

# Senior Design Day 2016

April 29, 2016

Discovery Park

# Computer Engineering, Computer Science and Information Technology

9 AM- 12 PM presentations on **second level**

Presentations beginning at 1 PM:

Computer Engineering	<b>B190</b>
Computer Science	<b>D215</b>
Information Technology	<b>D215</b>

# COMPUTER ENGINEERING

**Team Name:** Animaniacs

**Sponsor:** James Buchanan

**Program/Department:** Computer Science & Engineering

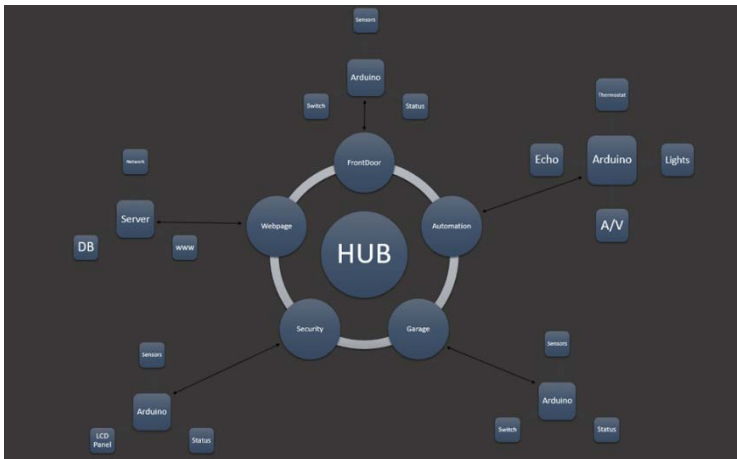
**Team Members:**

David Samaniego

Sebastian Riojas

Ester Lee

Tailyr Mack



Our Adaptive Home Automation System is a technology to improve overall home efficiency. We are devoted to create a system that can adapt and improve to a homeowner's lifestyle. By using a combination of hardware components and software, it tracks the homeowner's movements from one room into another. With every data of the homeowner's movement, our software will then be able to make choices on its own to create an environment that is at the homeowner's most convenience. The homeowner can also create their own lifestyle to their liking and override certain automation's.

Our system that interconnects all our hardware and software component is call the HUB. Our hardware includes many sensors to track the homeowner and the temperature of the house which are interconnected with an Arduino. Sensors will set off certain automation's according to the homeowner's movement between the rooms. Our Arduino then stores that data into our database and gather information on the homeowner's movement. That allows our system to turn his movement into a habit. More habits are then created and merged together as more information is gathered. We want to create a convenient and stress free environment that can enhance a healthier lifestyle.

**Team Name:** Work in Progress (WIP)

**Sponsor:** Shannon Cain

**Program/Department:** Computer Engineering

**Team Members:**

Mitch Curran

Jarryd Shirley

Tyseanah Spell

Kiana Casebeer



The Bobwhite Quail population is declining at an alarming rate, and researchers are having a difficult time finding the cause. In order to study the problem, researchers

have put an avian RF transmitter on the birds to track them. Current prominent research techniques involve pedestrian data acquisition which is time consuming, contaminates the data, and can be extremely dangerous for

researchers. We have been tasked with using a UAV to autonomously acquire the animal transmitter signal, and to use that to acquire GPS, visual, and temperature information in the vicinity of the quail.

**Team Name:** Deep Blue

**Sponsor:** Dr. Hassan Takabi

**Program/Department:** Computer Engineering

**Team Members:**

Tyler Toth

Christopher Romero

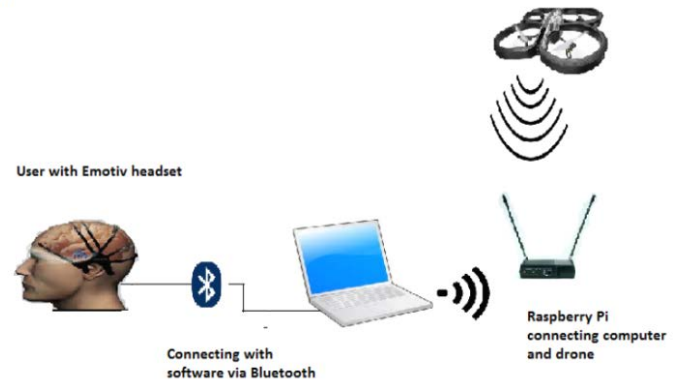
Luis Segura

Henry Flowers

Gobind Rauniyar

The purpose of this project is to design a system where a user can effectively fly a drone using simple thoughts. To decipher thoughts, EEG technology will be used to monitor electrical signals in the brain and translate them into meaningful information. This involves creating and designing a pathway for the brain to be able to communicate, control and fly a drone.

Network Diagram



**Team Name:** BECK Teck

**Sponsor:** James Buchanan

**Program/Department:** Computer Engineering

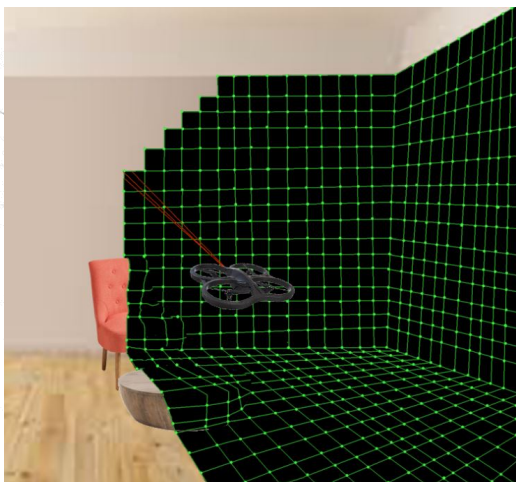
**Team Members:**

Carlton Allred

Brendon Knapp

Edmund Sannda

Kyle Upton



Project Muninn is an autonomous navigating, 3D mapping capable unmanned aerial vehicle (UAV). We have modified the Parrot-AR.Drone 2.0 with the Arduino Uno microcontroller to use LIDAR technology, in combination with proprietary and open source point cloud software, allowing it to autonomously navigate and map an indoor environment. The field of drone technology and autonomy is fast growing with a diverse range of applications. Autonomous UAV's could be used by the police and defense industry to gain information about potentially dangerous environments. There is also great potential for architecture research and design, as well as commercial real estate applications.

**Team Name:** Banana

**Program:** Computer Science and Engineering

**Team Members:**

Daniel Akintitan

Aaron Hardie

David Marquez

Jacquelyn Oquendo

Sammy Sirak

Banana's aim was to create an electric longboard that will safely transport a user from one destination to another. The board is ideal for travelling short distances (e.g. across a university campus) and is an alternative to driving or walking. Our goal is for the board to be able to travel up to 10 miles without recharging, and to reach speeds up to 10 miles per hour.

The longboard is powered by two 11.1V lipo batteries and an electric motor. We used an Arduino, a modified wii nunchuck and an electronic speed controller as a means for the user to control the speed of the board. Since the board is electric, it is an environmentally friendly choice for transportation.



**Team Name:** Enlightened

**Sponsor:** Acculight USA

**Program/Department:** Computer Engineering

**Team Members:**

Alex Adamcik

Maria Moreno

Matthew Davidson

Tara Thompson

Thomas Kanabay

Our client, Acculight USA, is a company which produces LED lighting solutions for commercial, residential and industrial applications. Acculight USA was looking to deploy their LED lamps as street lights worldwide. While they currently had high intensity LED lights, which were corrosion resistant and engineered to reduce heat, they wanted to offer a technologically advanced "smart street light" system that would reduce the problems of deploying lamps in that environment. In addition, they also wanted this system to deliver remote monitoring and control, maximize efficiency, and improve the ability for staff to identify failures and provide maintenance. We, the project group Enlightened, worked with Acculight USA to develop a system that provided these solutions, while incorporating their existing LED lamp models.

Our system is a prototype comprised of a Central Management Server (CMS) and four Smart Lights that communicate through Power Line Communication (PLC). The primary job of the CMS is to control and monitor the four Smart Lights and send out alerts regarding the status of the light when necessary.

# COMPUTER SCIENCE

**Team Name:** Focal Point

**Sponsor:** Self-Sponsor

**Program/ Department:** Information Technology

**Team Members:**

Wayne Wong

Jacob Kizhazeparampil

Ching Kwan Yeung

Satender Yadav

**Add Item**

Item Name

Item #

Quantity

Low Quantity

Supplier

Store

Auto  Manual

**Inventory View**

Store 1	Store 2	Store 3	Store 4
Item #	Item Name	Qty	Supplier
✓	✓	14	✓
✓	✓	14	✓
✓	✓	14	✓
✓	✓	2	✓
✓	✓	14	✓
✓	✓	14	✓

We will be creating a web-based application that handles the inventory of any restaurant. At first, business owners will be able to add their restaurant and suppliers. Furthermore, they will be also able to add items to their inventory, and each item will be linked to a specific supplier. There will be a feature that alerts the user when their items are “low” in quantity, allowing them to order more before they run out. Each individual item will have a different “low quantity” that users will have to set prior to adding to their inventory list. Any item that is low will automatically be marked in red.

Additionally, there will be a feature that allows users to send an email to the supplier manually, unless the item is set to

automatically notify the supplier once it’s low by sending an automated email. Users can also view the purchase history, track sales, and item popularity displayed as a graph or chart. When items arrive, users can confirm their order and the program will then update the user’s inventory list with the newest quantity. Users can also see the top 10 items that have been ordered the most, to identify what is popular among customers.

**Team Name:** Bowie

**Sponsor:** Dr. Parsons

**Program/ Department:** CSCE/Psychology

**Team Members:**

Matthew “Phil” Escobedo

Alexandra Woods

Johnathan Morgan

We need a way to capture output from a game controller and/or steering wheel. One route to this goal would be to use a raspberry pi or similar hardware to build an embedded system that can act as a bypass for a USB controller.

The device needs to read input from the game controller and pass it on to a computer that is running a simulation (e.g., videogame, virtual environment).

Simultaneously the data from the controller needs to be output via an Ethernet port to another computer—on which a program records with a timestamp which button was pushed on the controller

**Team Name:** Mediamancer™

**Sponsor:** Stryker Communications

**Program/ Department:** CSCE/CS

**Team Members:**

Dan Biwer

Tommy Conto

Dustin Eaton

Stryker® is one of the leading providers of technology solutions for the medical field. The Stryker Media Engine (SME) was created as an addition to Stryker's media management system to assist hospitals and medical professionals in modifying media. SME is a RESTful API that allows users to edit, convert, and annotate different forms of media. It was built in Node.js using the Express framework, making requests fast and easy. This, in conjunction with Stryker's Studio 3 archiving capabilities, will provide a simple interface for the following services:

- Converting videos and images to different resolutions, formats, and bitrates
- Merging video files of different formats
- Cutting and splicing video files
- Burning annotations onto image files

The Mediamancer team is excited to demo SME, and we're happy to answer any questions you may have.

**Team Name:** Omelet Whispers

**Program/ Department:** Computer Science and Engineering; Computer Science

**Team Members:**

Chad Smith

Thomas Lee

Wade Powers



Home Room will be a web-based teaching and tutoring tool designed to help teachers communicate assignments, offer guidance, and administer tests and quizzes to their students. Students will be able to complete and upload assignments to the website for grading and review. Parents will be able to take a hands on role in their child's education by monitoring assignment progress and communicating with their child's teacher. We envision this website to be utilized by professional, private tutors, and large school districts with a high number of students in the 3<sup>rd</sup> Grade through High School age group.

**Team Name:** Nova Elite

**Program/ Department:** Computer Science

**Team Members:**

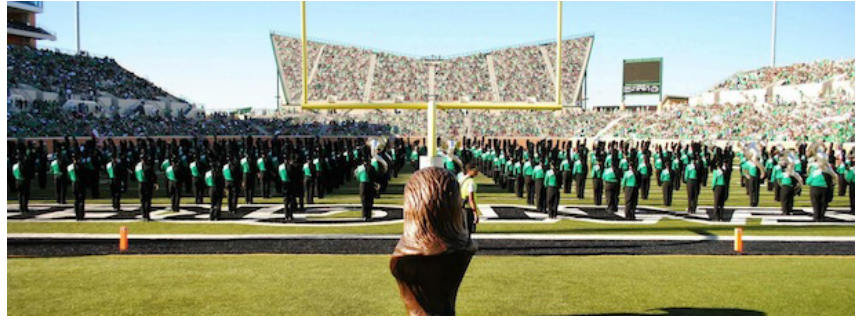
Jason Hoang

Imran Akhtar

Kai-Chuan Chan

Sabrin Thamed

This project consists of a teacher app and student apps that communicate directly with each other, giving the teacher the ability to guide the students who spread across the marching field/rehearsal room via a single device and allowing students to ask questions and take notes with ease. The program will focus on compiling all of the paperwork, sheet music, and coordinate



sheets involved with students learning, rehearsing, and performing a marching band show onto their own personal devices and tablets. This will make the process of teaching easier and help the students stay organized with all of their papers. All apps will also have access to vital learning tools for a performing ensemble so that the students can practice with the app on their own. These apps will be designed for marching bands across the United States, but they can be adjusted to satisfy other indoor rehearsals for any type of ensemble.

**Team Name:** UNSC

**Program/Department:** Computer Science

**Team Members:**

Charlie Pipes

Matthew Hermes

With the introduction of Windows 10, Microsoft has included a voice “companion” called Cortana. Cortana has a function that allows you to open an app/program by simply uttering the phrase “Hey Cortana, Open <program/app name>”. However, this functionality is very limited as Cortana will only open programs and apps that have embedded this functionality in their software or those that are created by Microsoft. Many programs are excluded from this function as well as common folders in Windows 10.

Our proposal is to create a piece of software that will allow Cortana to open and close any App, Program, Drive, or File on your computer with the “Hey Cortana” voice command. The software would allow the user to input the file path and then allow the user to give their program a name so that Cortana knows what the file is called.

We want to include a CPC History functionality would be to allow the user to see what has been changed as well as revert any changes made.

There is a degree of flexibility to allowing the user to call a program whatever they wish. For instance, Skype could be called “Skype” or if there are conflicts with that word then you could use something as arbitrary as “Apples”.

There are a few extra functionalities we would like to implement such as opening multiple programs at once or simply closing files using a voice command. These extra features would apply to all programs and files as well.

The customer base for this project is rather vast. Any person that uses Cortana will be able to use this program. Windows is a common OS that many people use and the use of this application allows Cortana to be used to her fullest extent.

**Team Name:** Team Pudding

**Program/Department:** Computer Science

**Team Members:**

Charles Alan Macon

Jordan Sanders

Hunter Ross

We are creating a “smart” mirror that uses a monitor behind a one-way mirror to display various types of information including the time, weather, RSS feeds, and greetings. It will also include useful features such as a motion sensor night light, automatic screen shut off, and built in music player functions.

To keep costs low, we will be using a raspberry pi for the internal computer and cheap sensors available for the platform. The monitor will be housed inside a custom wooden frame with a two way mirror placed above the screen panel. All necessary materials will be provided by Jordan.

This is the first draft feature list:

- Weather Display with image/animation
- Digital/Analog Clock
- Greeting messages based on time with user's name
- RSS Feed chosen by user
- Have Pandora music capabilities
- A motion sensor for screen on/off
- Light sensor with and LED for temporary night light
- Picture display for comparison (Hairstyle, makeup, etc.)
- A power button
- Air Play Mouse support for iPhone and android so a user could configure the mirror (Login to Pandora, select station, move UI elements)
- Startup animation
- Pause and play button for music

**Team Name:** Pump You Up

**Program/Department:** Computer Science

**Team Members:**

Christian Schwartz

Jacob Donnelly

Next Pump is a mobile sharing application where users have the ability to build and find workout playlists. The aim of this project is not only to help new users easily find workout routines, but also set up a community where users are able to share their fitness knowledge. It will help new users find a place to start and stick to routines that have been proven to work. It will also allow more experienced users to find new workouts to keep them engaged. Users will be able to build workout routines by selecting exercises which will be organized by muscle groups and target area. If an exercise cannot be found the user has the ability to create their own and share it with the Next Pump community. User can then build a schedule in order to plan out their activity. Next Pump is a social application, if someone has no idea where to start they can find preset workout routines others have shared or simply discover new exercises. Once a workout has built users can save it for later use as well as share the entire workout or individual exercises to others.





**Team Name:** Breadcrumbs

**Program/ Department:** Computer Science

**Team Members:**

Zachary Serna

Manuel Vargas

Bereket Teweldebrhan

Loc Huynh

This application is an android mobile program that creates a map of walkable locations that services like Google Maps have not charted before such as campuses, theme parks, etc. Once these places have been charted, the application can provide paths from location to location to anyone who visits the previously mapped area.

The application will utilize the mobile phone location to create paths that users can submit; using graph theory, paths will eventually be built to create a working map of the locations. Once these maps have been built, our algorithm will find the shortest walkable distance and help the user arrive at their destination.



**Team Name:** Twenty

**Sponsor:** David Keathly

**Program/Department:** Computer Science

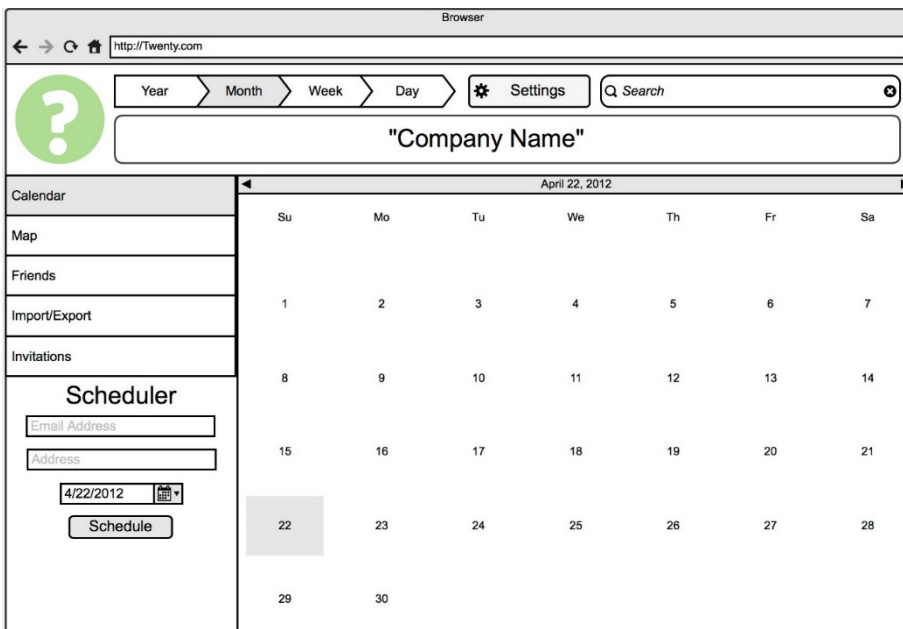
**Team Members:**

Philip Bright

Danny Stieben

Brian Mauldin

Project Twenty is the calendar of social media. Users can put all their work, events, classes, and all other schedules into the calendar with the address of each event. Using Twenty to schedule appointments at the



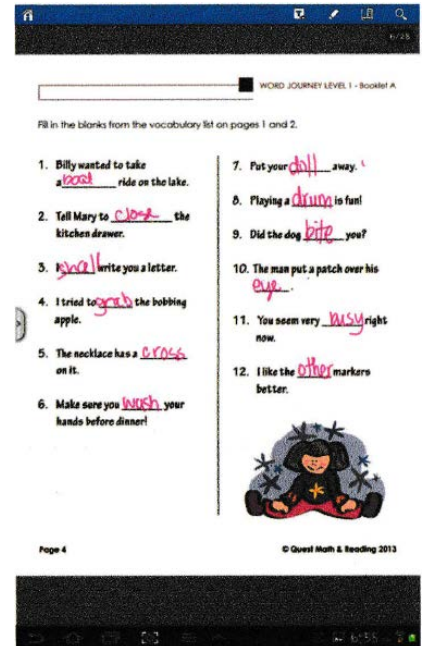
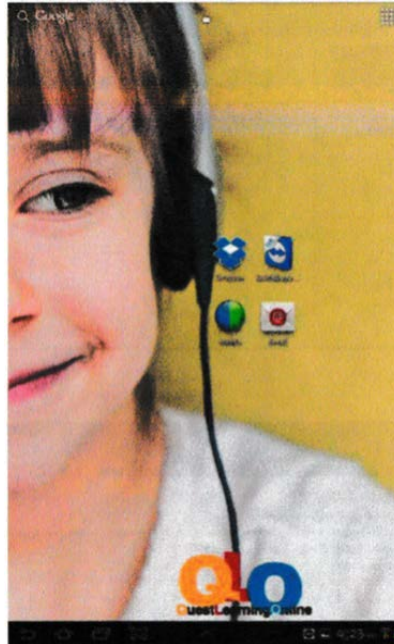
doctor's office is a breeze, instead of going through several dates/times to find the one that works patients just give their calendar ID or login information to the receptionist and Twenty will calculate all the times they are available to come in. Since it includes addresses it will calculate drive time, including traffic calculated by Google. When the receptionist books the appointment it puts it straight on the patient's calendar and their set. This is just one of the many scenarios where Twenty makes troublesome scheduling a thing of the past.

**Team Name:** The Tutors  
**Sponsor:** The Gideon Foundation  
**Program/ Department:** Computer Science

**Team Members:**  
Erika Gutierrez  
Scott McKeefer  
Paul Yapobi  
George Ndede  
Christopher Cruz.

The Gideon Foundation is a community based organization that involves parents and their children in advancing both reading and math skills so that children are prepared to enter college or the job market. The goal is to help the students by not only offering specific skills building exercises, but also to give parents and their child achievable work sessions that serve as a guide for efficient use of study time. The Foundation provides a safe after school program to children and young people in our community especially to those families are not able to pay for the services.

Our job is to design a web application where users students can get access to the instructor through tablets provided by the Gideon Foundation. The application will provide live sessions with instructors, share screen to monitor activity progress and student progress report elaboration that will help instructors when presenting to the parents the students progress over time.



**Team Name:** Closed Loop  
**Sponsor:** David Keathly  
**Program/ Department:** Computer Science

**Team Members:**  
Addison Mink  
Jackson Kelley



*EnGen* makes every adventurers' job easier. Using the standard system and guidelines of *Dungeons & Dragons* 5th edition, *EnGen* allows users to produce procedurally generated encounters. Encounters can be generated using user made content or by downloading opensource material made by the D&D community. User made content will include: Monsters, environments, loot, and room types. Allowing Dungeon Masters to fully customize the generated encounter, and help in making it a fun and unique experience.

**Team Name:** Cloud Control  
**Department:** Computer Science

**Team Members:**  
Jacob Pebworth  
Luis Alvarez

Our client has asked for a website that utilizes an inventory database to set items on the site as sold out or in stock. We have decided on using the MVC 6 and Azure services to deliver a website that is able to be used long-term and with plenty of scalability. Our plan has plenty of room for expansion of functionality and appearances.



**Team Name:** The Absolutists  
**Program/Department:** Computer Science

**Team Members:**  
Travis Allan  
Chris Fitch  
Ian Henderson

For our project, Maker's Board, we felt inspired to create an online community and marketplace for artists and art enthusiasts to share, rate and sell original works. We hope our project will be like an online art gallery or coffee shop where people will gather to share their love for Art. It will be especially beneficial for new artists who are seeking exposure. Our site will focus on community, an intuitive interface, and a secure form of payment (or donation) with PayPal.

Our design incorporates a web-based app with individual accounts, a server database, a search engine, and posting boards with different categories. Users will be able to upload works, complete with a description, price, and location. Users will be able to rate and review other user's artwork. Pieces can be listed as "for sale," while others could be simply uploaded to receive feedback from the community. The site will aim to become a cultural hub for artists.

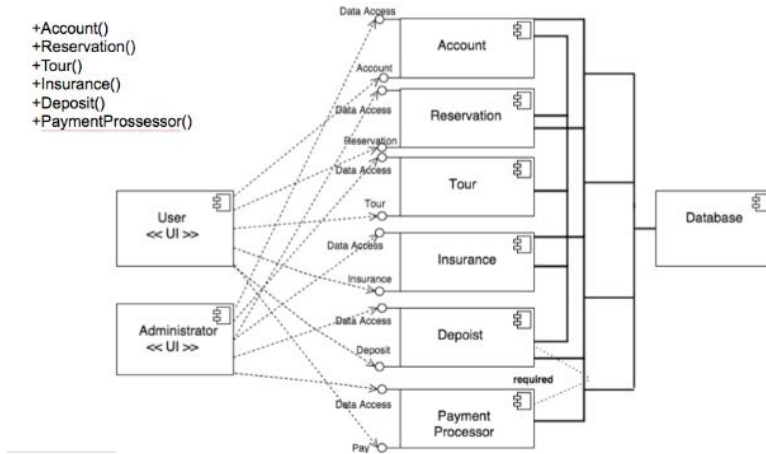
MB

# INFORMATION TECHNOLOGY

**Team Name:** Travel Bug

**Sponsor:** Bilbrey Tours

**Program/ Department:** Information Technology / IT Capstone II



**Team Members:**

Jordan Luper

Tyler Page

Yesenia Montano

Michele Hindman

Team Travel Bug has been contracted to create a front-end and back-end website for Bilbrey Tours. This website is designed to increase efficiency, reduce the load on the staff workers, and eliminate forms to send in payments. The website will streamline the

process of customers browsing available tours, creating an account, opting for travelers insurance, signing up for a mailing list, reserving a tour, and making a payment online.

Bilbrey Tours has been around since 1990 and this year they are celebrating 25 years of business. To date, Bilbrey Tours has traveled to 47 countries and continues to look for new and exciting destinations for their travelers. Right now, Bilbrey Tours has a current website that allows customers to view travel packages and then they have to download two forms. One of the forms is for payment on the deposit and the other form is for travelers insurance. Both of these forms have to be mailed into their office and then the staff deals with the payment and enters in the customer's information in the system.

Our goal is to make this website user friendly for both their senior citizen customers and for their staff members when they need to update the website for future usage. When creating the website we want to keep the owner and her staff members involved.

**Team Name:** The Squad

**Sponsor:** John Franklin

**Program/ Department:** Information Technology

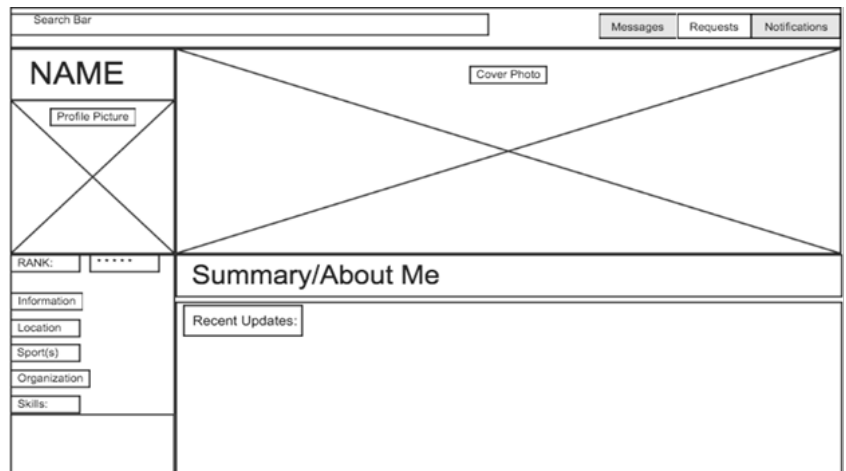
**Team Members:**

Duy Tran

Julie Quiroz

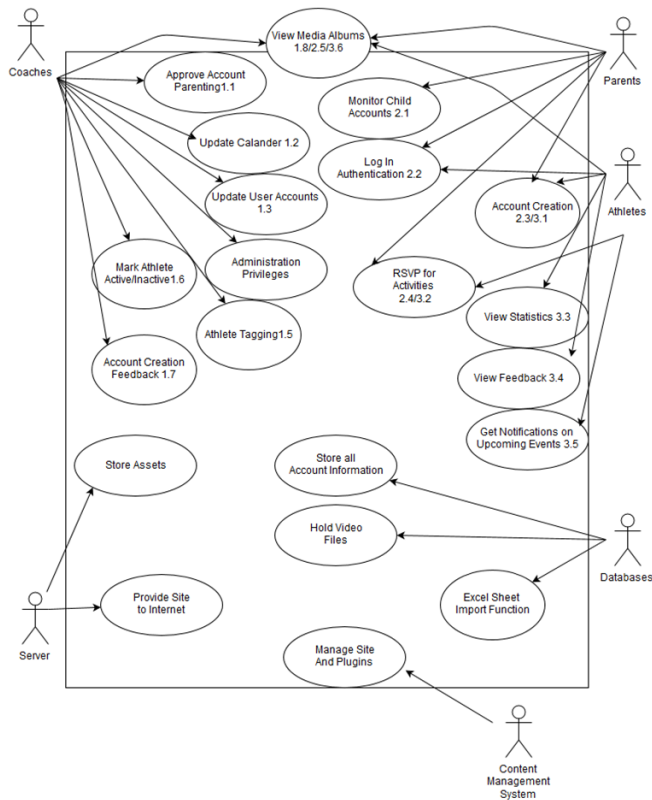
Shaddy Zayour

Victor Akinnawo



We are in development of a social media website for athletes and sport organizations looking for leagues or teams to be a part of. Our concept, is to create a user friendly web application for those who are sport enthusiasts or athletes that want to show off their skills in an atmosphere that others can openly appreciate. The site will include basic social media functionalities like messaging and user

dashboards along with the integration of personal stats, thoughts, and a sport themed feed. Our application is going to be run by Drupal with their offered plugins for group management, user relationships, and inviting friends. Our hopes are to later expand on this project through other mediums like android/apple applications or standalone computer applications; and imputing advertisements at the ends of development that is currently working as an incentive for our group. We hope to take on Design Day with an awesome application to exhibit to our audiences and promote it all in the same day!



**Team Name:** Digital Defenders  
**Sponsor:** Jim Buchanan  
**Program/Department:** Information Technology

**Team Members:**  
 Cody Abbott  
 Ben Sunny  
 Andrew Day  
 Emanuel Taylor

The purpose of the project is to develop an application that can help our client better communicate with his student athletes and their associated parents without having to go through some other type of medium. The Denton3c Website (D3C) will be the hub of the communication as well as a go to area for student athletes to check on the latest scheduled events, check what events the student athletes might be participating in, as well as getting feedback from the coaches. Athletes and parents will also be able to view how the athlete is doing by being able to view the list of achievements associated with that athlete.

**Team Name:** CODA  
**Sponsor:** Hasan Takabi  
**Program/ Department:** Information Technology

**Team Members:**  
 Corbin Watkins  
 Oanh Ngyuen  
 David Loughran  
 Alejandro Luna

This is the concept of how our headset will connect to the android device and perform its task. We will develop a connection between the headset and the android device (tablet) with an on and off switch. Once a connection is developed the user is able to send a thinking command of choice. It will reiterate until the user is done performing tasks and powers off the device.

