes are supported: a full-immersion block-manipulation mode and a streamlined point-and-click interface, accommodating users of varying comfort levels while constructed logic is displayed simultaneously as syntax code. The application features a progressive curriculum of over fifteen levels in which users program a turtle to navigate terrain toward a goal, with increasing complexity introducing control flow constructs including loops, conditional statements, and user-defined functions. Tutorials, hints, and a code-block dictionary provide continuous in-application support. A fully featured sandbox mode invites creative exploration, allowing users to design, play, and export custom levels within a grid-based environment.

UNT COLLEGE OF ENGINEERING

Code Cook

Team Members

Alexander Surma
Alex Sutton
Abdul Hashmi
Jihad Hamad
Zackary Wehbe

External Sponsors/Mentors

N/A

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

Playlist'd is a music based social platform app where users can discover and discuss songs through ratings and reviews. It is designed to combine personal song interest tracking with new and community-based music recommendations, giving users a polished space to build their profile, share ratings and song taste, and explore artists and releases through credible, user-driven feedback.

UNT COLLEGE OF ENGINEERING

Code Innovators

Team Members

Gautam Aryal
Rezwanur Rahman
Allen Pandey
Aasmi Joshi
Sworup Bohara

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi
Indira Devi Siripurapu

Abstract

People with disabilities often rely on fragmented, expensive tools that are poorly designed for their requirements. AccessAid is a free mobile application that unifies voicedriven navigation, real-time text extraction using optical character recognition, an AIpowered health assistant, and a community space for users to connect, chat, and share experiences with others facing similar challenges. Built on a serverless cloud architecture for scalability and reduced maintenance overhead, the app supports screen readers, dynamic text scaling, haptic feedback, and safety features such as an SOS emergency button, all in compliance with WCAG 2.2 AA accessibility standards. Through seven iterative development sprints and continuous user feedback, our team refined AccessAid into a practical tool that helps users to complete daily tasks more independently.

UNT COLLEGE OF ENGINEERING

Capstone Crew:
AI-Powered Digital Twin

Team Members

Pranav Dubey
Grayson Allo
Michelle Iyiegbu
Torian Ellis

External Sponsors/Mentors

Anirudh Nimmagadda

Internal Sponsors/Mentors

Abstract

The AI-Powered Digital Twin allows clinicians to input in biometrics of the patient, any medical history from the patient (select few histories are provided currently), any current medication being taken by the patient (select current medications provided currently), and simulate possible ADE's when tested against a medication the patient is about to be prescribed. The clinician inputs all biometrics of the patient, then types in what medication they are prescribing for the patient. Our AI model will then go fetch all required data about the prescribed drug by scanning through multiple publicly accessible online databases and will then calculate the risk of ADE's based upon the patient data, drug data, and desired dosage/frequency. The model will also provide what it believes to be the desired dosage/frequency based on all the data so if there are risks of ADEs, then the system provides a reasonable dosage/frequency amount to eliminate a large amount of guess work by clinicians.

UNT COLLEGE OF ENGINEERING

ASEJE: Beginner-Friendly Python Debugging Extension for VS Code

Team Members

Anuj Jyakhwa, Sulav Adhikari, Ethane Bone, Evan Rodriguez, Jin Twomey

External Sponsors/Mentors

N/A

Internal Sponsors/Mentors

Stephanie Ludi

Abstract

ASEJE is a Visual Studio Code extension designed to help beginner programmers understand Python debugging more easily. The project creates a user-friendly environment with features such as guided walkthroughs, improved hover support, sidebar tools, and debugging assistance. The goal is to simplify debugging for students who may find traditional tools difficult to use. During this phase, the team focused on implementing core features, improving usability, and testing the interface to better support beginner.

UNT COLLEGE OF ENGINEERING

Quad Net - MYRA: AI-Powered Smart Wardrobe Assistant

Team Members

Priteesh Madhav Reddy Karra
Rishi Raj Kanukuntla
Snehitha Paruchuri
Aashish Thapa Magar

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Stephanie Ludi

Abstract

MYRA is an AI-powered wardrobe assistant designed to simplify the outfit selection process. It suggests clothing based on factors like weather, location, and personal style preferences, helping users save time and reduce decision fatigue. By learning from user choices, MYRA continuously improves its recommendations, offering more personalized suggestions over time. The app also allows users to manage their wardrobe digitally, discover new outfit combinations, and make the most of their existing clothing. Overall, MYRA combines convenience, style, and practicality, offering a smarter, stress-free way to enhance personal style every day.

In addition, MYRA tracks a virtual wardrobe and recommends outfits for different occasions. Its intuitive interface makes choosing outfits quick and easy, saving users time.

UNT COLLEGE OF ENGINEERING

Savvy Coders
Savvy Track App

Team Members

Bibek Bhujel, Isha Basnet, Ajay Babu, Lucus Wormington, Subhash Galla

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

Savvy Tracker is a mobile application that help users better understand their nutrition and manage food-related health concerns. The app provides detailed nutritional and ingredient information for foods through multiple methods, including image recognition, barcode scanning, and search functionality. It also alerts users when a food contains ingredients, they are allergic to, helping them make safer dietary choices.

In addition, Savvy Tracker allows users to log their daily food intake and monitor key nutritional metrics such as calorie consumption. By tracking meals over time, users can gain insights into their eating habits and overall health. The app also features an interactive chatbot that enables users to ask questions related to food, nutrition, and wellness, making it a comprehensive tool for informed and personalized dietary management.

SenScribe Accessibility App
Team STARK

Team Members

Reewaz Rijal
Kaushik Naik Guguloth
Spencer Russell
Tamerlan Khalilbayov

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

Everyday sounds—alarms, voices, warnings—are critical to safety, yet often inaccessible to people with hearing impairments. For individuals with hearing impairments, existing alternatives such as sign language, visual cues, or specialized alert systems can help, but they also have clear limitations. Some require the user to remain within sight, while others depend on extra hardware or advance setup. Because of this, important sounds, spoken words, and emergency warnings can still be missed.

SenScribe is a mobile application designed to improve safety, awareness, and independence for people with hearing impairments. It provides real-time environmental sound classification, live speech-to-text transcription, and text-to-speech support, helping users better understand both their surroundings and conversations. The app also includes customizable trigger-word alerts, user-trained custom sound recognition, saved history, and on-device AI summarization of transcribed content. By processing data locally on the device, SenScribe works offline while protecting user privacy. Its goal is to ensure that hearing impairment does not limit a person's ability to stay informed, communicate effectively, and move through daily life with confidence.

UNT COLLEGE OF ENGINEERING

ShipSmart

Team Members

Isaac Fynn
Noah Coon
Terry Walter

External Sponsors/Mentors

Fedex – Katrina Johnson

Internal Sponsors/Mentors

Abstract

This project presents the development of ShipSmart, a supply chain logistics application designed to optimize shipment management and improve operational efficiency. The system integrates data tracking, routing optimization, and real-time visibility to address common inefficiencies in logistics operations. ShipSmart enables users to monitor shipment status, analyze logistics data, and make data-driven decisions to enhance performance. The application is built using modern software development practices, focusing on scalability, usability, and system reliability. By improving transparency and reducing delays in the supply chain, ShipSmart provides a practical solution for efficient logistics management.

UNT COLLEGE OF ENGINEERING

MYTECH: SILVERFINDER

Team Members

Jade Mitchell, Joshua Yao, Rachel Townsend, Hannah Clethen, Miles Hannah

External Sponsors/Mentors

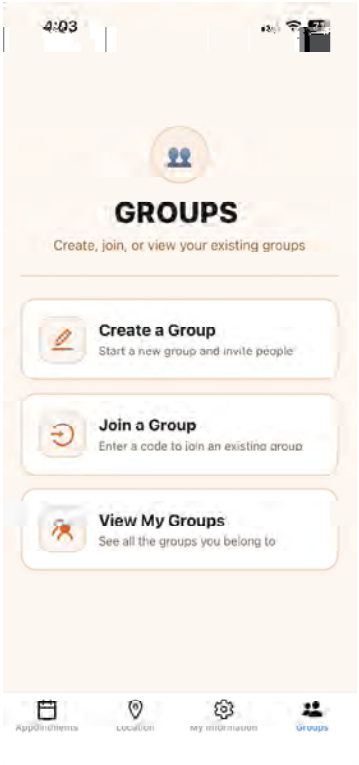
N/A

Internal Sponsors/Mentors

David Keathly

Abstract

The growing use of technology among the older demographic of users is transforming the way caregivers and families are taking care of their elderly loved ones. With an aging population, and an increased number of individuals with cognitive impairments among seniors, the risk of elders going missing is a significant concern. Although there are applications and services like Life360 and silver alerts that help with finding loved ones, our application provides a robust, multi-functional, and secure platform that combines these functionalities. Silver Finder aims to provide a user-friendly digital solution that allows families and care takers the ability to not only track their seniors location, but also notify communities, contact law enforcement, and release auto generated missing posters at the push of a button. Thus, facilitating easy identification in the case of an emergency.



UNT | COLLEGE OF ENGINEERING

Scrum of the Earth
FarmRa Project




Team Members

Phuong Luu
Blake Zadeh
Camden McCoy
Henry Atterberry

External Sponsors/Mentors

Internal Sponsors/Mentors

Dr. Jacob Hochstetler

Abstract

Small to mid-scale agricultural operations lack affordable tools for real-time, field-wide environmental monitoring, forcing crop management decisions to be made without reliable soil data. This project addresses that gap through a distributed wireless sensor network capable of continuously measuring soil moisture, ambient temperature, light intensity and node battery state across a deployed field area.

Each sensor node is built around a low-power ESP32 microcontroller paired with a LoRa transceiver, enabling long-range transmission to a central gateway without dependency on existing network infrastructure. Nodes operate on battery power with deep sleep scheduling to maximize field lifespan, and all collected data is aggregated and presented through a web-based dashboard providing farmers with real-time and historical environmental readings. The system further supports on-demand sensor polling, low-battery alerting, and is housed in a custom-designed stake enclosure for direct ground

UNT COLLEGE OF ENGINEERING

Surface Velocity Radar (SVR)

Team Members

Serhat Erdogmus
Funminiyi Oluwaniyi
Barbara Martinez-Guerrero

External Sponsors/Mentors

Applied Concepts
Thu Nguyen

Internal Sponsors/Mentors

David Keathly

Abstract

This project focuses on the design and development of a web-based portal for the Surface Velocity Radar (SVR) system used in water monitoring and environmental analysis. The system collects velocity data, which is then parsed, stored, and visualized through an interactive web interface. The platform enables users to configure the device and monitor real-time data through clear graphical representations. The project integrates a full data pipeline, including a parser, backend API, database, and frontend dashboard, to provide accurate and efficient data management. Additional features such as calibration tools, logging, and analytics improve usability and support better decision-making. Overall, this project demonstrates practical skills in full-stack development, hardware integration, and data visualization while addressing real-world challenges in water flow monitoring.

UNT COLLEGE OF ENGINEERING

TaskBlast

Team Members

Daniel Garcia
Sarah Lawton
Jacob Pavlick
Joshua Shapiro
Joey Ryan Suliguin

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly (Sponsor/Professor)
Avijeet Shil (Mentor/TA)

Abstract

TaskBlast is a mobile application designed to assist children and neurodiverse individuals in improving time management, task completion, and routine-building skills. The app combines task management tools with gamification elements such as rewards and mini-games to encourage engagement and focus. TaskBlast incorporates the Pomodoro Technique to structure work cycles, with a customizable amount of work being rewarded with a similarly customizable amount of play. The app is designed around a retro space theme, with pixel art and music made by our team members. To encourage broad and accessible use, TaskBlast features many accessibility options (including colorblind modes, language settings, and text-to-speech) as well as a parental-managed mode. TaskBlast is planned to be released to the iOS App Store and the Google Play Store.

To-Do List

Team Members

London Haith
Deevya Patel
Johnathan Dorsey
Samwel Makyao
Ryan StClair

External Sponsors/Mentors

N/A

Internal Sponsors/Mentors

David Keathly
Raushan Pandit

Abstract

This project serves to create an innovative and new to-do list style application. Many people have to-do lists, but may struggle to follow through with actually completing tasks, staying on track, or even using their application once they have them. This app works to solve this by having set notifications based on the task at hand, style of task, task intensity, or even the time period (morning, afternoon, night, etc) of when the task needs to be completed. Additionally, it offers an easy to use AI feature to help create tasks and keep you on track. This application differs greatly from others by taking these approaches to making task lists simple to create while having a system sophisticated enough to keep using.

UNT Marketplace/Gold Team

Team Members

Daniel Echevarria
Akeel Hanchard
Jeffery Holmes
Justin Nguyen
Julian Ondrey

External Sponsors/Mentors

Internal Sponsors/Mentors

Indira Siripurapu

Abstract

Whether you're a freshman just starting out their first year at UNT, a senior that's closing in on graduation, or even a professor teaching another semester, purchases are required from all parties at a university for a successful semester. The UNT Marketplace is an online platform that allows current students and faculty to buy and sell items to each other, similar to Facebook Marketplace, Craigslist, and Offer-up. However, access t< the marketplace requires a current and valid UNT email address. A verified UNT e-mail address may provide a higher sense of security given the fact that you are a current university student or instructor.

UNT Navigation Web-Application

Team Members

Umang Patel
Sarthak Shrestha
Nikhil Karki
Manuel Lopez

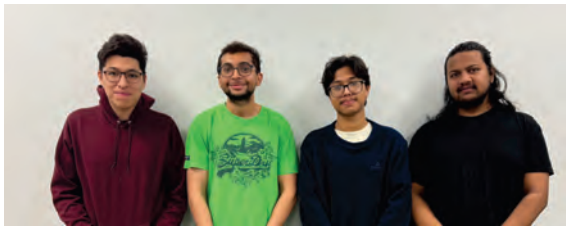
External Sponsors/Mentors

Internal Sponsors/Mentors

Mr. David Keathley

Abstract

As UNT grows, new students, staff, and visitors often find it hard to get around campus, keep track of classes, and stay updated on events. Our web app helps users navigate the campus, view and add events, manage schedules, and connect with friends, making it easier to plan their day and explore campus life. What makes it unique is that it combines basic navigation with social and event features, giving users a simple way to stay organized and connected in one place.



UNT COLLEGE OF ENGINEERING

UNT AR Navigator

Team Members

Edidiong Anwan
Aimua Ilogienboh
Priscilla Osineye
Tedros Tecle
Vicky Wainaina

External Sponsors/Mentors

Internal Sponsors/Mentors

Abstract

This project focuses on creating a 2D navigation system that can run on a website. Users select a starting point and a destination on a 2D map, and the system calculates the most efficient route between them. If a selected point doesn't match a pre-existing path (Waypoints), the system temporarily treats the click itself as a navigable point, ensuring the path always reaches the desired location. The navigation is designed to feel smooth and intuitive, avoiding unnecessary backtracking, and the path is displayed clearly on the map so users can easily follow it.

UNT | COLLEGE OF ENGINEERING

Vellora

Team Members

Kyi Bell
Marcelo Gonzalez
Sara Nurdil
Daiduong Dinh
Ronald Perez
Aseel Shaheen

External Sponsors/Mentors

Internal Sponsors/Mentors

David Keathly

Abstract

Tracking business expenses can be time-consuming and frustrating. Remembering collecting your receipts, keeping track of receipts, and remembering how much your mileage was is critical information that can be hard to keep track of. For a busy professional on a business trip, all of these records can be a burden to keep in mind while focusing on your work or even enjoying downtime when you have it. Without accurate descriptions of your expenses you risk reimbursement being delayed or incorrect. Vellora aims to simplify and automate the expense tracking process, reducing the need for manual entry and ensuring people get reimbursed fairly and efficiently.

UNT COLLEGE OF ENGINEERING

VESTA
Virtual Economic Simulator and Trust Assessment

Team Members

Asmitha Dhamodharan
Emma Tripp
Heather Schoonmaker
Oscar Truillo Montoya
Richa Kumari

External Sponsors/Mentors

Michael D. Barnett
Joel A. Zamora

Internal Sponsors/Mentors

David Keathly
Jacob Hochstetler

Abstract

A novel web application to measure financial scam vulnerability.
How would you design a game that protects older adults from financial scams?
Financial exploitation is one of the most pressing issues facing older adults, yet traditional paper-and-pencil measures often fail to capture the real-world decision-making processes that underline vulnerability. That's the idea behind VESTA. In this virtual economic simulator, participants manage purchases, utility bills, and simulated social interactions, allowing us to measure financial decision-making and susceptibility to scams in ways that are both engaging and ecologically valid.
We are proud to present and help develop a tool that can one day help vulnerable populations identify and prevent financial exploitations.

UNT COLLEGE OF ENGINEERING

Visual Studio Extension

Team Members

Lucas Lira
Sterling Hardy
Dhanush Reddy Donuru
Vineeth Reddy Maramreddy
Sai Teja Reddy Shaga

External Sponsors/Mentors

Internal Sponsors/Mentors

Jacob Hochstetler

Abstract

Our project is a Visual Studio code extension that allows a professor to create interactive lessons for their students inside of Visual Studio Code. The extension signs in the user automatically and allows instructors to upload videos, add annotations for code that the students can read, and create quizzes that students can answer and submit. The extension also allows for a selected code section to be explained by an LLM agent. The extension uses a SQLite database making it fully locally hosted, allowing for a more secure extension.

UNT COLLEGE OF ENGINEERING

VR Blocks

Team Members

Jack Coker
Drew Daffern
Jabari Freeman
Harriet Mangum
Nathaneal Pape

External Sponsors/Mentors

Internal Sponsors/Mentors

Stephanie Ludi
Saba Jazi
Indira Devi Siripurapu

Abstract

Learning to code presents a significant barrier for many first-time programmers, particularly when instruction relies on abstract, text-based interfaces. VR Blocks addresses this challenge by embedding programming education within an engaging virtual reality environment that prioritizes tangible, visual interaction. Two interaction modes are supported: a full-immersion block-manipulation mode and a streamlined point-and-click interface, accommodating users of varying comfort levels while constructed logic is displayed simultaneously as syntax code. The application features a progressive curriculum of over fifteen levels in which users program a turtle to navigate terrain toward a goal, with increasing complexity introducing control flow constructs including loops, conditional statements, and user-defined functions. Tutorials, hints, and a code-block dictionary provide continuous in-application support. A fully featured sandbox mode invites creative exploration, allowing users to design, play, and export custom levels within a grid-based environment.

WASM

Team Members

Gangidi Sritan Reddy
Benjamin Wilson
Shivam Shakthivel Pandi
Biraj Sharma
Ololade Naomi Awoyemi

External Sponsors/Mentors

Internal Sponsors/Mentors

Jacob Hochstetler

Abstract

The WASM as OS project is a web-based sandbox environment designed for testing suspicious code. Users can test code safely without installing a virtual machine, preserving storage space on their devices. Rather than relying on existing .wasm engines, the platform operates on a proprietary, custom-built environment tailored specifically to client needs. This WASM environment is fully accessible through a web UI and boasts robust features, including scheduling, multitasking, and reportable runtime metrics.

UNT | COLLEGE OF ENGINEERING

@UNTEngineering

engineering.unt.edu
940-565-4300