H.A.R.D HACK Project Proposal

Team Canton
Zhimin Lin, Zihan Yi, Po Hsiang Huang, Rigo Carreto, Robert Young

Project Abstract (100 words) - High Level Description of Project

By using dragon board 410c, mezzanine board, arduino uno, and an ultrasonic distance sensor, we created a device that can be triggered through bluetooth connection. It is design to be implemented as door locks providing security by enabling an automatic, Bluetooth system that recognizes individual phones' IP addresses for access. As an extra measure for security and efficiency, we added the ultrasonic sensor to detect and allow access only if paired device is within the range of a meter.

Project Description (500 words)

What inspired you to create this project? (500 words MAX)

While brainstorming, Robert addressed the issue of students being locked out of their residential halls because they forgot to bring their ID card or forgot their card's PID. Our team agreed to work on this issue because all of us have experienced such frustration. We want to save students the hassle of pulling out their ID cards from their wallets, help them avoid the risk of being locked outside their dorms if they forgot or misplaced their ID, and at the same time provide security by enabling an automatic, Bluetooth system that recognizes individual phones' IP addresses to act as a reliable fail safe for student residential access.

What was your desired outcome? (250 words MAX)

Making students' lives easier. It is much less likely for us to forget our phones than forgetting our ID cards, thus decreasing the chance of being locked outside by forgetting both. Furthermore, our hands can be freed from fumbling for our ID cards. Imagine going shopping and coming home carrying a lot of stuff. It would be very inconvenient when we have to put the stuff down and look for our IDs. With this technology, anyone carrying a registered phone with bluetooth function can unlock doors remotely simply by approaching the door.

Future improvements

Despite hours of effort, we were unable to integrate the servo motor to perform an unhinging movement and build a 3D printed shell due to technical issues. Therefore, we believe that this

product has the potential to latch onto and adapt to all kinds of doors. By reducing its size and cost, it could become a very widespread and convenient security system attractive to college residence agencies and those seeking independent, custom installations.