UCSBB

UC Santa Barbara Bathrooms

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The Problem

The need / desire that our app fulfills:

There is no up-to-date map that can help students, faculty, and guests to the UCSB campus find the restroom nearest to them.

The UCSB community needs a way to know where bathrooms are within the buildings on campus, as well as which bathrooms they can use (accessibility, gender).

UCSBB allows users to:

❏ visualize the location of each bathroom through Google Maps integration and interact with the pop-up contents.

❏ view a comprehensive lists of bathrooms inside a specific building.

❏ filter settings and decide which bathrooms will remain on the Maps based on their gender/accessibility preferences.

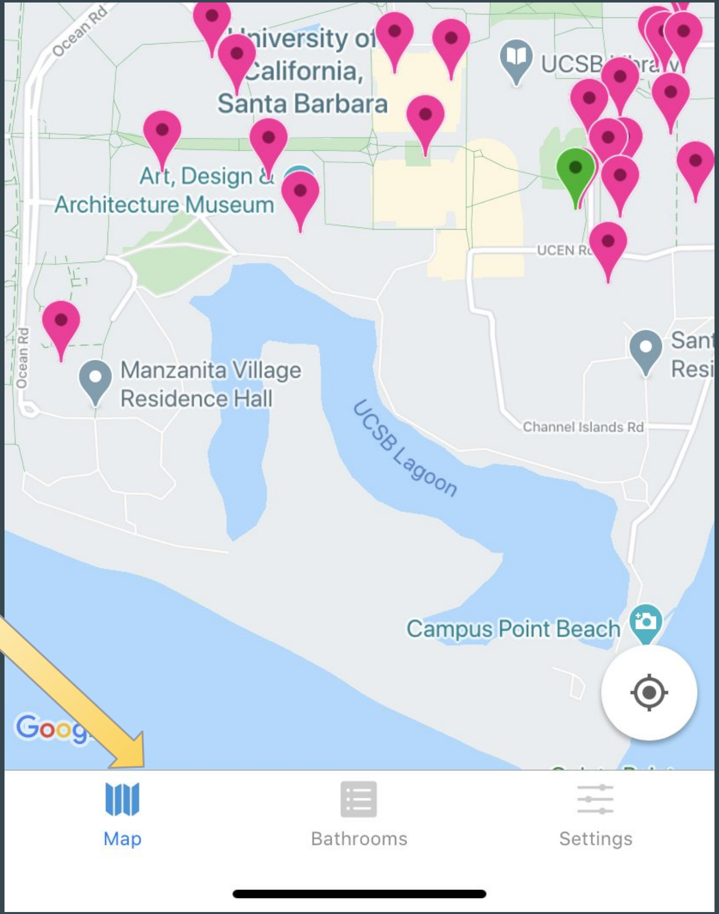
Framework & tools

- React Native
  - Used to develop cross-platform application. Programmed in JavaScript.
- Firebase
  - Store and update bathroom information(location, room/building, accessibility, gender, etc.) in real time.
- Jest
  - Automate integration and unit testing.
- Expo
  - Simulate the application on iOS device

UI Design

A tab navigation bar at the bottom of the screen allows users to navigate between the three screens :

- ❑ Maps
- ❑ Bathrooms
- ❑ Settings

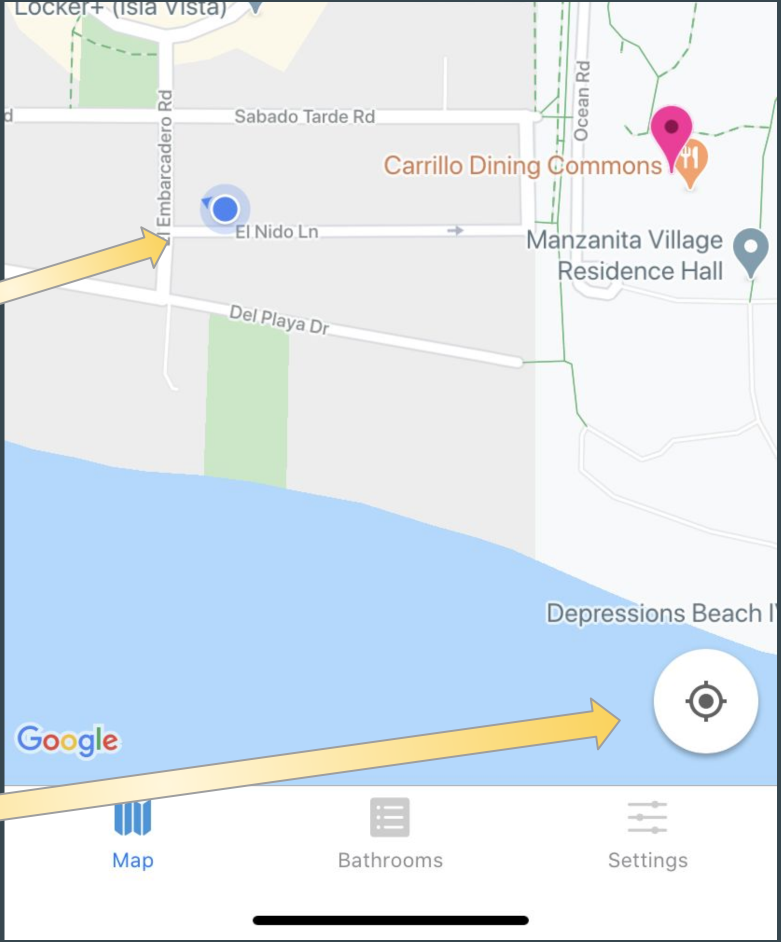

University of California, Santa Barbara
UCSB Library
Art, Design & Architecture Museum
UCEN Rd
Ocean Rd
Manzanita Village Residence Hall
UCSB Lagoon
Channel Islands Rd
Campus Point Beach
Google
Map
Bathrooms
Settings

Map Tab

Features

- ❏ Launching application opens the maps tab, centered on user's location, indicated by a blue dot.
  - ❏ Allows the user to immediately see bathrooms closest to them within seconds of opening the application.

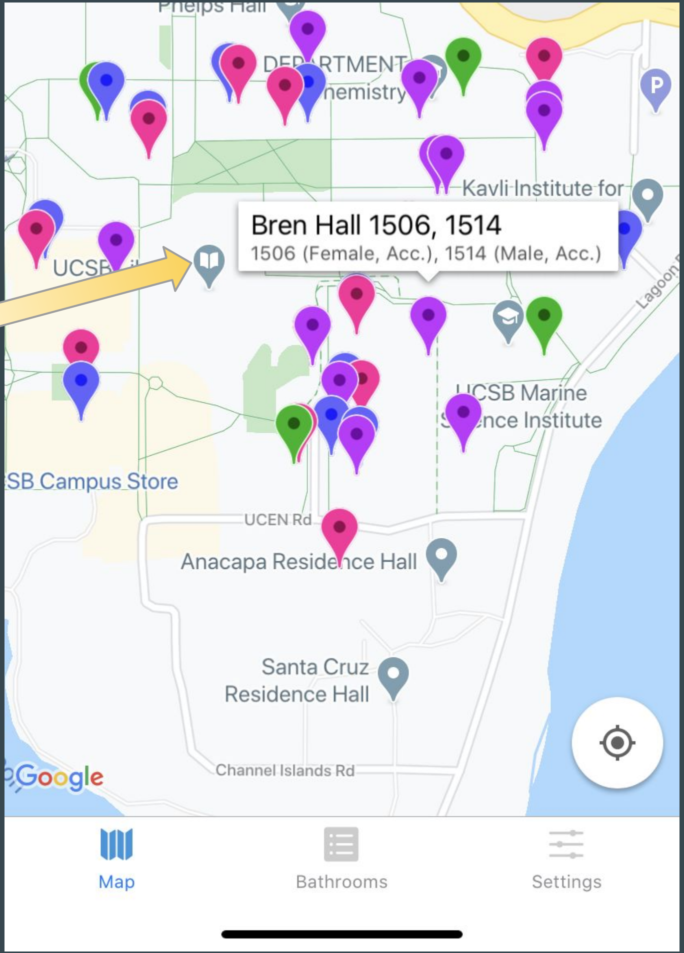
- ❏ Users can pinch to zoom in/out and drag screen to move map, then easily center map back on their location using the center on user location button



Features

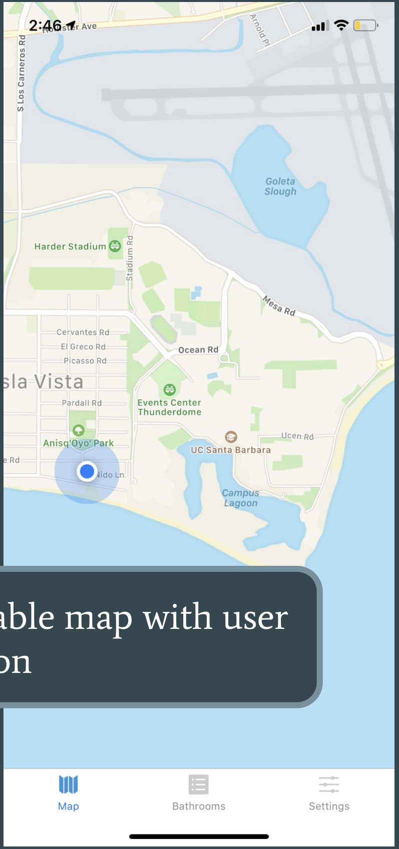
❑ Clicking on a bathroom marker will reveal bathroom room numbers and gender and accessibility information.

❑ Bathroom markers are color coded by gender so users can easily see which bathrooms they can use

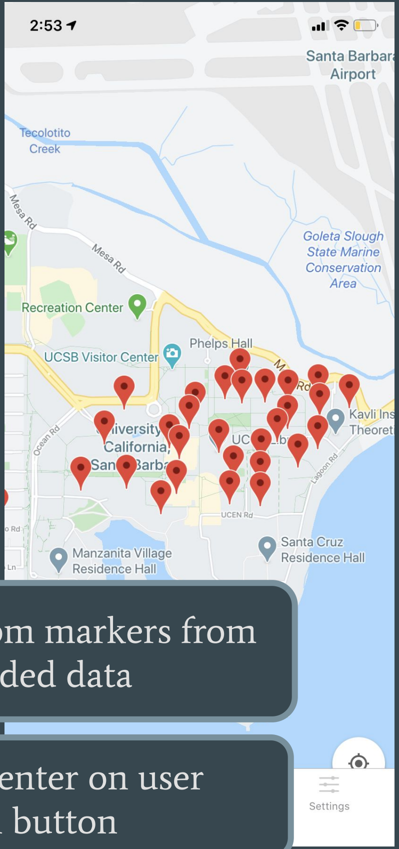


Bren Hall 1506, 1514
1506 (Female, Acc.), 1514 (Male, Acc.)

Evolution

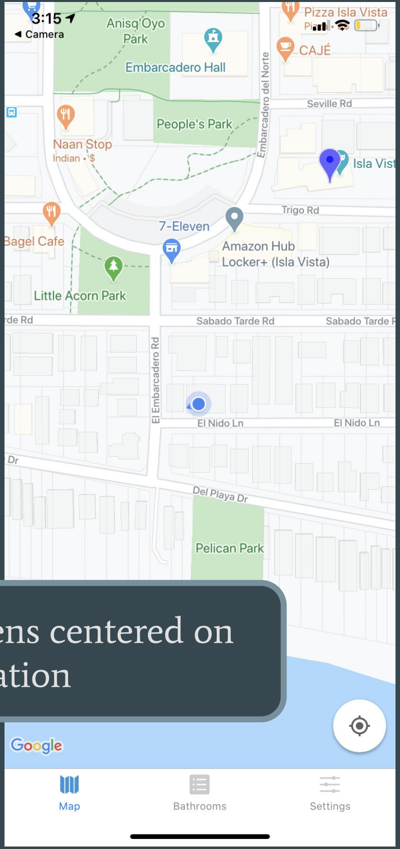


moveable map with user location


2:53
Santa Barbara Airport
Tecolotito Creek
Mesa Rd
Goleta Slough State Marine Conservation Area
Recreation Center
UCSB Visitor Center
Phelps Hall
University of California, Santa Barbara
Kavli Institute for Theoretical
UCEN Rd
Lagoon Rd
Manzanita Village Residence Hall
Santa Cruz Residence Hall
Settings

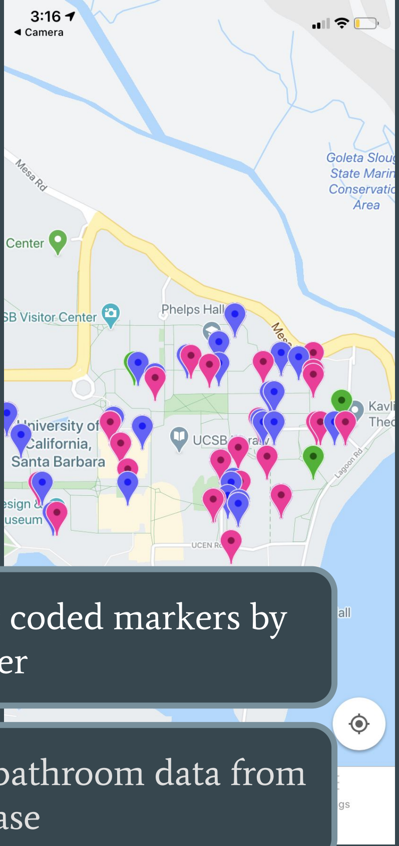
bathroom markers from hard coded data

added center on user location button



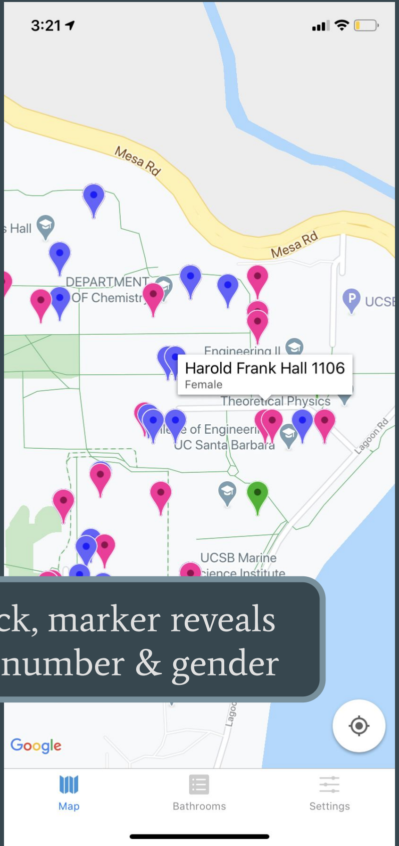
map opens centered on user location

Evolution



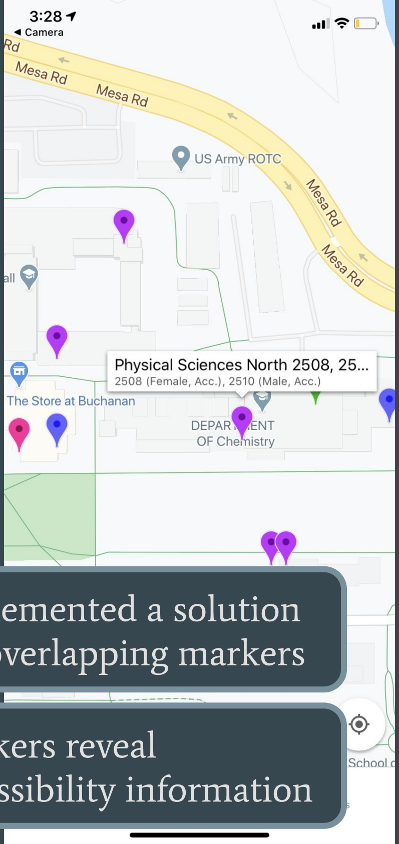
color coded markers by gender

pull bathroom data from firebase



Harold Frank Hall 1106
Female

on click, marker reveals room number & gender



Physical Sciences North 2508, 25...
2508 (Female, Acc.), 2510 (Male, Acc.)

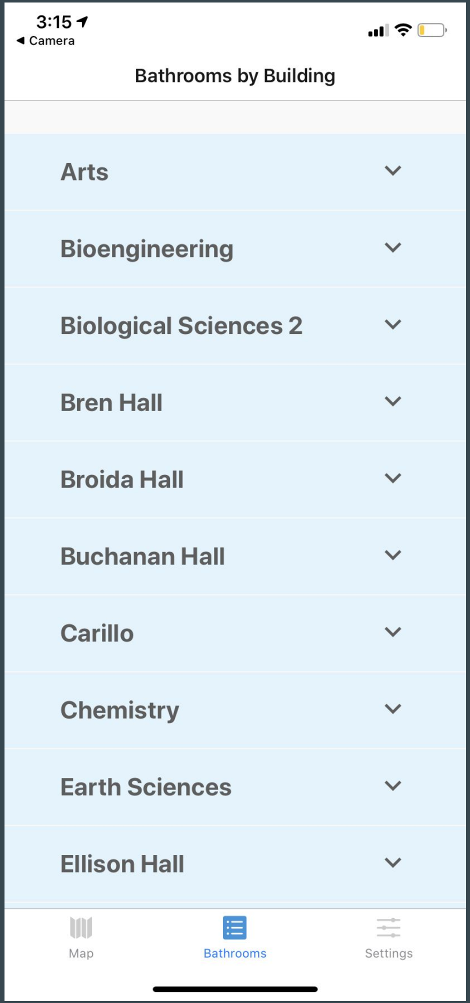
implemented a solution for overlapping markers

markers reveal accessibility information

Bathrooms Tab

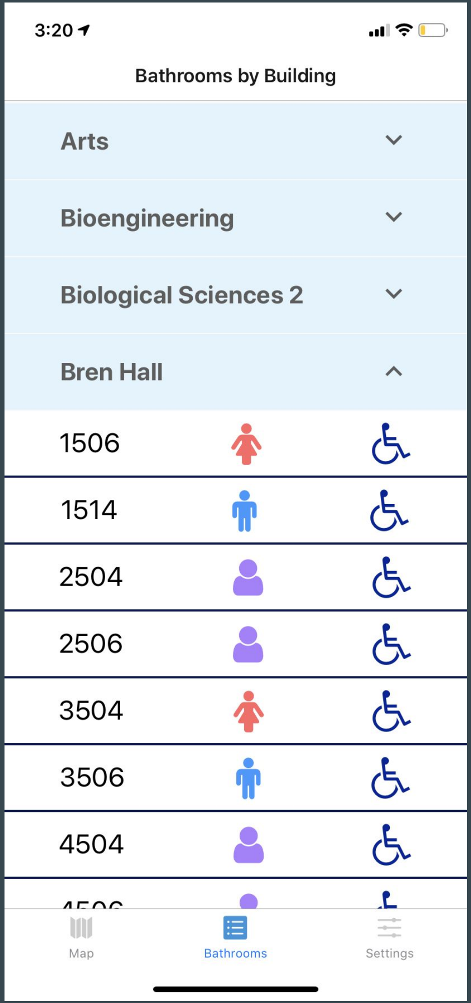
Features

- Displays information about bathrooms on campus organized by building
- Upon clicking a building, users can see a list of all bathrooms in that building
- Bathrooms have color coded icons indicating gender and accessibility



Bathrooms by Building

- Arts
- Bioengineering
- Biological Sciences 2
- Bren Hall
- Broida Hall
- Buchanan Hall
- Carillo
- Chemistry
- Earth Sciences
- Ellison Hall



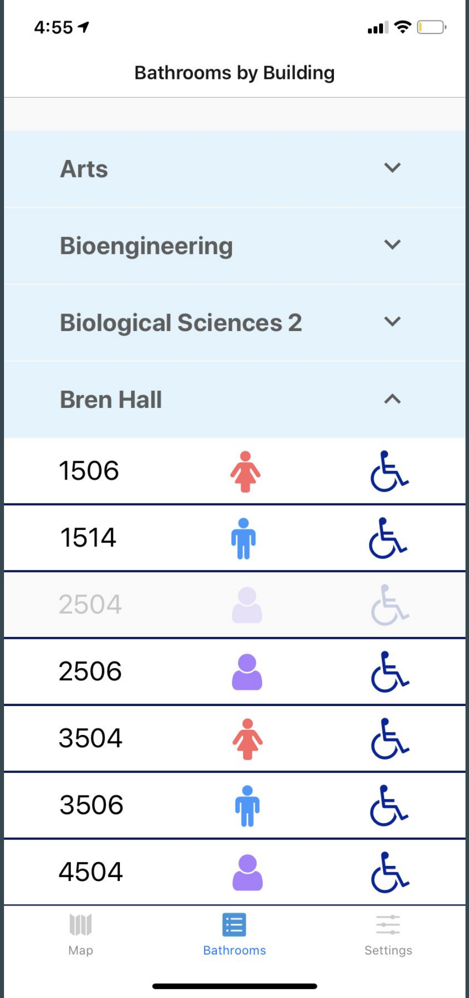
Bathrooms by Building

- Arts
- Bioengineering
- Biological Sciences 2
- Bren Hall

1506	🚺	♿
1514	🚹	♿
2504	●	♿
2506	●	♿
3504	🚺	♿
3506	🚹	♿
4504	●	♿
4506	●	♿

Features

- ❑ Clicking on a bathroom will open the map, zoomed in on the location of the chosen bathroom
- ❑ User can see where the bathroom is relative to their location



Bathrooms by Building

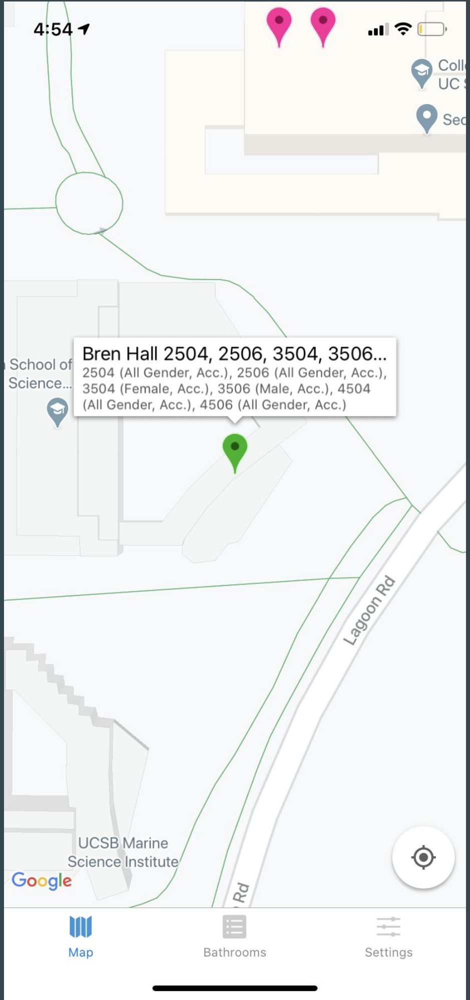
Arts

Bioengineering

Biological Sciences 2

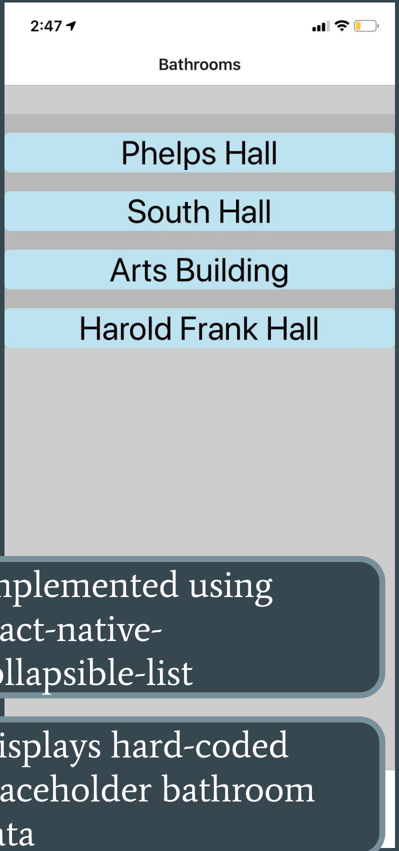
Bren Hall

1506	♀	♿
1514	♂	♿
2504	●	♿
2506	●	♿
3504	♀	♿
3506	♂	♿
4504	●	♿



Bren Hall 2504, 2506, 3504, 3506...
2504 (All Gender, Acc.), 2506 (All Gender, Acc.), 3504 (Female, Acc.), 3506 (Male, Acc.), 4504 (All Gender, Acc.), 4506 (All Gender, Acc.)

Evolution



2:47

Bathrooms

Phelps Hall

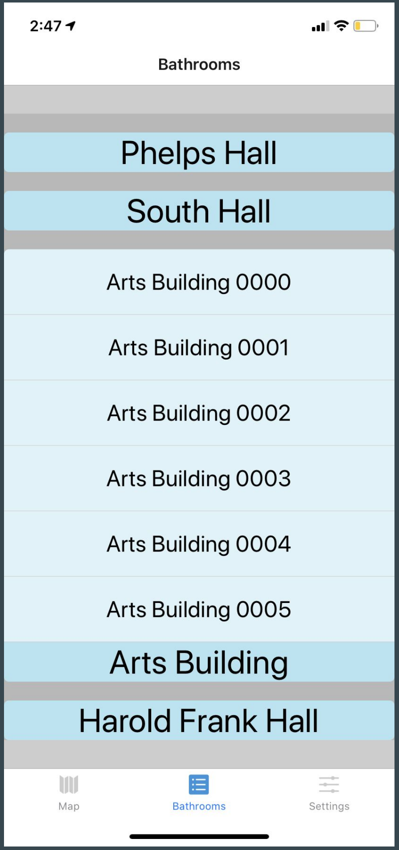
South Hall

Arts Building

Harold Frank Hall

Implemented using react-native-collapsible-list

Displays hard-coded placeholder bathroom data



2:47

Bathrooms

Phelps Hall

South Hall

Arts Building 0000

Arts Building 0001

Arts Building 0002

Arts Building 0003

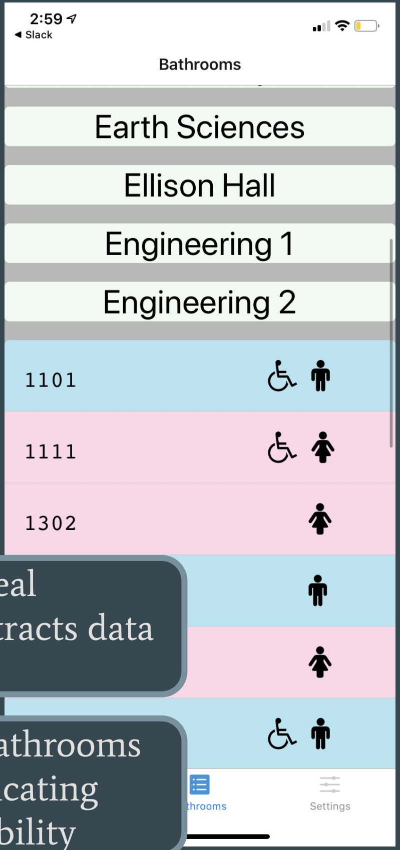
Arts Building 0004

Arts Building 0005

Arts Building

Harold Frank Hall

Map Bathrooms Settings



2:59

◂ Slack

Bathrooms

Earth Sciences

Ellison Hall

Engineering 1

Engineering 2

1101 ♿ 🚹

1111 ♿ 🚺

1302 🚺

🚹

🚺

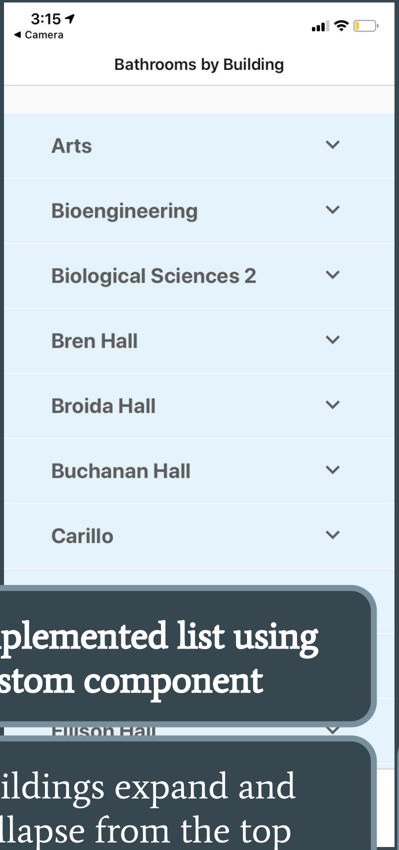
♿ 🚹

throoms Settings

List contains real bathrooms, extracts data from Firebase

Color coded bathrooms with icons indicating gender/accessibility

Evolution

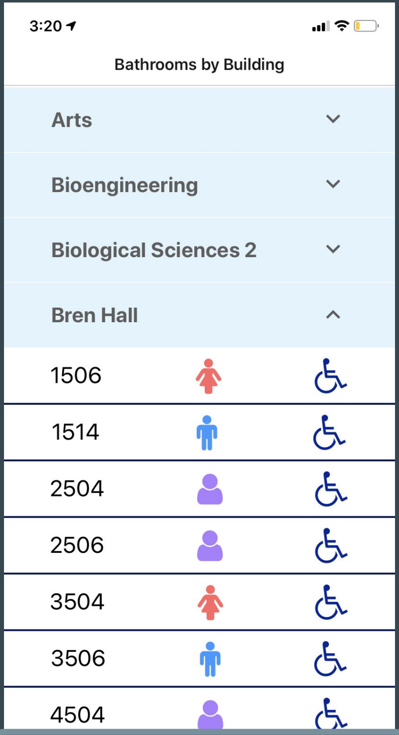

3:15
◂ Camera

Bathrooms by Building

- Arts
- Bioengineering
- Biological Sciences 2
- Bren Hall
- Broida Hall
- Buchanan Hall
- Carillo
- Ellison Hall

implemented list using custom component

buildings expand and collapse from the top

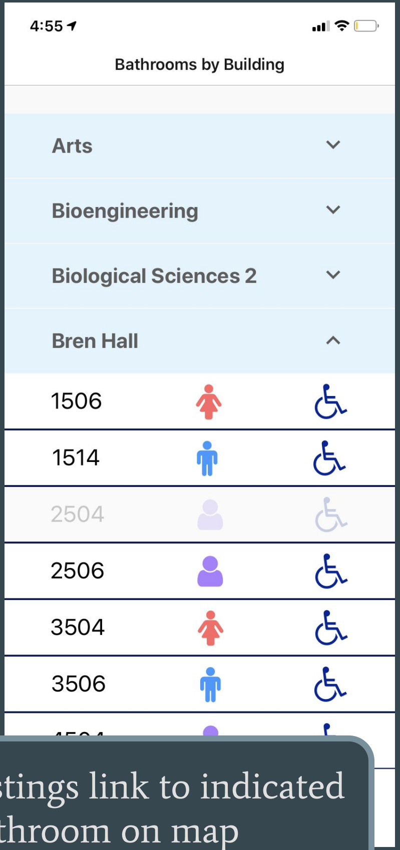

3:20

Bathrooms by Building

- Arts
- Bioengineering
- Biological Sciences 2
- Bren Hall

1506	♀	♿
1514	♂	♿
2504	●	♿
2506	●	♿
3504	♀	♿
3506	♂	♿
4504	●	♿

bathrooms have color coded gender & accessibility icons

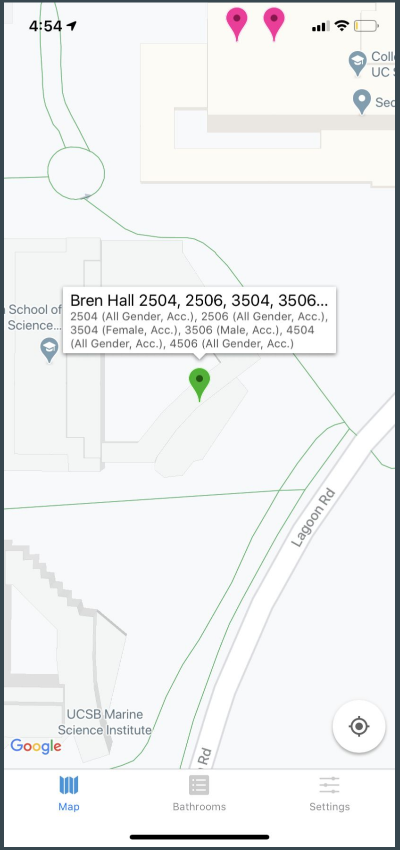

4:55

Bathrooms by Building

- Arts
- Bioengineering
- Biological Sciences 2
- Bren Hall

1506	♀	♿
1514	♂	♿
2504	●	♿
2506	●	♿
3504	♀	♿
3506	♂	♿

Listings link to indicated bathroom on map

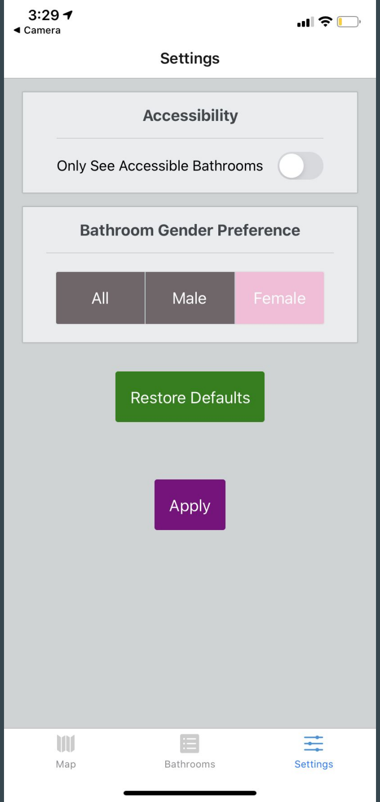

4:54

Bren Hall 2504, 2506, 3504, 3506...
2504 (All Gender, Acc.), 2506 (All Gender, Acc.), 3504 (Female, Acc.), 3506 (Male, Acc.), 4504 (All Gender, Acc.), 4506 (All Gender, Acc.)

Settings Tab

Features

- Users can set filters based on gender/accessibility preferences so that the map shows only bathrooms that fit their preferences



3:29
◀ Camera

Settings

Accessibility

Only See Accessible Bathrooms ○

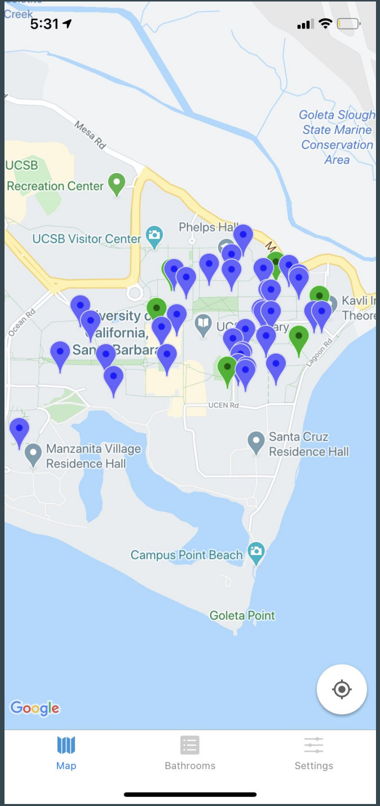
Bathroom Gender Preference

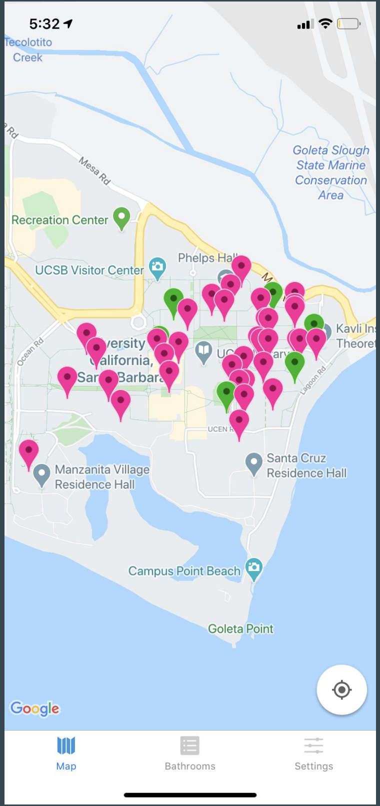
All | Male | Female

Restore Defaults

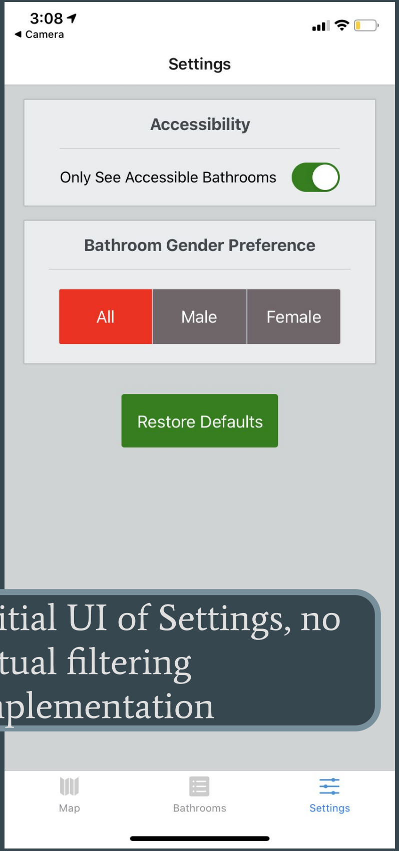
Apply

Map | Bathrooms | Settings


5:31
Creek
UCSB
Recreation Center
UCSB Visitor Center
Phelps Hall
Mesa Rd
Goleta Slough State Marine Conservation Area
University of California, Santa Barbara
Kavli Institute for Theoretical
UCEN Rd
Ocean Rd
Lagoon Rd
Manzanita Village Residence Hall
Santa Cruz Residence Hall
Campus Point Beach
Goleta Point
Google
Map
Bathrooms
Settings


5:32
Tecolotito Creek
Mesa Rd
Goleta Slough State Marine Conservation Area
Recreation Center
UCSB Visitor Center
Phelps Hall
University of California, Santa Barbara
Kavli Institute for Theoretical
Ocean Rd
Lagoon Rd
UCEN Rd
Manzanita Village Residence Hall
Santa Cruz Residence Hall
Campus Point Beach
Goleta Point
Google
Map
Bathrooms
Settings

Evolution



Settings

Accessibility

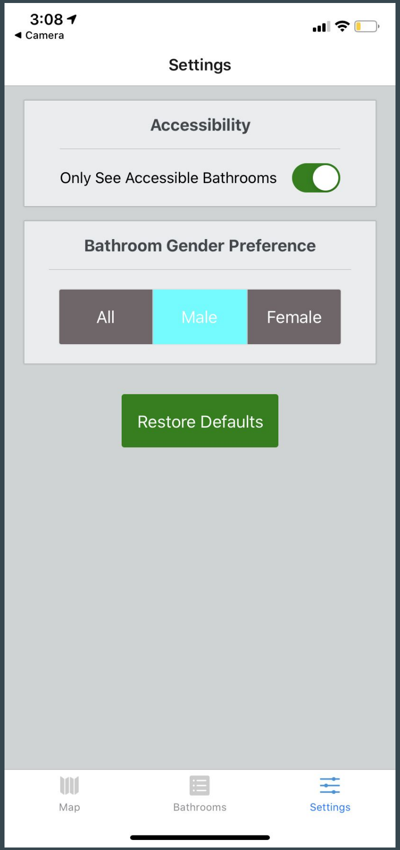
Only See Accessible Bathrooms ●

Bathroom Gender Preference

[✓ All] Male Female

Restore Defaults

Initial UI of Settings, no actual filtering implementation



Settings

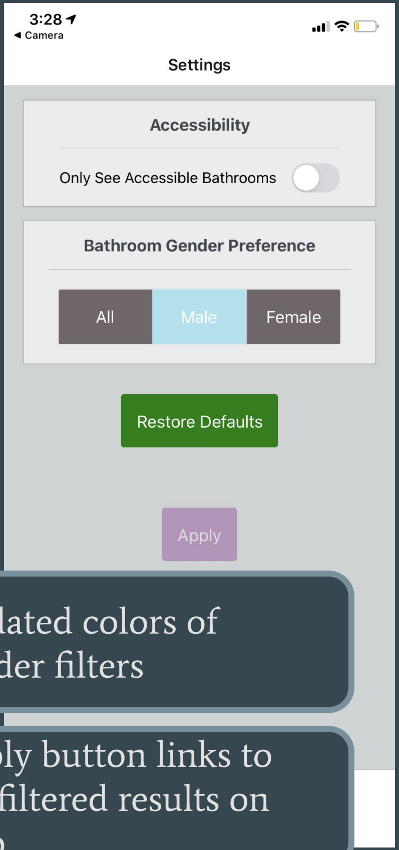
Accessibility

Only See Accessible Bathrooms ●

Bathroom Gender Preference

All [✓ Male] Female

Restore Defaults



Settings

Accessibility

Only See Accessible Bathrooms ○

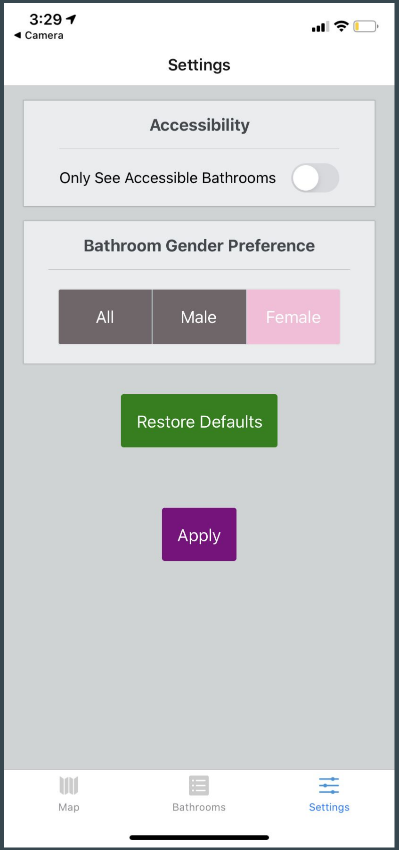
Bathroom Gender Preference

All [✓ Male] Female

Restore Defaults

Updated colors of gender filters

Apply button links to the filtered results on map



Settings

Accessibility

Only See Accessible Bathrooms ○

Bathroom Gender Preference

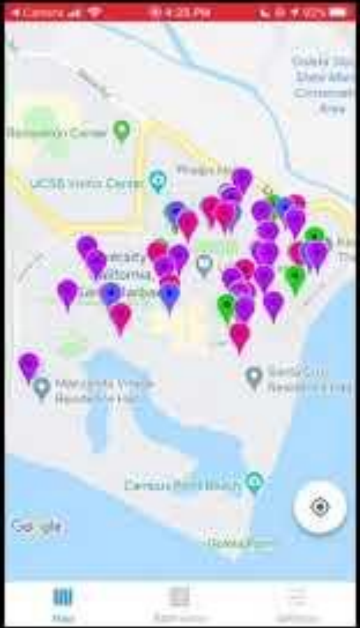
All Male [✓ Female]

Restore Defaults

Implementation Roadblocks

- ❏ Map markers overlapping
- ❏ Settings synchronization
  - ❏ Once user selects a filtering option, we want to synchronize this setting to the entire app and thus render different contents.
  - ❏ Attempted solution: Firebase storage.
    - ❏ We tried storing a user's setting on Firebase, but this means each user must have a unique Firebase storage spot.
  - ❏ Correct solution: Async storage.
    - ❏ Using AsyncStorage, a React Native module, we were able to modify and access app-wide data, allowing storage of users setting preferences.

Demo


Recreation Center
UCSB Visitor Center
Campus Point Beach
Google
Map

Thank you!