College of Engineering

R&D Expo

University of North Texas

SENIOR DESIGN

Spring 2025

COLLEGE OF ENGINEERING
Department of Computer Science & Engineering

INFORMATION TECHNOLOGY
Senior Design Abstracts
Spring 2025

Cybersecurity Scenario Generator

Team Members

Michael Hoover
Zachary Jones
Stephanie Molina
Jared Diosdado

External Sponsors/Mentors

Internal Sponsors/Mentors

David Hochstetler

Abstract

The Cybersecurity Scenario Generator project centers on the development of an interactive and dynamic tool for middle school and high school students to develop investigative learning experiences. By investigation of digital evidence in virtual artifacts, students will solve cybersecurity-themed mysteries, which will enhance their critical thinking and problem-solving abilities. Teachers will input the necessary inputs, such as a school mascot, school location, and rival school team, in order to generate scenario-specific learning materials automatically. These learning resources will include PowerPoint presentations, disk images with electronic clues, and quizzes, such that lesson preparation will be simple and encourage experiential learning. A user-friendly interface will offer access for instructors of varying technical abilities. Success of the project will be determined with regards to usability and teachers' feedback, demonstrating its success in enhancing cybersecurity training.

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Eagle Nexus Collective

Team Members

Bibi, Diego, Hunter, Jakob, Tanner

External Sponsors/Mentors

N/A

Internal Sponsors/Mentors

David Keathly
Jacob Hochstetler

Abstract

This capstone project involves designing and developing a new automation tool to replace Ansible. Written in a more concurrent and performant language such as Go or Rust, the tool aims to overcome Ansible's performance bottlenecks, specifically in large-scale infrastructures where concurrency and speed are critical. The goal is to replicate Ansible's core functionality, optimize performance, and allow compatibility with existing Ansible playbooks to provide a smooth transition for users.

Goat Observation and Assessment Technology (G.O.A.T).

Team Members

Albert Kileo
Jack Follett
Jesus Chavez

External Sponsors/Mentors

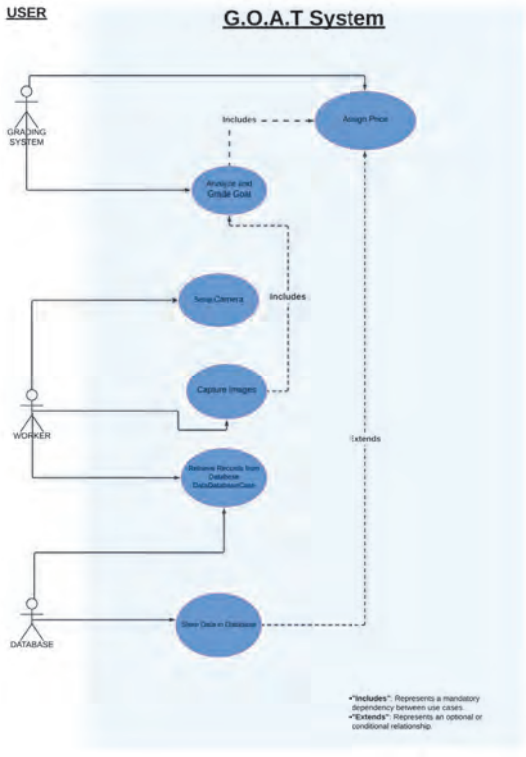
Clean Chickens and Co. LLC
Rebecca Wierschke (CEO)

Internal Sponsors/Mentors

University of North Texas (UNT)
David Keathly (Senior Project Manager/Professor)

Abstract

The Goat Observation and Assessment Technology (G.O.A.T.) project provides a straightforward software solution that uses advanced image recognition to automatically grade and price goats.
The system captures clear goat images from three camera angles—front, side, and above—and quickly analyzes their physical qualities like size, shape, and fat distribution. It then assigns accurate quality grades and fair prices immediately.
All grading results, breeder details, goat weights, and additional notes or images can be securely stored and easily accessed through a simple, user-friendly SQL database. G.O.A.T. makes goat assessment quicker, easier, and more consistent, even for users with limited technical experience, significantly improving efficiency and record-keeping accuracy.



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HTTP418

Team Members

Kevin Le
Emma McKenzie
James Hebert
Sam Hargrave
Evan Press

External Sponsors/Mentors

Brandon Jones Photography

Internal Sponsors/Mentors

David Keathly

Abstract

Brideline is a one-stop-shop for brides and grooms seeking the perfect vendors to bring their happily-ever-after to life. Serving as both a vendor directory and a wedding planning tool, the platform revolves around listings created by vendors who register on the site. What sets Brideline apart is its easy-to-use, minimalistic, ad-free design.
The goal of this project is to execute a comprehensive overhaul of the existing marketplace, enhancing the user experience in line with Brideline's founding principles. Built on WordPress and hosted through WPEngine, key improvements include dynamic vendor listings with enhanced visuals, advanced search and filtering capabilities, and dedicated business pages integrated with multiple APIs. Additional enhancements focus on streamlining the registration and log-in processes, bolstering security measures, and improving account and listing management.
A major innovation is the interactive "Bride Guide," designed to help brides identify their preferences and simplify wedding planning.

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Team Pioneers - FleetTrack

Team Members

Nathaly Pineda
Geoffrey Mathenge
Daniel Onwuka
Alex Sims

External Sponsors/Mentors

Grace K. , South Link Logistics LLC

Internal Sponsors/Mentors

Professor David Keathly

Abstract

FleetTrack is a web application designed to streamline the management of trucks, drivers, and trailers. The web application provides the company with quick access and easy navigation to important data regarding their business operations.

The frontend, which provides a responsive and user-friendly UI, was completed using Typescript with Angular, HTML, and SCSS. For the database, which stores important information such as driver and vehicle information, we went with Microsoft SQL Server.

Rainbow Garden Interactive Game Board

Team Members

Luis Reyes
Ahmad Roussan
Samixa Rajopadhyaya
Sanjay Chauduary

External Sponsors/Mentors

Ryan Garlick

Internal Sponsors/Mentors

David Keathly
Chef Cathy

Abstract

The Rainbow Garden Interactive Game Board is an informative and entertaining digital learning aid for kids. It will educate kids about healthy eating in an engaging manner and be a part of Chef Cathy's website, "Eat Like The Rainbow." Quizzes, riddles, and information about wholesome eating will all be included in the game board's visually appealing layout. With an emphasis on user interaction, accessibility, and young users' ease of understanding, this draft design delineates the fundamental components and framework required to create a successful gaming board. The Board Game will assist in provide a fun way of learning about Food for kids ages through 5 to 10.

Straight up Roofing

Team Members

Zachary Dipaula, David Ene-Ita, Nabigh Lalani, Pranay Munikuntla, Muhamed Ibrahim, Andres Sandoval

External Sponsors/Mentors

Kyle Kelly

Internal Sponsors/Mentors

David Keathly

Abstract

This project streamlines StraightUpRoofing's operations by merging multiple platforms into a single, user-friendly system. It integrates project management, financial tracking, and media storage while ensuring accessibility on both desktop and mobile devices. Key APIs like Google Calendar and Sheets will enhance scheduling, financial organization, and compliance. Designed for ease of use, the platform simplifies workflows, boosts efficiency, and improves the experience for both employees and customers.

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Tech Support

Team Members

Zachary Gilbert, Jonathan Dorf, Juan Herrera, Michel Lopez, Chase Neumann, Trevor Sims

External Sponsors/Mentors

Gravity

Internal Sponsors/Mentors

David Keathly

Abstract

This is a web-based Contact and Event Management System for Gravity. The system will streamline volunteer management, donor tracking, event setup, and contact communication. It integrates features like account creation, administrative control, calendar functions, and a custom database for tracking interactions and events.

Gravity currently lacks a structured way to track contacts, donations, and volunteer involvement. The process of event setup and communication is manual, leading to inefficiencies in tracking contributions and appropriate follow-ups. This system will streamline these processes, reducing errors and improving the user experience.

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@UNTEngineering

engineering.unt.edu
940-565-4300