SMART Rack

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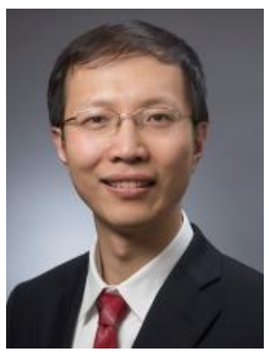


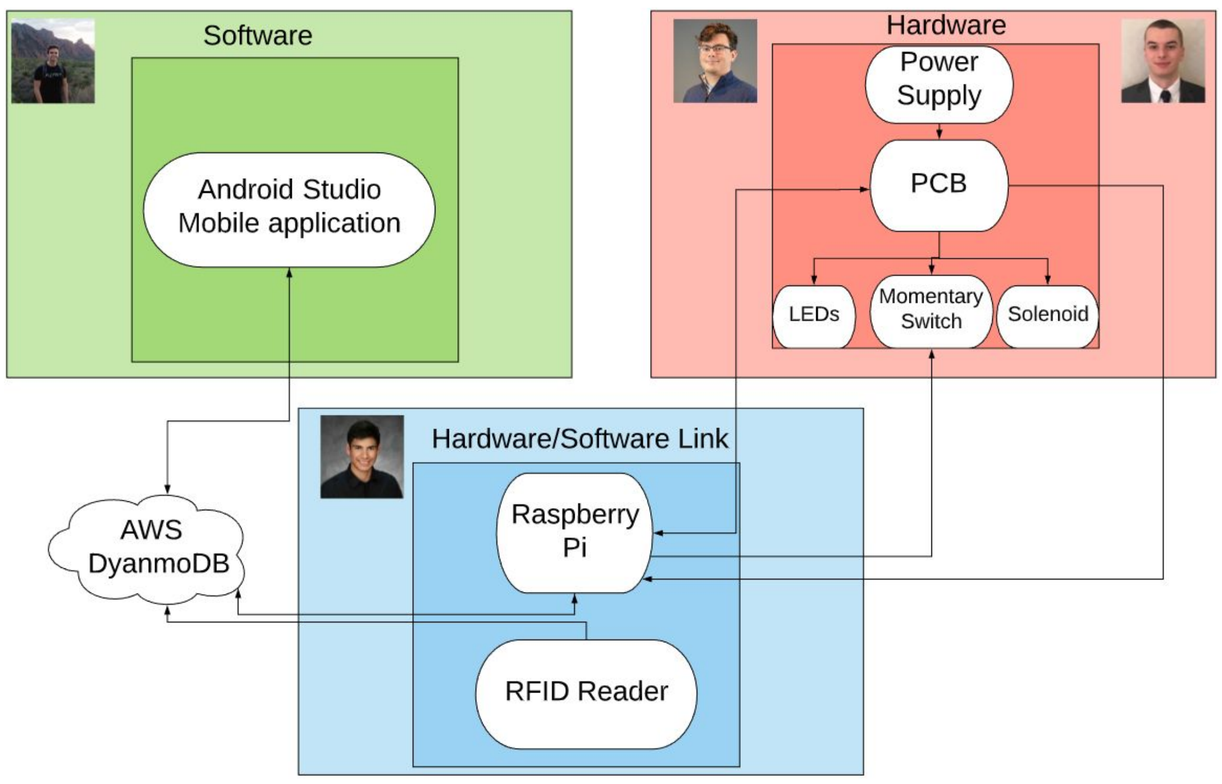
Abstract

One of the most common methods of transportation, especially for students, is biking. However, a big issue, especially on campus, is overcrowded bike racks. The SMART Rack offers a solution to this issue. The SMART Rack is a bike rack that is connected to the internet, and is operated through a mobile application. The app allows users to reserve spots at the rack of their choice, giving users peace of mind knowing that their bike is secure.

System Overview

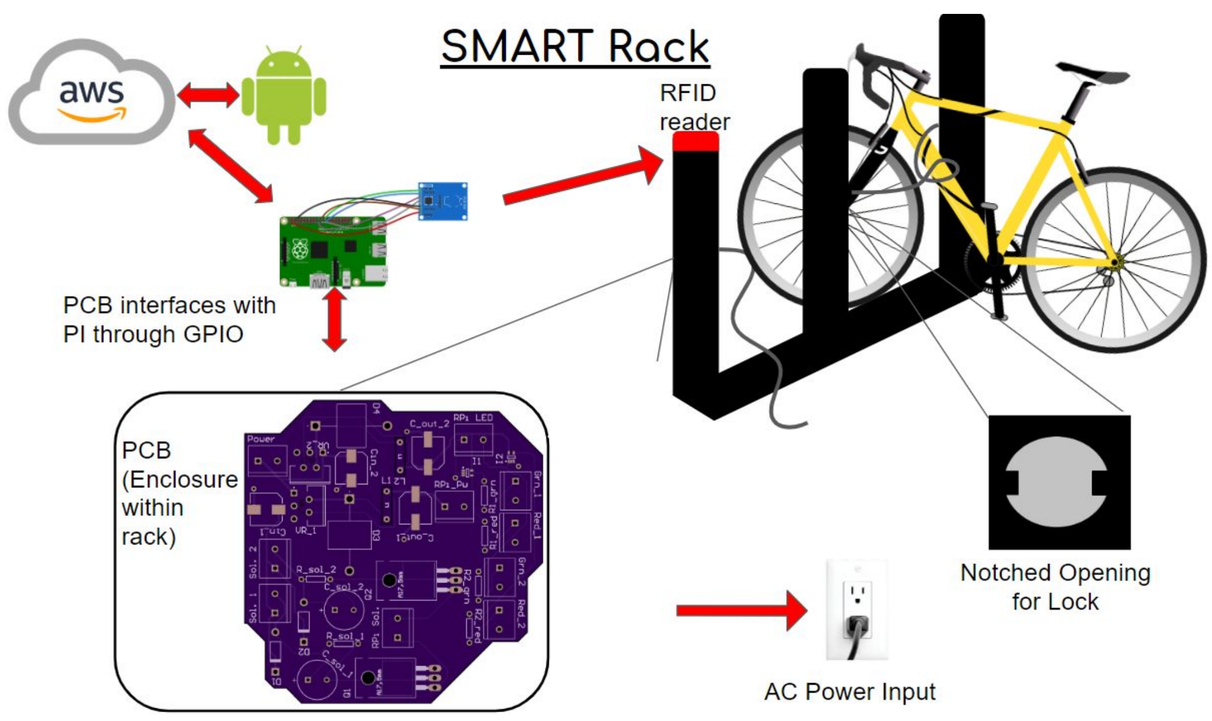
SMART Rack features an embedded lock bike rack that connects to an Android mobile application via Amazon Web Services. Reservations of rack spots are made possible through this application, which shows users all available bike spots via map view. Users are able to use RFID cards to lock and unlock their bikes once they arrive at the rack.

Block Diagram



Results

Our team was successful in creating a working Smart Rack where our embedded locking system can properly engage with the tap of our dummy RFID tags (substituting the conventional UCard).



Specifications

- Mobile Application Reservation System
- 15 minute post-reservation deadline
- Embedded locking system
- RFID Compatibility
- Raspberry Pi integration

Acknowledgement

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