Senior Projects

## Department of Computer Science

GROVE CITY COLLEGE

April 2022
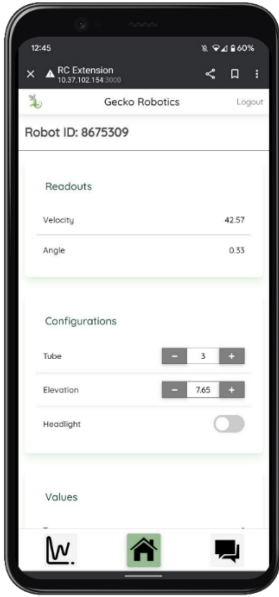
Robot Control Extension is a web application that works in tandem with Gecko Robotics' desktop application and gives users limited control of their robots across a diverse range of platforms. Users can edit parameters and view robot configuration values. They can also view the robot sensor's data and utilize the chat to communicate with other users.

Alex Chen, Isaac French, Matthew Hay, Tim Kratz

Client: Gecko Robotics
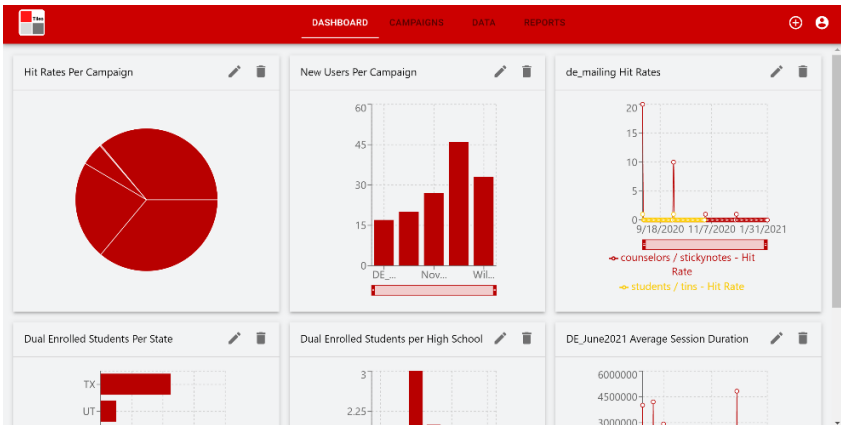
Tileo is a web application that empowers college employees to make improved marketing decisions to increase student enrollment and return on investment. Authorized users can track and analyze the effectiveness of targeted marketing materials sent to high schools, upload raw data from approved sources, and customize visualizations of the aggregated data on their home page. They can also opt in to receive useful analytics reports in their inbox at selected intervals.

Nathan Fulton, Dana Reigle, Katherine Spaan, Carly Williams

Client: Grove City College Department of Graduate and Online Programs

The **Grove City Christian Academy Lunch Ordering System** is designed to replace a manually managed ordering system by connecting parents and administration with a streamlined lunch ordering experience. Parents can make orders on the web and pay via credit card, and administration can track lunch orders and print out a variety of necessary reports for managing the lunch program.

Sydnee Charles, Aric Cox, Trenton Clauss, Josh Smeltzer

Client: Grove City Christian Academy

Find-A-Tutor is a web application to improve the process of finding tutors and becoming a tutor on college campuses. In addition to normal appointment scheduling, students can find the office hours, office location, and syllabi for their professors and classes. Tutors can customize the rate they charge relative to each class and change their availability at any time. Administrators can easily upload information, like professors and classes, for the semester.

Isaac Apel, Nathan Beam, Aaron Sickafuse, Timothy Warner
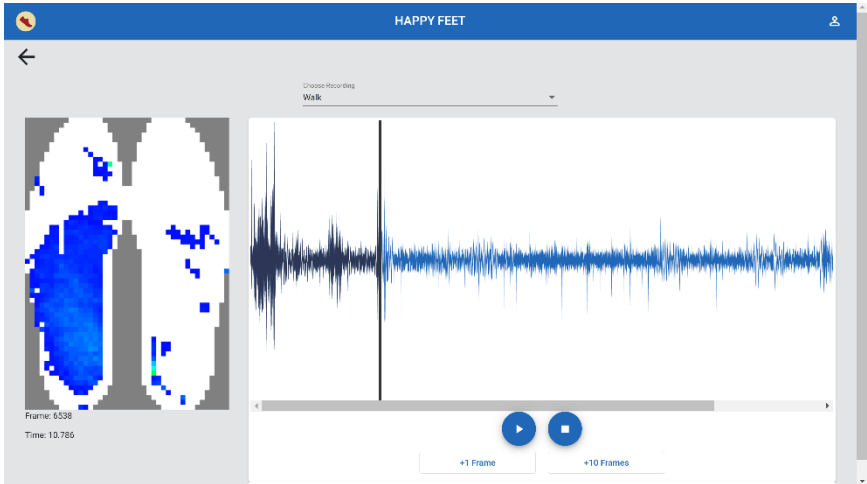
Happy Feet helps researchers assess the biomechanical health of patients based on their footsteps on a treadmill, aiding with data collection, visualization, and analysis. While subjects are on a treadmill, a desktop application gives researchers an easy way to collect pressure and audio data synchronously. A web application allows researchers to analyze the data via synchronous playback of the pressure and audio recordings, as well as view computed statistics for the recorded data.

*Timothy Dietsch, Luke Greenway, Patrick Kriley, Tirzah Lloyd*

Client: Highmark Health, Grove City College Departments of Mechanical Engineering and Exercise Science

CyberSafe is a system to detect cyberbullying messages sent from a child's Android device using a sophisticated, proprietary machine learning algorithm. CyberSafe's keylogger continuously monitors and analyzes any messages sent from the phone, alerting parents via email when cyberbullying is detected. CyberSafe includes a Google Chrome extension with which volunteers can submit examples of cyberbullying they see online. These examples are vetted using CyberSafe's online reviewing platform before being used to improve the accuracy of the machine learning algorithm.

Ryan Betz, Caleb McKinney, Harrison Peñaflor, Tanner Strange

Client: Smith Micro Software
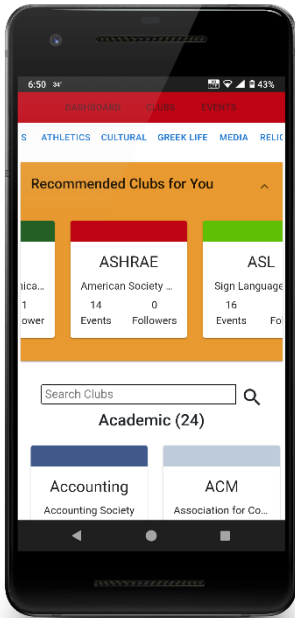
Club Catalog is a cross-platform web app for students looking to get involved in campus organizations. Users can find and follow new clubs and RSVP for associated events. An elastic search and a responsive recommendation algorithm helps students find clubs and events that interest them. Club officers can personalize their organization's profile page and create events to generate interest in their community.

Philip Applegate, Jonah Boling, Matthew Moody, Charles Petrongolo

GrovExchange is a mobile-first web app designed for Grove City College students looking to buy and sell textbooks to other students. GrovExchange prioritizes the safety and anonymity of students, allowing them to connect with others virtually before choosing to meet in person to complete transactions. This app aims to assist students in selling and purchasing used textbooks from their peers at a reasonable price.

Enoch Andreades, Paul Hodge, Caleb Johnson, Max Pargeon
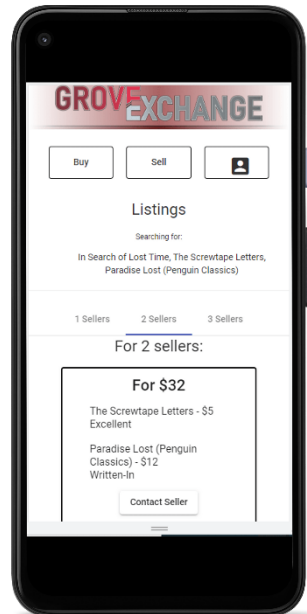
Outstanding Computer Science Senior Award

In recognition of a graduating senior's academic achievements and service to the department and community

Tirzah Lloyd will graduate *summa cum laude* with a Bachelor of Arts in Computer Science and minors in Cybersecurity and Psychology. Her senior capstone project helps researchers assess the biomechanical health of patients from their footsteps on a treadmill, a collaboration with Highmark Health and the Mechanical Engineering and Exercise Science departments at the College. Tirzah is a member of the varsity soccer and lacrosse teams, serving as captain of the soccer team and earning Academic All-America honors and First Team All-Conference honors. In 2021, she completed an internship at Syneos Health, where she improved the structure and usability of the cloud application controls and helped build out the web firewall. After graduation, she will be working as an Associate Technical Consultant at SAS in North Carolina.

Dana Reigle will graduate *summa cum laude*, earning a Bachelor of Science with a double major in Computer Science and Mathematics. Her senior capstone project enables College staff to visualize and track the effectiveness of marketing materials sent to high schools, synthesizing data about the marketing materials, college web site traffic, and students applying to and enrolled at the College. Her mathematics senior seminar project examined Pollard's rho method for finding prime factors of large numbers, an important problem in cryptography. Dana served for two years as Treasurer of the department's student organization, the ACM, and one year as Treasurer of Kappa Mu Epsilon, a math honorary society. In 2021, she completed an internship at SonSet Solutions, which works with other ministries to provide technology-based solutions to advance the Gospel worldwide. As part of that internship, she overhauled their databases, making a new design that could track changes to the data over time. She is pursuing employment in the DC area after graduation.