UCSC Bus Tracker

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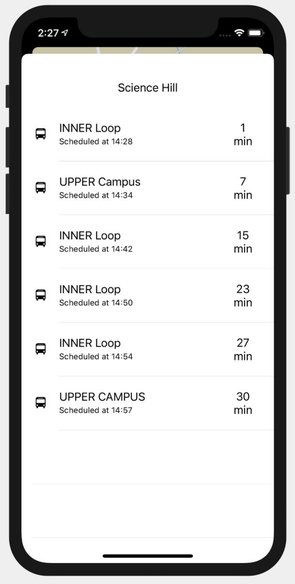
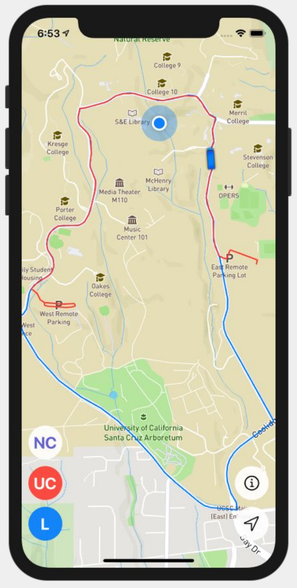
Abstract

Currently, UCSC students do not have a way to track campus buses. There have been many attempts in the past, but none were designed to last and only worked for a couple years. Students need bus data to efficiently navigate around campus. As it stands, the current bus system without accessible live tracking is unreliable.

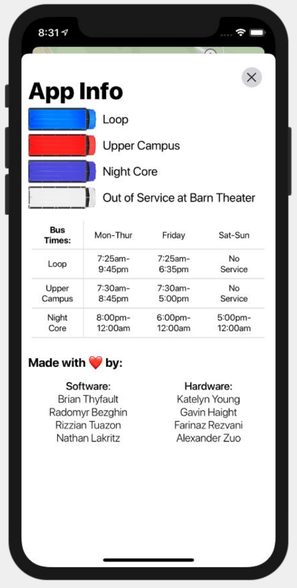
Our iOS app provides much-needed bus tracking alongside other helpful features. This is being done using an old hardware setup on campus used to locate the buses with radio base stations. With this data, we provide a clean and modern app to live-read the GPS location of on-campus buses and get an accurate ETA to bus stops.



Schedule & ETAs



Route Highlighting



Info Page

Features

- Real-time bus location tracking with distinct bus icons
- User location and points of interest give context to the map
- Bus orientation feature allows users to easily identify the direction of travel
- An ETA Table for every bus stop makes it easy for users to catch buses on time
- Colored bus routes help users who are new to the campus know exactly which bus to take to get to their desired destination
- Info panel lets users quickly learn how the bus system works

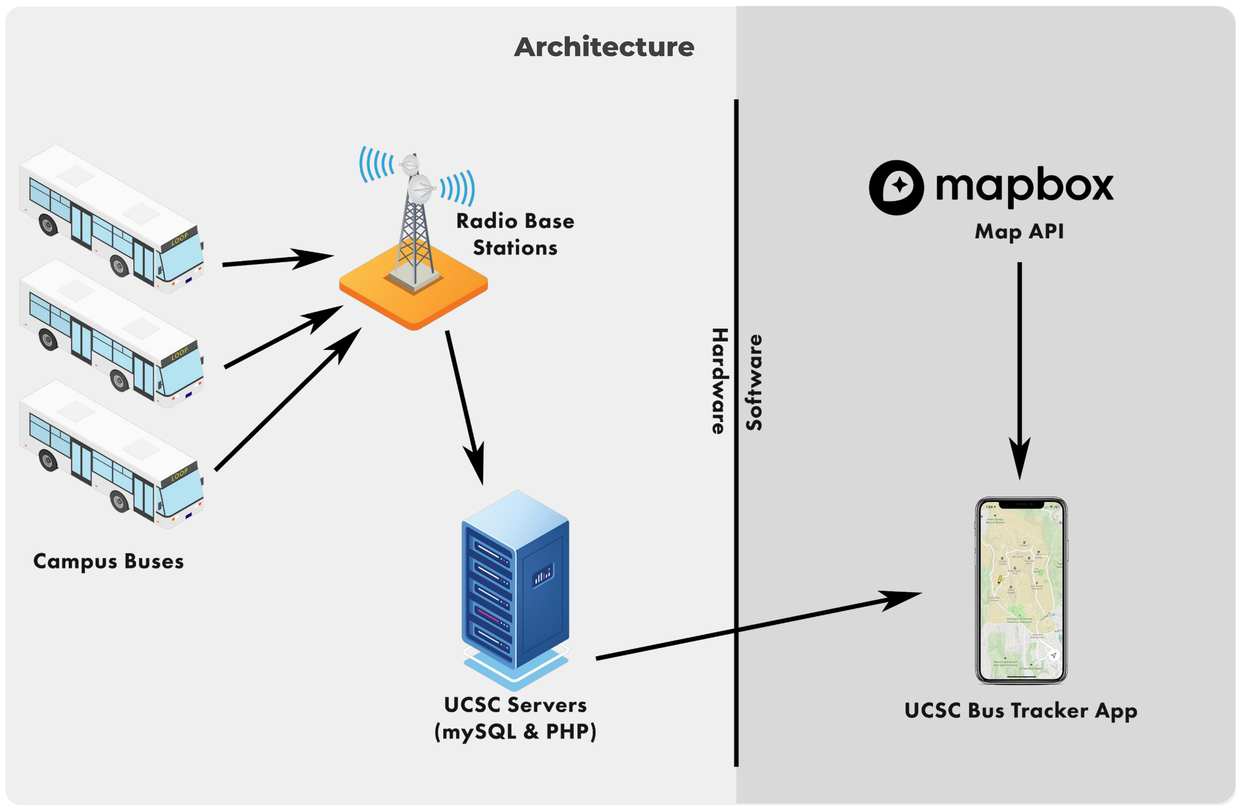
Approach

The hardware team that we were collaborating with was responsible for producing a whole new tracking system that includes: new on-bus tracking devices and upgrades of base stations. Together with our iOS application, these changes will ensure that students get reliable bus information whenever it's needed.

Mapbox: This is the core API our application is built on. It provides essential functionality for mapping points of interest and dynamically displaying the buses on a map.

MySQL & PHP: We are using data provided by the hardware team, that is stored on a mySQL database.

Radio Base Stations: Are acting as a middleman by collecting the data from the buses and sending it to the database.



Conclusion

Our team was able to create a mobile application that has a great-looking and intuitive UI as well as functionality that will help students navigate this school.

Hardware team succeeded in creating new and improved tracking devices, but its integration has been delayed due to COVID-19 concerns. Installing newer hardware onto the buses will conclude a full revamp of the UCSC Bus Tracking System which hopefully can happen in the Fall.