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## ECE 153B Project Proposal

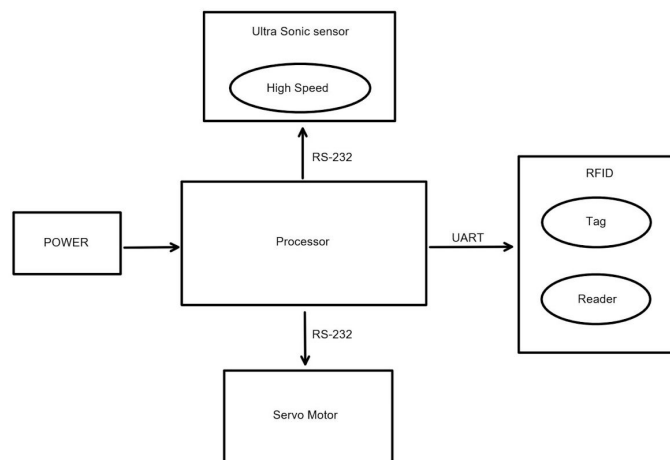
Overview: Similar to existing products by Ring and Nest, we want to implement a front door security mechanism but with some extra features. It would allow the user to automatically open a door at the swipe of a card and capture front door movement.

Peripherals and protocols:

- [Ultrasonic sensor](#): to detect if an object is within range of the front door (RS-232)
- [RFID tag/reader pair](#): to scan into the place (UART)
- [Servo motor](#): to twist the deadbolt and let the person in if granted access by the resident or if the NFC tag has the desired entry key (RS-232)

We were originally planning to incorporate a camera module to capture the complete view if an object is there and until it leaves and allow the resident to grant entry access through the app but swiped those ideas in favor of time and complexity. To simulate these ideas, we have decided to go with turning on an LED if an object is within range and a pushbutton switch to grant access.

Block diagram:



Responsibility list (subject to change, work simultaneously for the most part):

- Swetha: software configuration
- Cher: website, demo video

Software structure: uses interrupts to quickly alert processor

- if distance measurement from ultrasonic sensor less than 2 feet -> turn on LED
- if RFID tag key equals entry key -> turn servo
- if push button is pressed -> turn servo

Link to website: [Front Door Security](#)