LocalNotify
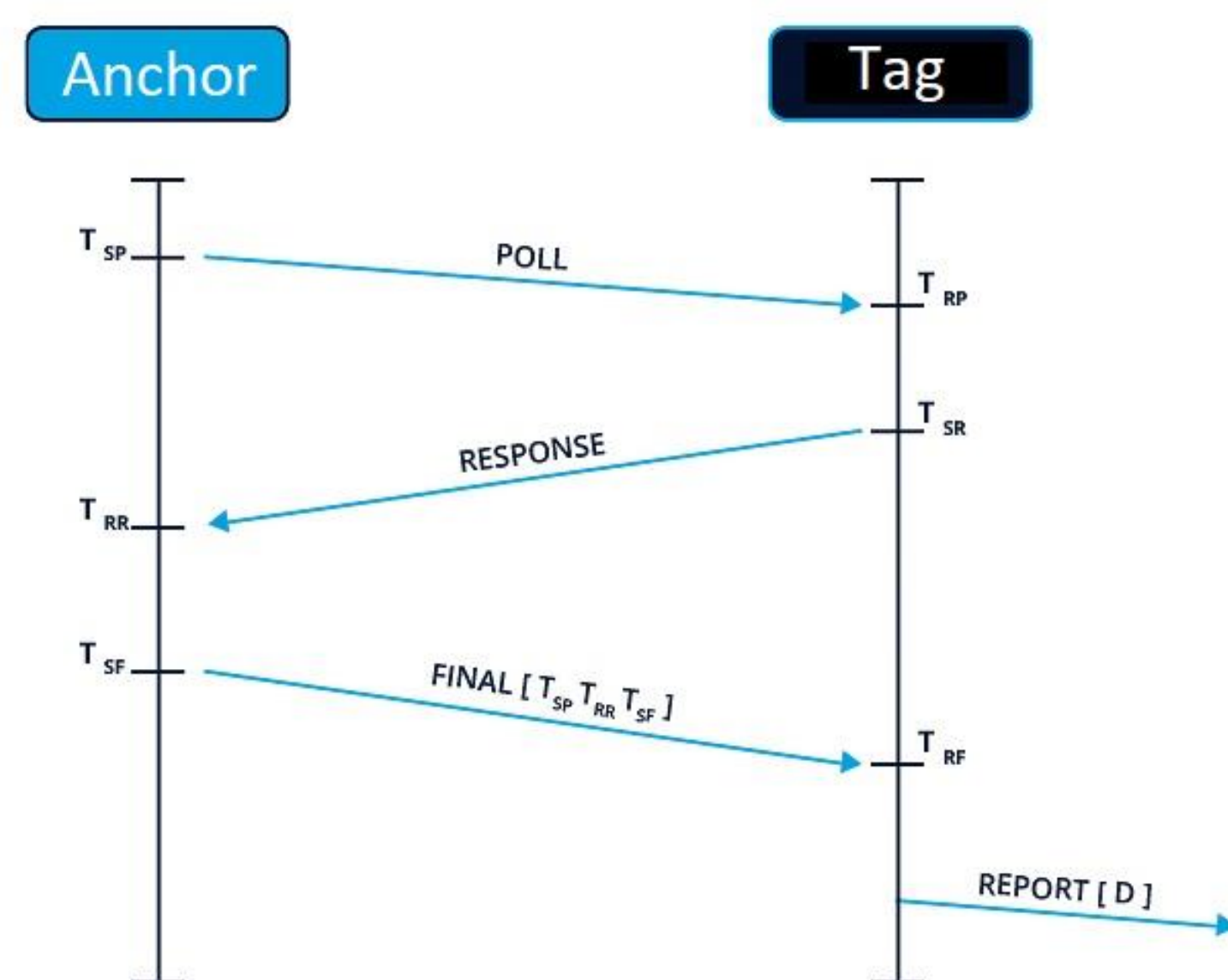## Vishnu Jaganathan   Ajish Sekar

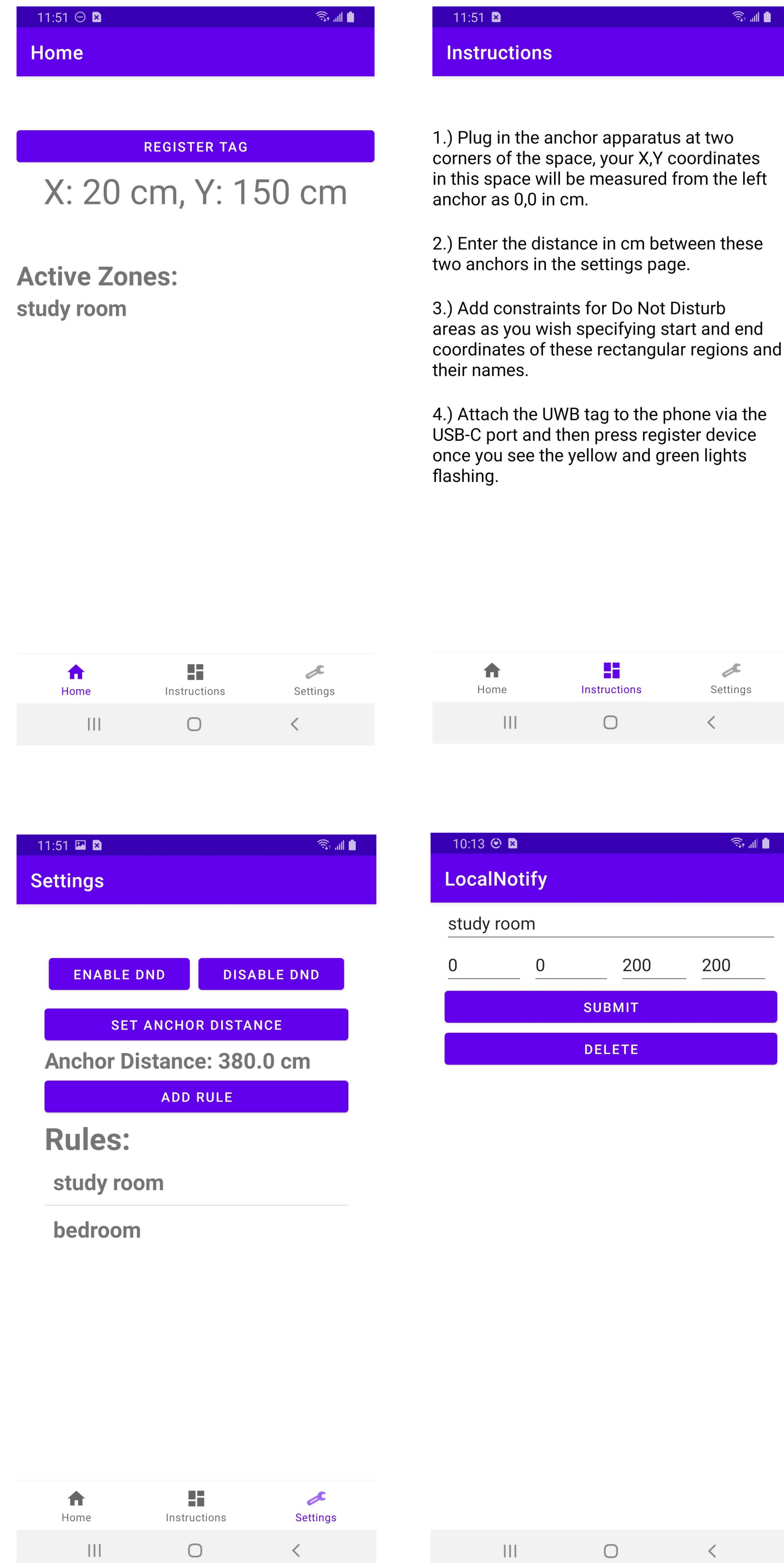**Georgia Institute of Technology**

Introduction

Do you hate being disturbed by notifications when working but you keep forgetting to switch on do not disturb mode? This project aims to bring location aware services to a smartphone using UWB chips for localization, enabling:

- Toggle DND mode when entering/leaving a zone
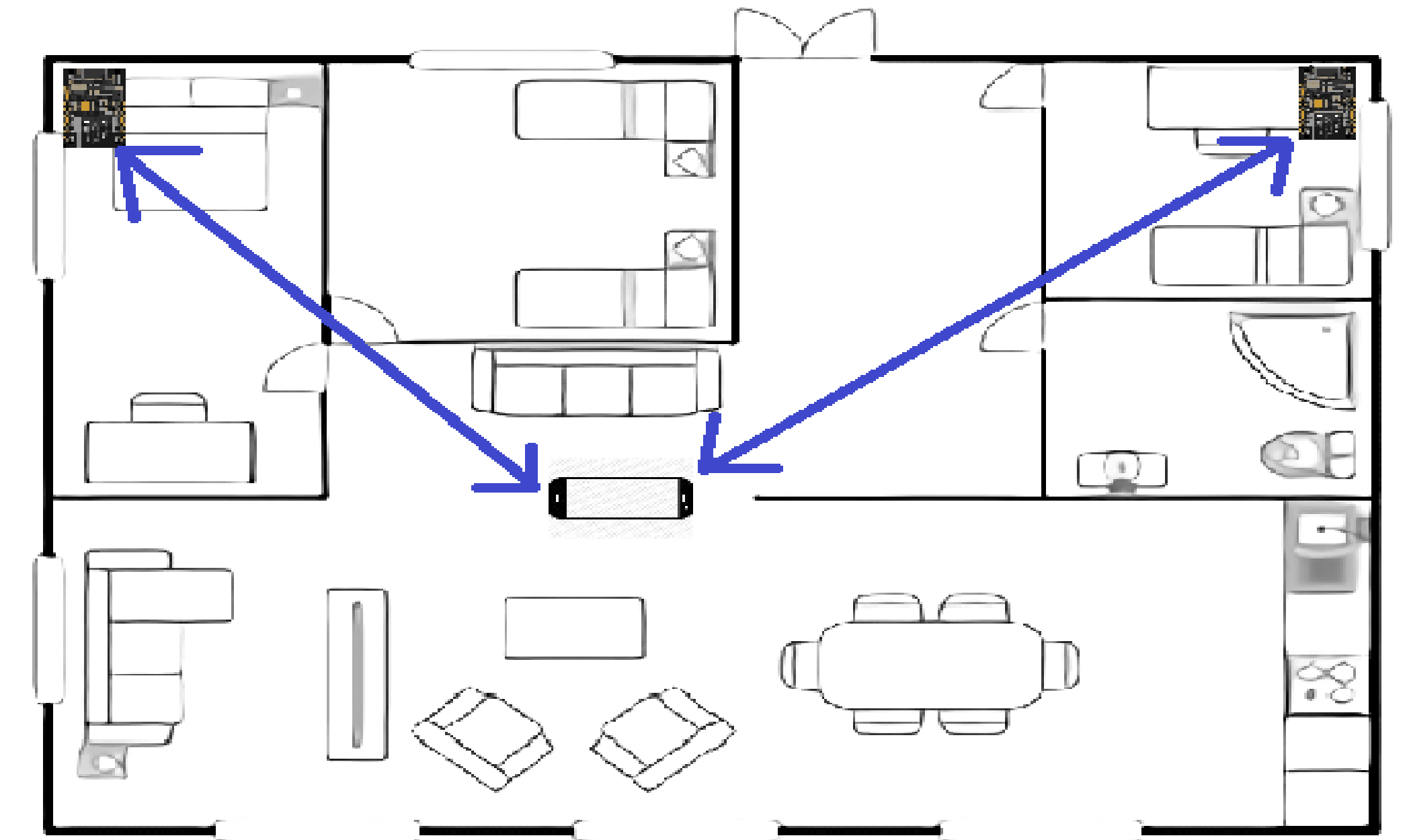- Location sensitive notifications
- Location sensitive actions

Two Way Ranging

App Screenshots

Home

REGISTER TAG

X: 20 cm, Y: 150 cm

Active Zones:
study room

Instructions

1.) Plug in the anchor apparatus at two corners of the space, your X,Y coordinates in this space will be measured from the left anchor as 0,0 in cm.

2.) Enter the distance in cm between these two anchors in the settings page.

3.) Add constraints for Do Not Disturb areas as you wish specifying start and end coordinates of these rectangular regions and their names.

4.) Attach the UWB tag to the phone via the USB-C port and then press register device once you see the yellow and green lights flashing.

Settings

ENABLE DND   DISABLE DND
SET ANCHOR DISTANCE
Anchor Distance: 380.0 cm
ADD RULE
Rules:
study room

bedroom

LocalNotify

study room

0   0   200   200

SUBMIT
DELETE

System Design

- Two anchors alternate sending their device id and position to the tag every 0.5 seconds, and the android app stores this information.
- The left and right distance along with the distance between anchors form a triangle, where the law of cosines can be used to calculate (x, y) coordinates.

Future Work

- Google's UWB API can be used with UWB capable phone to eliminate the need for an external tag
- Improve UI to use fingerprinting to locate users.