Home Observable Entry Monitoring System (HOMES)

UCF DEPARTMENT OF EECS

Initial Project and Group Identification Document
Senior Design 1
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Project Description

The focus of our senior design project is to create an innovative and modern home observable monitoring entry system (HOMES) that will be low in cost and simple to use. The system will function with all entry points of your home, doors, windows, and even pet entrances. The user will be able to grant or prohibit access to the home via the system panel, wearable devices, or remotely via android device app. We plan to have an LCD panel mounted to the outside of the front door to display a list of options for your guests to interact with the system. The options will include but are not limited to leaving a voice message, a text message, and ringing the doorbell. A motion sensor will activate the camera to record and images will be captured and sent to the user when your guests ring your doorbell. The system will be able to send notifications via android device app, text message, or email when the doors open or close, lock or unlock, and monitor the entry or exit of all entities in your household, all at the request of the user.

Project Motivation

It seems that everybody would like a smart home to go along with their smart phones, smart TVs, smart cars, etc. but most of our homes are still technologically lacking. We can operate our cars, television sets, and other devices remotely so why not our homes? When friends and family, and even strangers decide to contact us we are usually notified, especially if we were unavailable. Whether we missed a voice call, video call, text message, or email, we are able to see a picture or at least a name, but what about the people who visit our homes? These questions and the answers to these questions are the motivation behind our project. We as a group do not feel comfortable with the lack of knowledge of who may have approached our homes while we were away. Therefore we've decided to create a system that will provide the monitoring and security features you need at your fingertips.

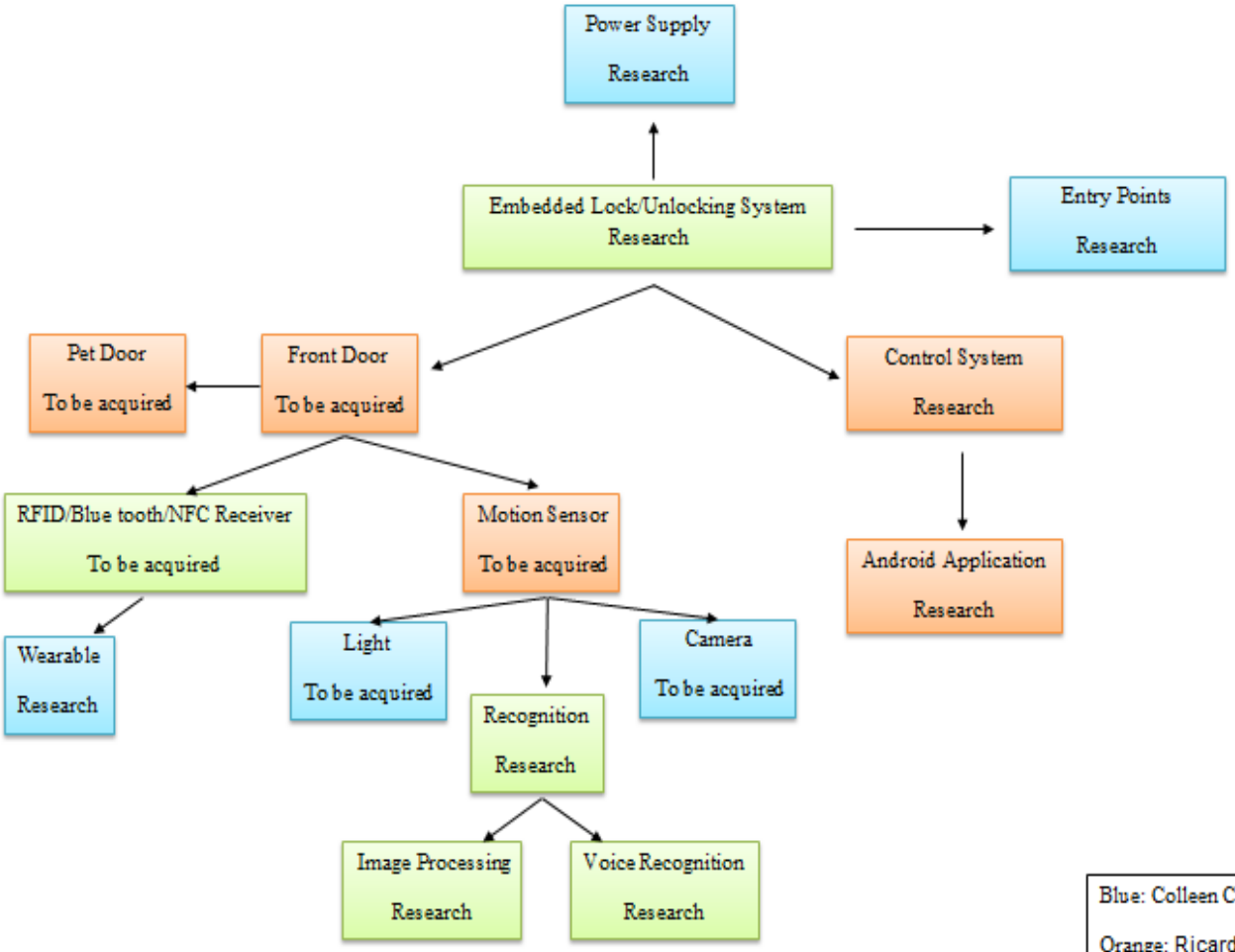
Project Objectives

- Experience in design and implementation of electrical devices
- Experience in design and implementation of printed circuit board
- Experience in the selection and integration of commercially available parts
- Camera display & capture at request
- Lock and unlock door via android app
- Motion sensor camera activation
- Sleep function / low power mode
- Access via wearable device
- Fully functional face recognition

Specifications and Requirements

- Front door will have a motion sensor that will turn on a light at night when a person comes within 2 feet of the door.
- Motion sensor will activate a camera that will take a picture of the individual at the door and send it via an android application to the homeowner's phone.
- A LCD screen will be on the door to list options to the guest including leaving a message.
- Homeowner will then have the option to unlock the door via the application to let the guest in or to ignore the notification.
- The application will record when all external entry points (doors and windows) are accessed.
- Homeowners will be given at least 2 wearables that will unlock the door via RFID, bluetooth, or NFC.
- A pet door will be included that will open when the homeowners pet comes within 1 foot of the door via RFID, bluetooth, or NFC.

Block Diagram



Project Budget

Total Available Budget:	$ 500
Main Microcontroller / Board (Parts and Assembly)	$ 150
Lock + Door Materials	$ 45
Motor / Controllers	$ 20
Window Modules (Board/sensor/wifi)	$ 50
Small parts / Breadboards	$ 50
Motion Sensor	$15
LCD screen	$ 20
Camera	$ 50
Misc Supplies and tools	$ 50
Total Estimated Cost	$ 450

Project Milestones

Week	Goal
1 (Feb 1st)	Project Selection
2 - 5	Research - Know which boards and technologies to be used.
6 - 11	Design - Have a finalized designed product with parts ordered.
12 - 19	Prototyping - Have individual features completed and ready to integrate.
20 - 23	Prototyping / Testing
24 (Jul 26th)	Final Testing / Prepare Presentation