PHONE-BASED CAMPUS NAVIGATION

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Problem:
Indoor Wifi Localization:
• With the high variability in wifi signal strength indoors, it was our task to find a solution to the longstanding problem of indoor localization and navigation through received wifi signal strength.

• With CSU hosting visitors every day and the non-traditional layout of the campus we feel this is a very important problem to solve for all of the CSU community.

Our Solution:
Unique Wifi Signal Landmarks with k-NN:
We use combination of wifi signal landmarks and the k-Nearest Neighbors algorithm to solve our problem. Getting landmark data requires manually walking around your target area and identifying where you are on a floor map. This saves the unique received wifi signals and strengths to a non-relational cloud database with the coordinates. To find the nearest landmark we used the K-Nearest Neighbors algorithm to give us a list of our K nearest landmarks.

• Built using Android platform
• Utilizes Google’s Firebase cloud storage
• K-Nearest Neighbors Algorithm for localization

Percentage we received our actual closest landmark at each position in K-Nearest Neighbors List

View of our landmark