Goal: Develop a Smart Watch Prototype

- Implement the firmware for a "fully" functioning smart watch on Buckler
- Functionalities:
  - footstep detection
  - distance measurement
  - alarms/timekeeping
  - Bluetooth connectivity to iOS
  - control via voice commands

Ajay Gopi, Michael Lee, Arvind Sundararajan
EECS 149, Fall 2018

Smart Watch: Current Status

- Bluetooth
  - iOS side nearly complete
  - Problems with Buckler
- Sensing
  - Able to detect position and velocity along axes
  - Threshold detection
- Integrating various tasks
  - FreeRTOS: real-time OS kernel for embedded devices

Ajay Gopi, Michael Lee, Arvind Sundararajan
EECS 149, Fall 2018

Smart Watch: Challenges

- Bluetooth on Buckler
- Sensing
  - Problem: poor accuracy
  - Solution: filtering, thresholding
- FreeRTOS
  - configuring the FreeRTOS scheduler: event-driven vs. time-shared
- Display
  - choosing between 2x16 character and larger options

Ajay Gopi, Michael Lee, Arvind Sundararajan
EECS 149, Fall 2018