Team Number: May1714
Adviser: Jay Kim
Team Members/Roles:
Ming Wu (team leader)
Xiayang Sun (communication leader)
Chenliang Xu (webmaster)
Xin Ying (key concept holder)
Sam Jones (key concept holder)
Lyle Bishop (key concept holder)

Team Email: ecpemay1714@gmail.com
Team Website: http://may1714.sd.ece.iastate.edu
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Android App based on iBeacon

PROJECT PLAN

Contents

1 Introduction

1.1 Project statement

Our project is based on iBeacon, which is a mobile Bluetooth device that published by Apple in 2013. We will utilize this device and create a new Android App which will have the primary function of silencing your phones in a classroom, and send you information of this class such as announcement, lecture slides and homework. More functions will be added as we moving forward.

1.2 purpose

The project is aiming to give students a better lecture environment by automatically silencing your phone once you entering a classroom, and today's class materials will pop up on your tablet for you to take notes. It is quite convenient not just for education purpose, but also for some commercial presentations, business meetings and so on.

1.3 Goals

The goal of this project is to complete:

- Automatically silence phones when people entering certain area.
- Automatically pop up information about an object on your mobile device within an area.
- More functions will be added.

All goals are to be completed on time, under budget, and with priorities of safety.

2 Deliverables

In order to meet the goals outlined in the introduction, our project will give:

- A complete working App on android device
- An associated iBeacon device
- Testing report
- Budget report

3 Design

3.1 Previous work/literature

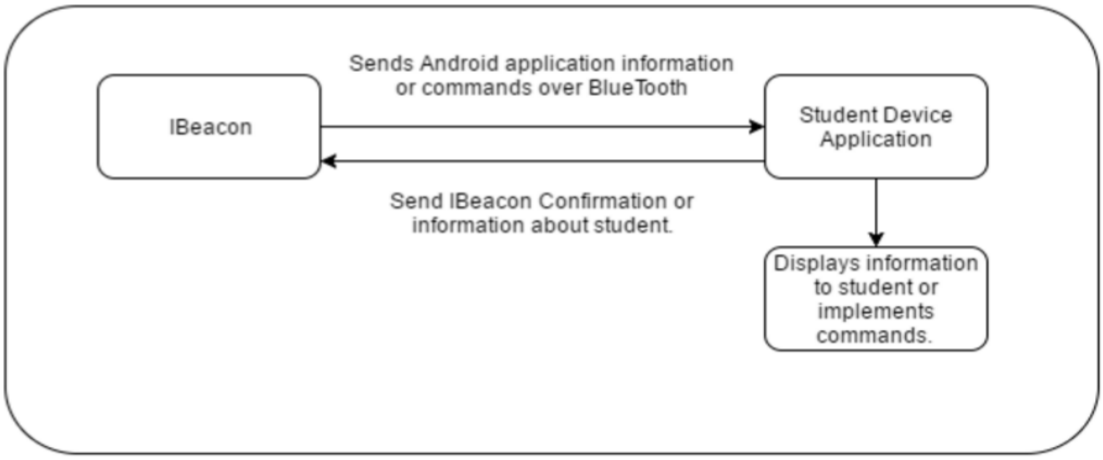
IBeacon is a new emerging technology that is just starting to be used commercially and being used in a wide variety of applications.

Launch Here App

IBeacon was used by the app "Launch Here" for use around a house. iBeacons are placed around the house and when the device approaches it, the Launch Here app opens a relevant app such as a TV remote, Alarm Clock, Grocery list etc.

Source: Mallik, Neha. 2016

3.2 Proposed System Block diagram



3.3 Assessment of Proposed methods

For this project, each member will be tasked with specific parts to program and research. For everyone to work on the same program, a product GitHub will be used so that multiple members can work on different parts of the same program. This product will also allow us to integrate it into android studio where it can be downloaded to a phone.

3.4 Validation

This project will be validated and tested by using an iBeacon and bringing a phone into range with our developed software. If the phone silences and also brings up useable data from the specified class; then the project will be confirmed and completed.

4 Project Requirements/Specifications

4.1 FUNCTIONAL

An iBeacon will be set in a classroom, and it will keep detecting signal within a specific range. When a mobile device such as cell phone or tablet with the app installed approaches, the app will immediately execute a command to mute the mobile device. Simultaneously, the iBeacon will send course information to that device over Bluetooth. Those are the basic functions of the project, and more functions will be added if we have extra time.

4.2 NON-FUNCTIONAL

As a student or a professor enters a classroom in which an iBeacon is set, their cell phones or tablets with the app installed shall be silenced immediately. The course related information including announcement, course slides, and homework will also pop up on those devices. We will add more functions if we can finish those basic functions ahead of schedule.

5 Challenges

The most significant challenge for this project is that some members in our group have little experience Java programming and in UI design for Android app. Therefore, it will take a while for every group member to do some research and get familiar with those corresponding knowledge.

There are some technical challenges as well. Firstly, the detecting range of the iBeacon is not easy to control. we need to make sure every student in the classroom will receive the information, and we also need to avoiding sending the information to the students in other classrooms. The second technical challenge is that the durability of iBeacon is uncertain. Not sure if intensity of the signal transferred from an iBeacon is enough to cover the whole classroom is another technical challenge.

6 Timeline

You may want to include a Gantt chart/something similar to help visualize your timeline to complete the project.

6.1 First Semester

Basic plan for the first semester is getting every member used to android studio and start working on UI design for our android application.

Our goal is to finish data transmission from android client (phone/tables) to iBeacon.

6.2 Second Semester

The second semester is set to working on functions after all transmission tests are complete. We will also limit the measurement distance more accurate. The function part will be detailed designed and implemented on the second semester.

Title:	iBeacon
Time	Event
24-Oct	Get start
31-Oct	Learning iBeacon
7-Nov	Do deep research on iBeacon
14-Nov	Play with android studio
21-Nov	Learning UI design
28-Nov	Make final changes to UI
5-Dec	Connect android to iBeacon
12-Dec	Finish data transmission
19-Dec	First semester report
9-Jan	Test for transmission
16-Jan	Test iBeacon distance
23-Jan	Finish all sensitivity test

30-Jan	Working on first function: Silence phone
6-Feb	Keep working first function
13-Feb	Test for first function
20-Feb	Start second function: announcement
27-Feb	Keep working second function
6-Mar	Test and debug for functions

7 Conclusions

An Android App will be developed to work with the Beacon technology in functions beneficial to a particular environment, in our case, a classroom. The app will enable phones within the specific area to be silenced and retrieve information of the class such as announcement, lecture slides and homework which enhances the educational experience.

8 References

Mallik, Neha. “5 Best iBeacon apps that are leading the pack.” *beaconstac,* MOBSTAC. February 19, 2015. blog.beaconstac.com/2015/02/5-best-ibeacon-apps-that-are-leading-the-pack. Accessed 10/18/2016.