

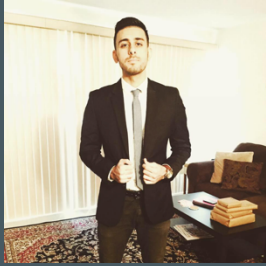
CDR Pothole Tracker



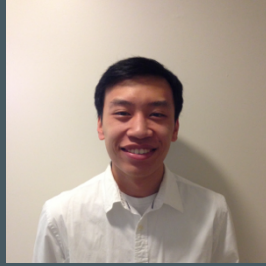
Muhammad Mir . Daniel Chin . Mike Catalano . Bill Quigg
Advisor: Professor Ciesielski

Pothole Tracker

Team 5



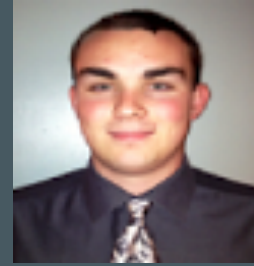
Muhammad Mir
CSE



Daniel Chin
CSE

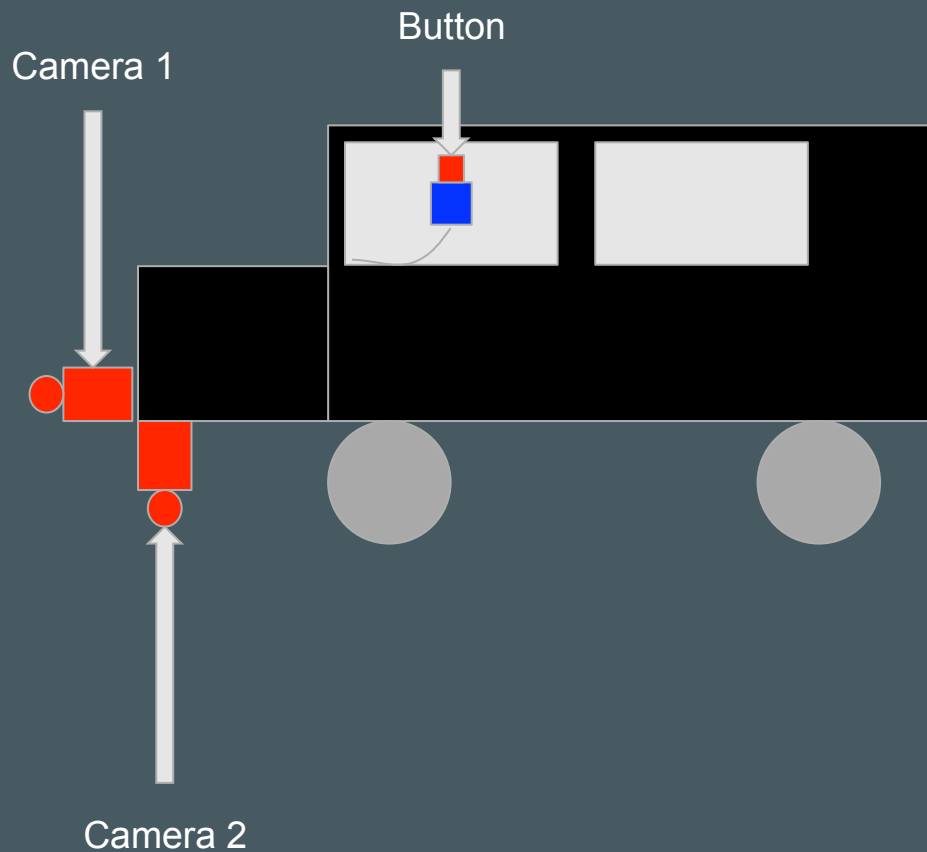


Mike Catalano
EE



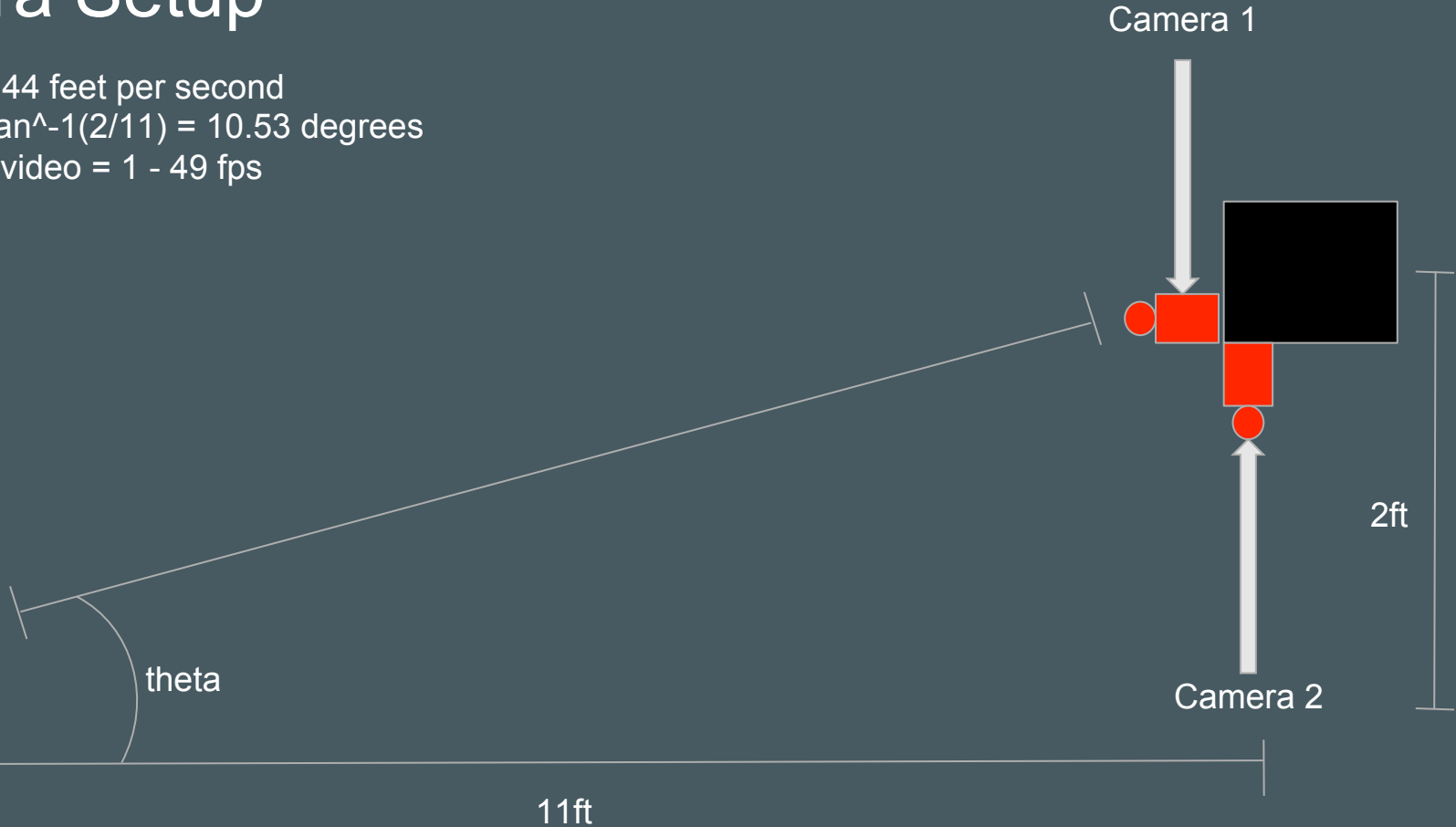
Bill Quigg
EE

A New Design

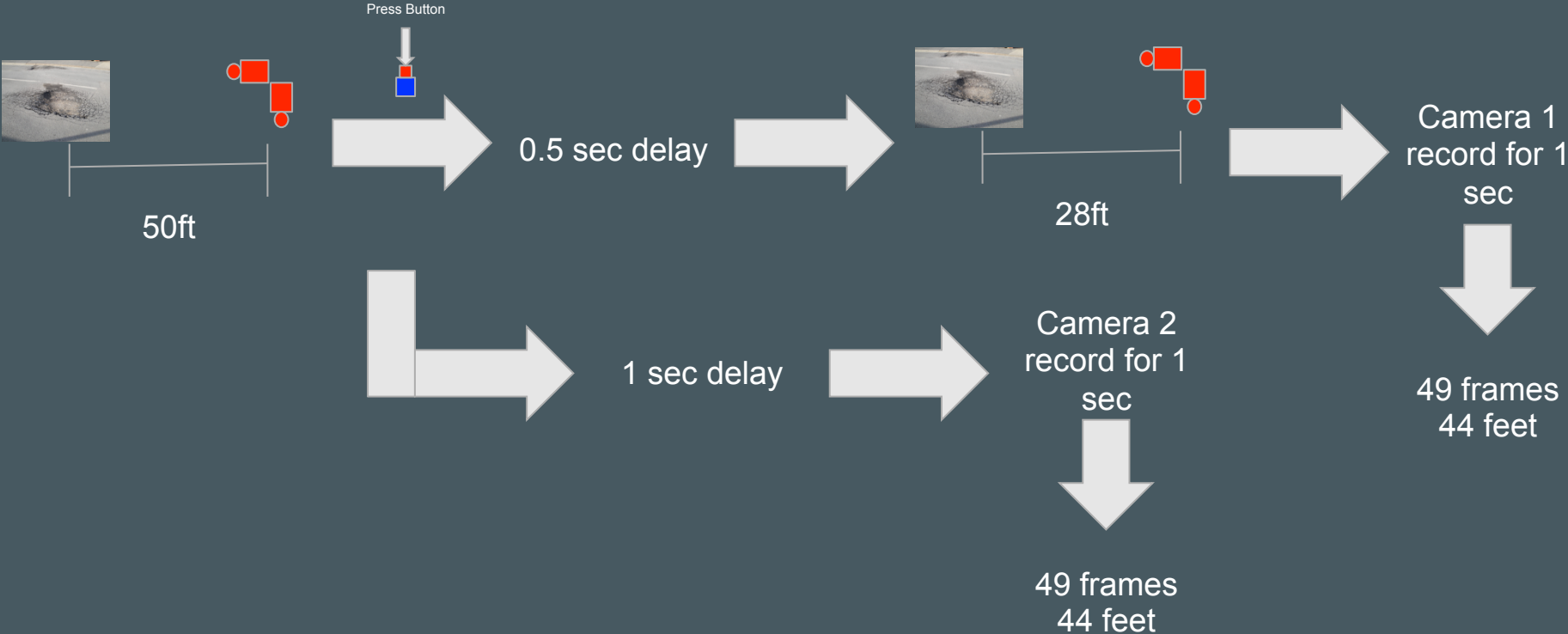


Camera Setup

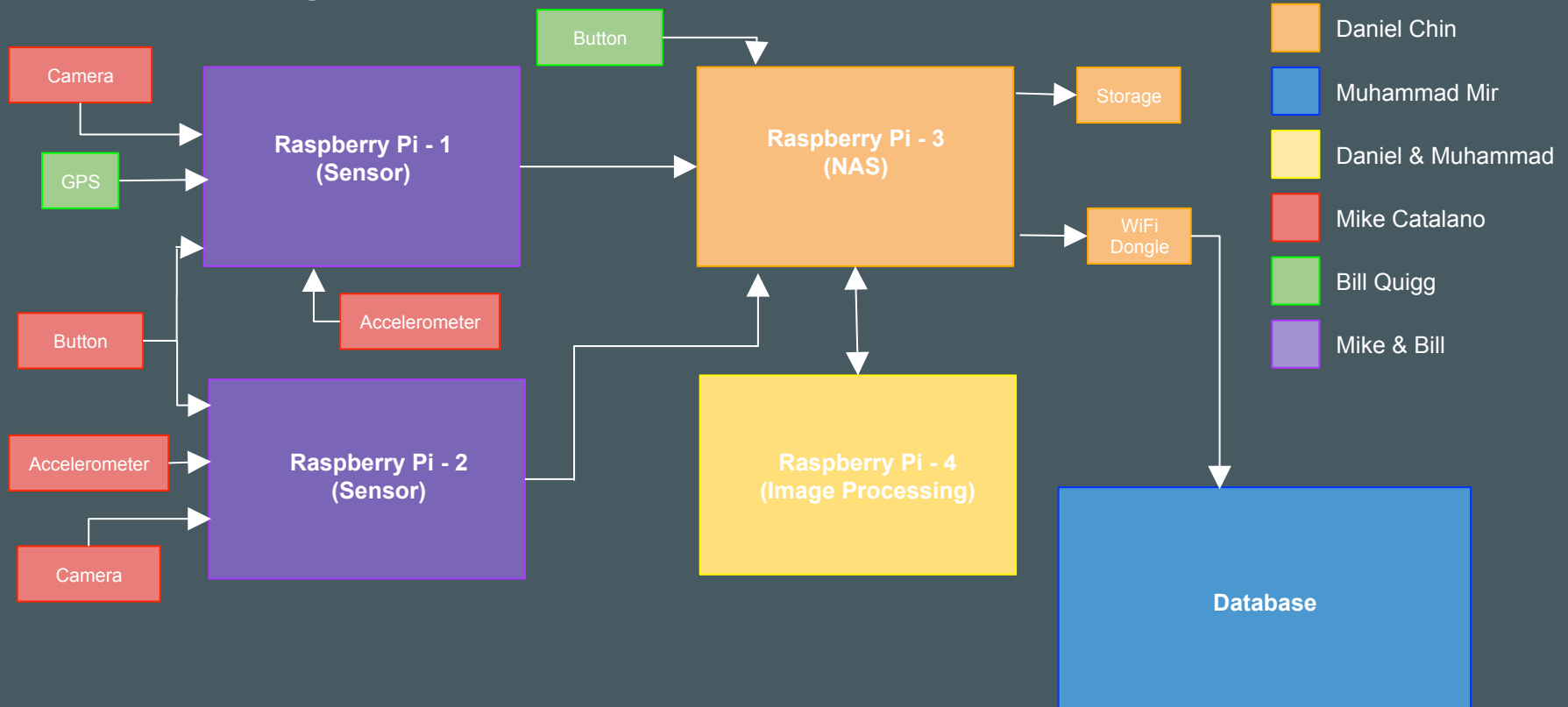
- 30 mph, 44 feet per second
- $\theta = \tan^{-1}(2/11) = 10.53$ degrees
- Camera video = 1 - 49 fps



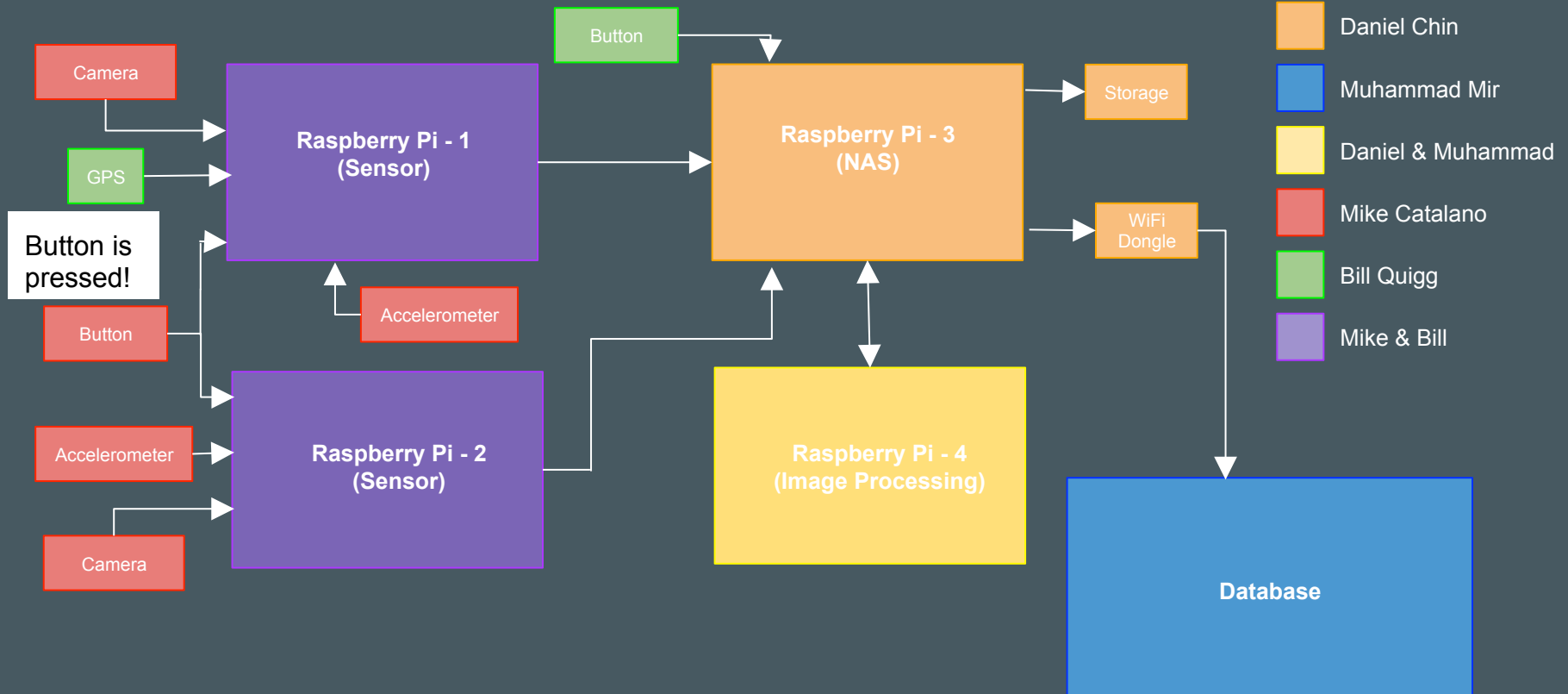
Scenario



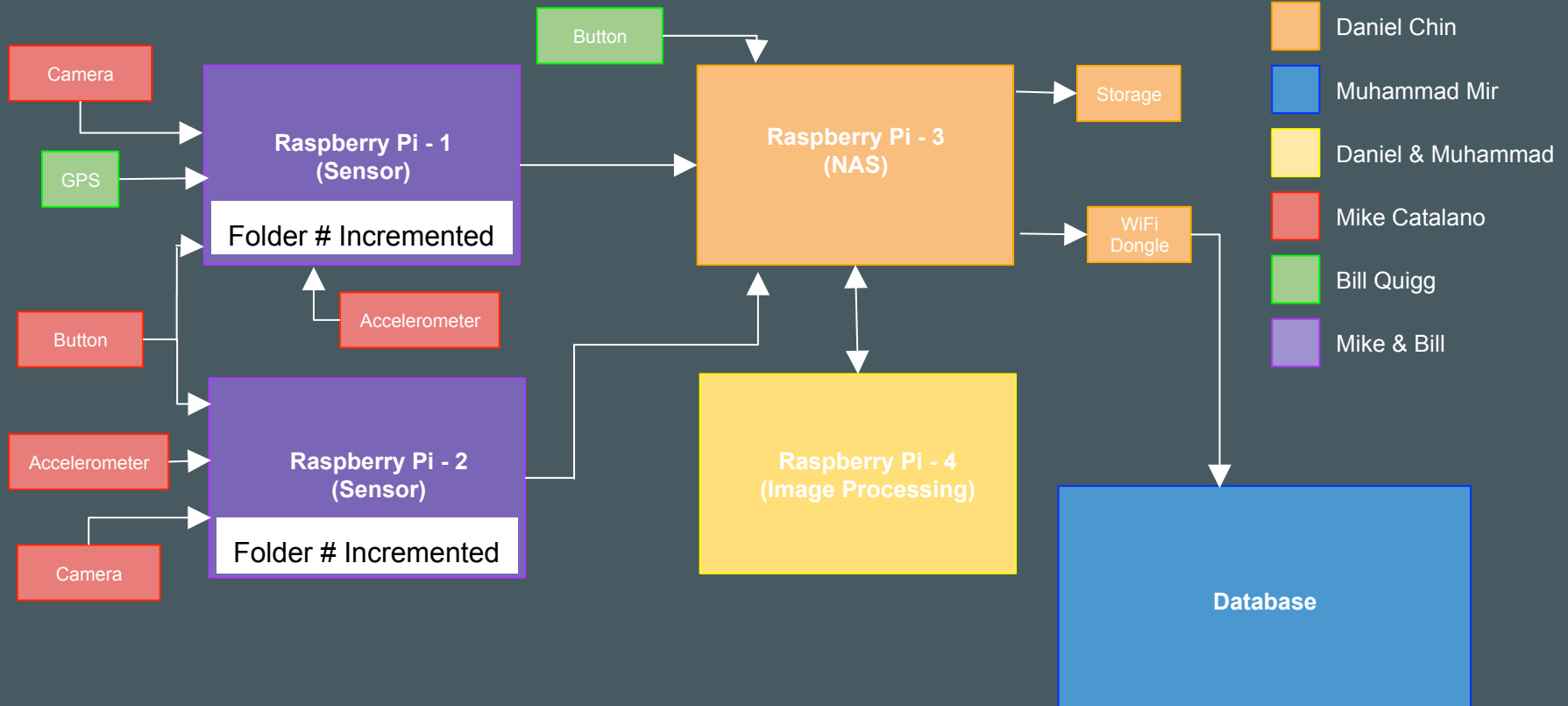
Block Diagram



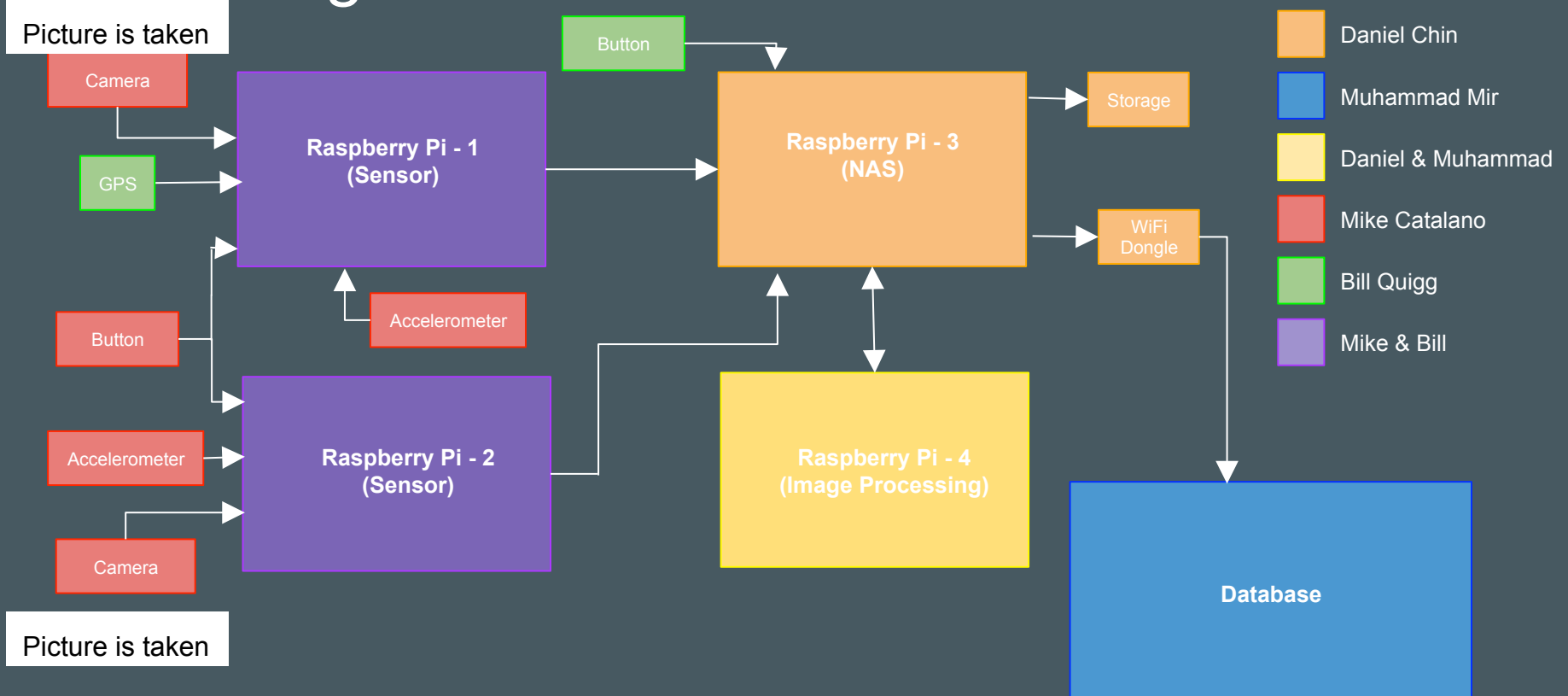
Block Diagram



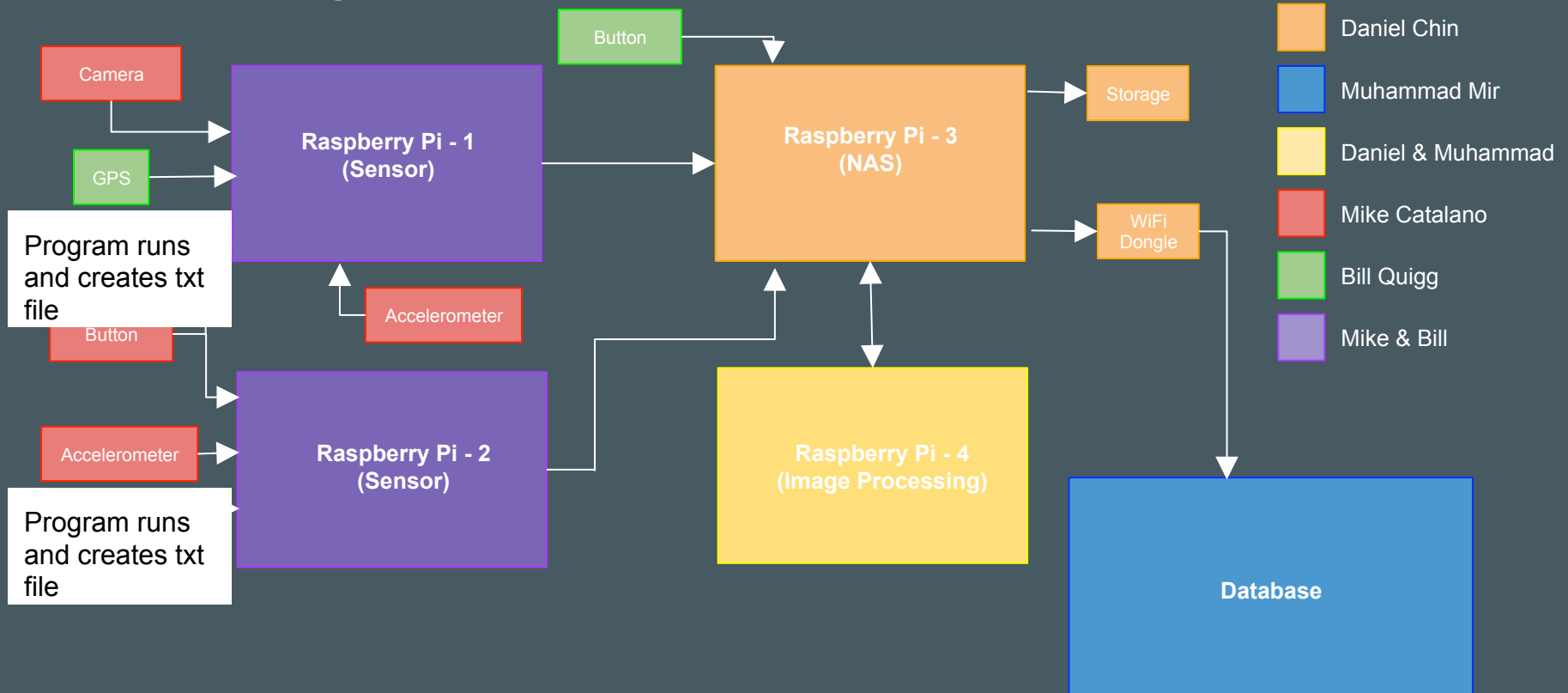
Block Diagram



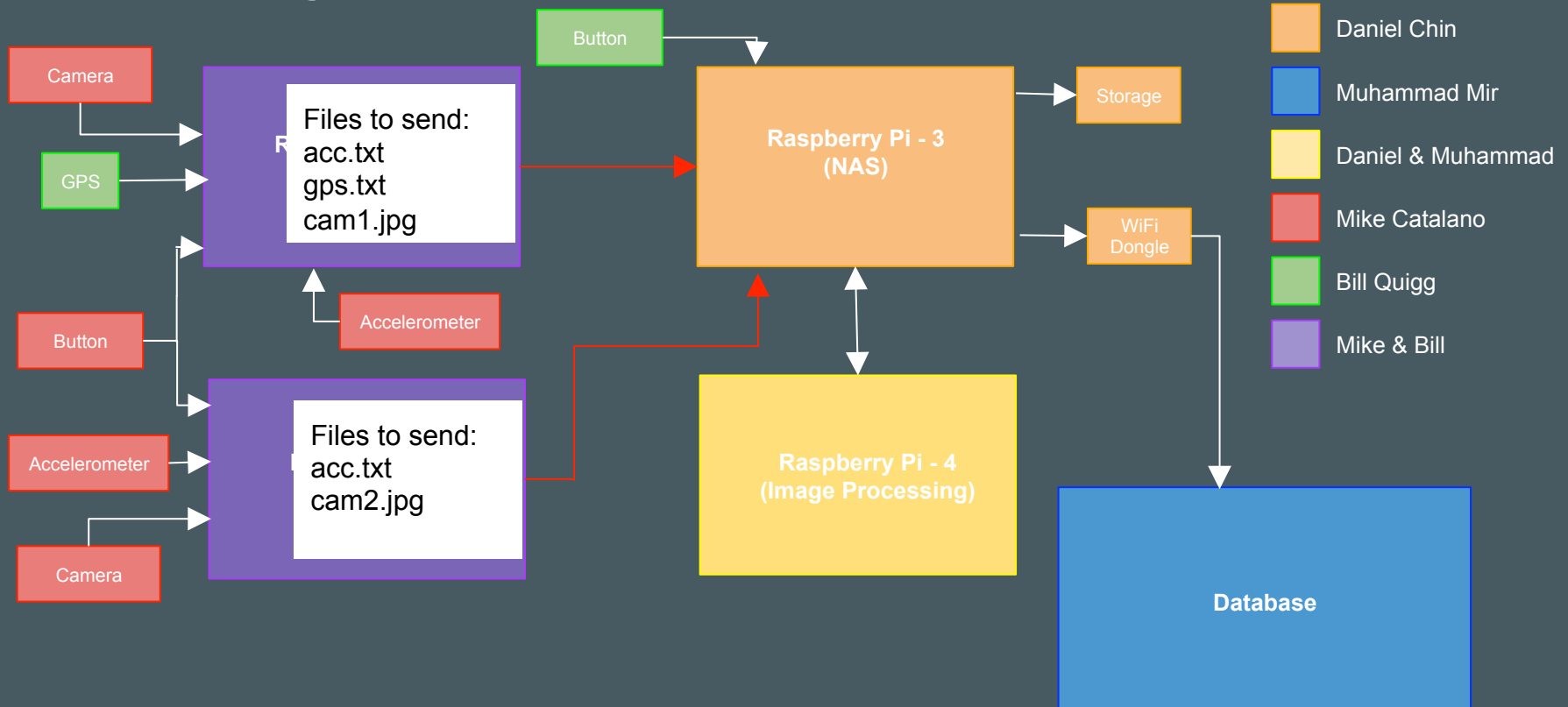
Block Diagram



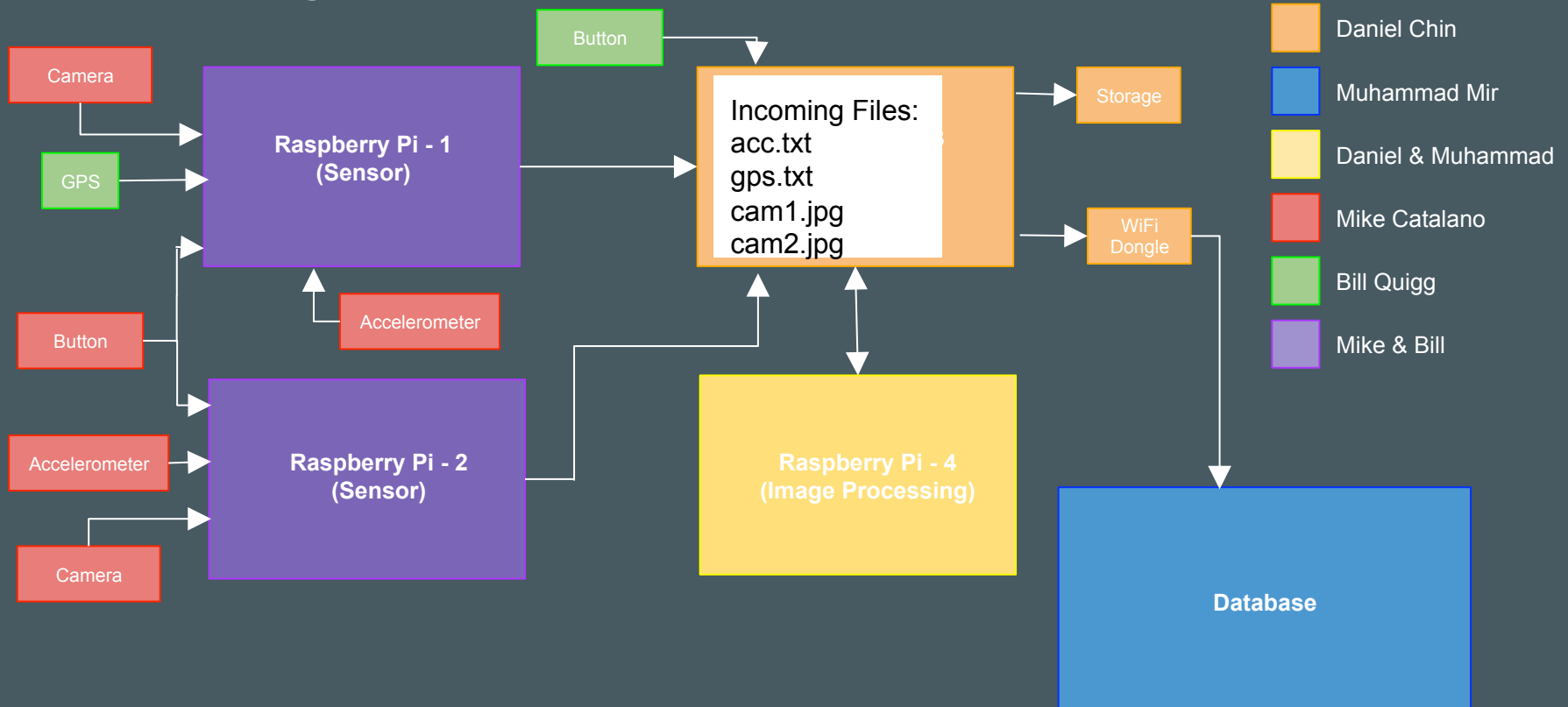
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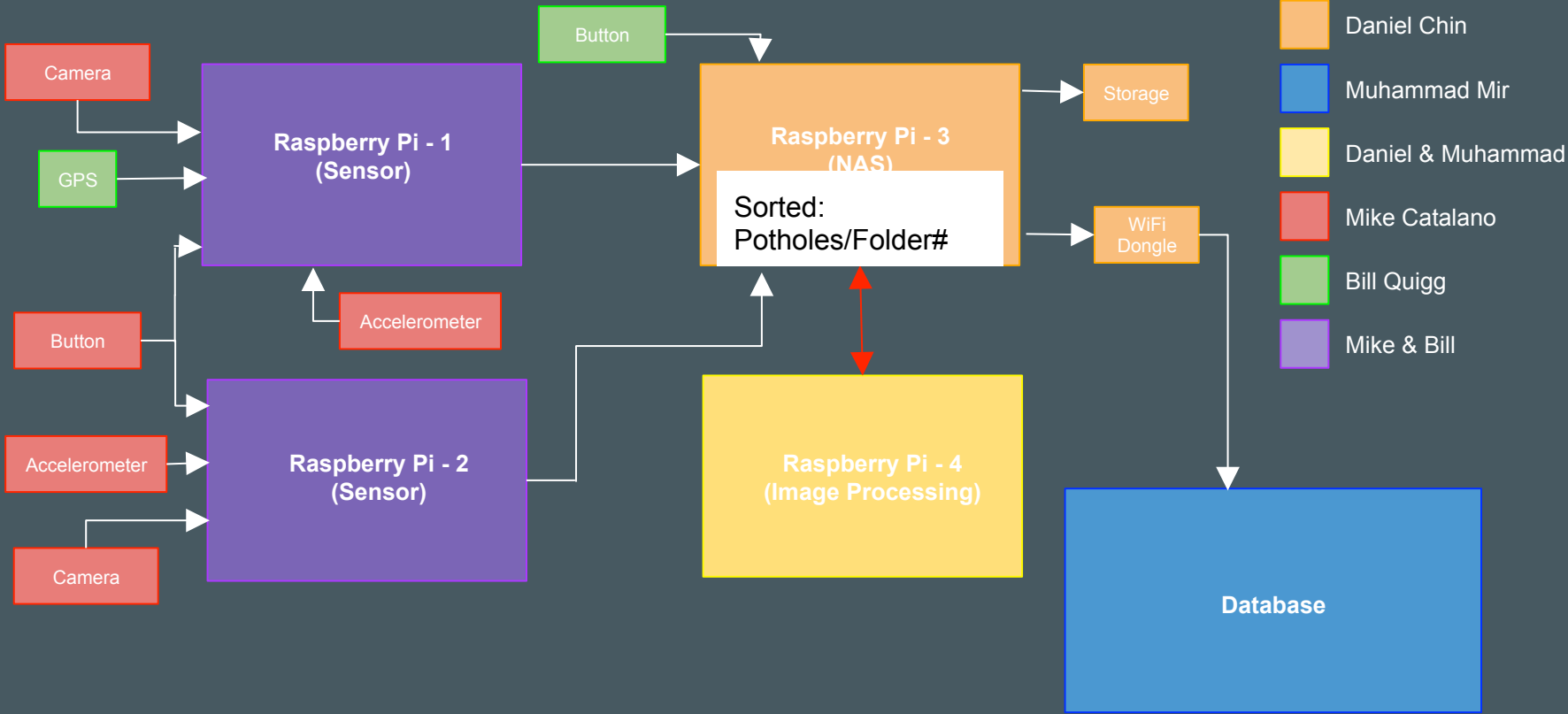
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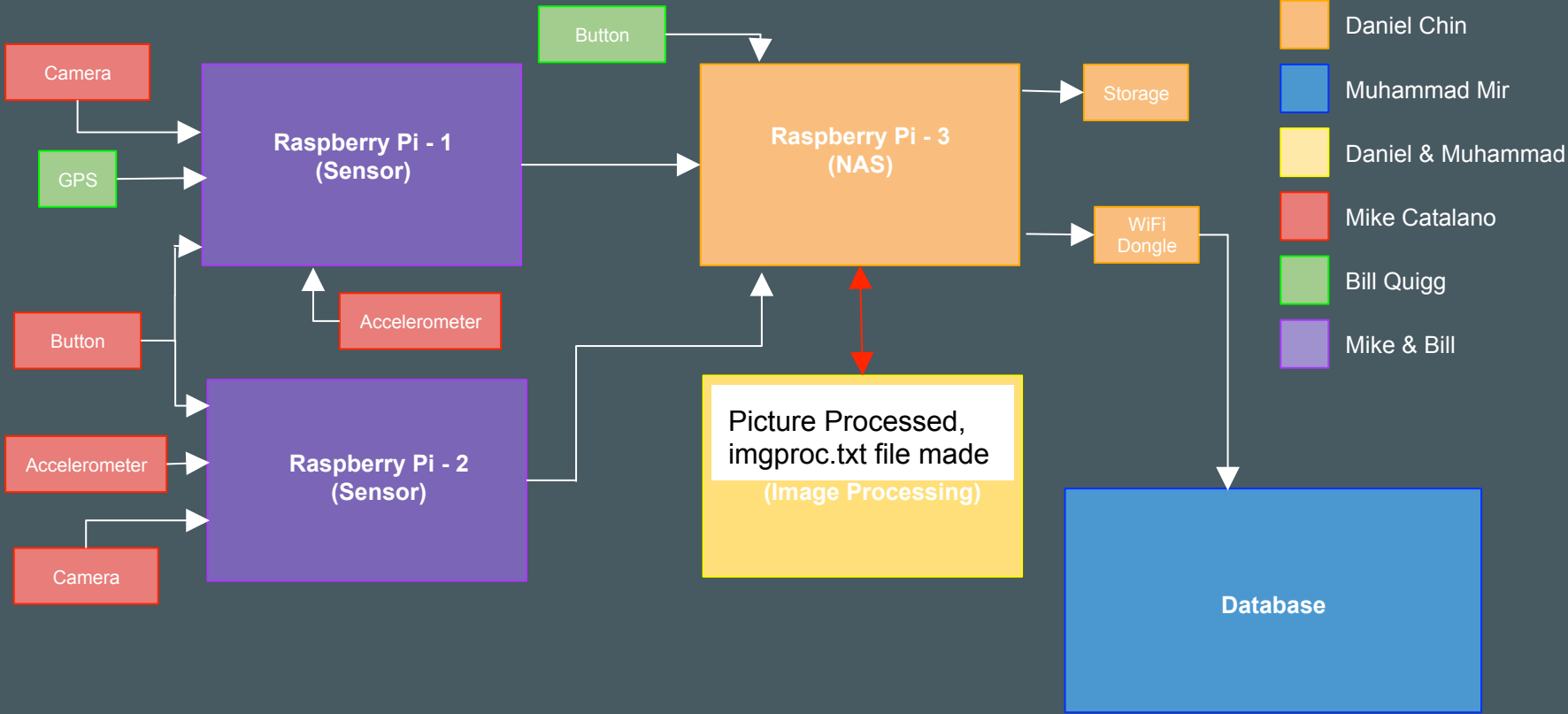
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Block Diagram

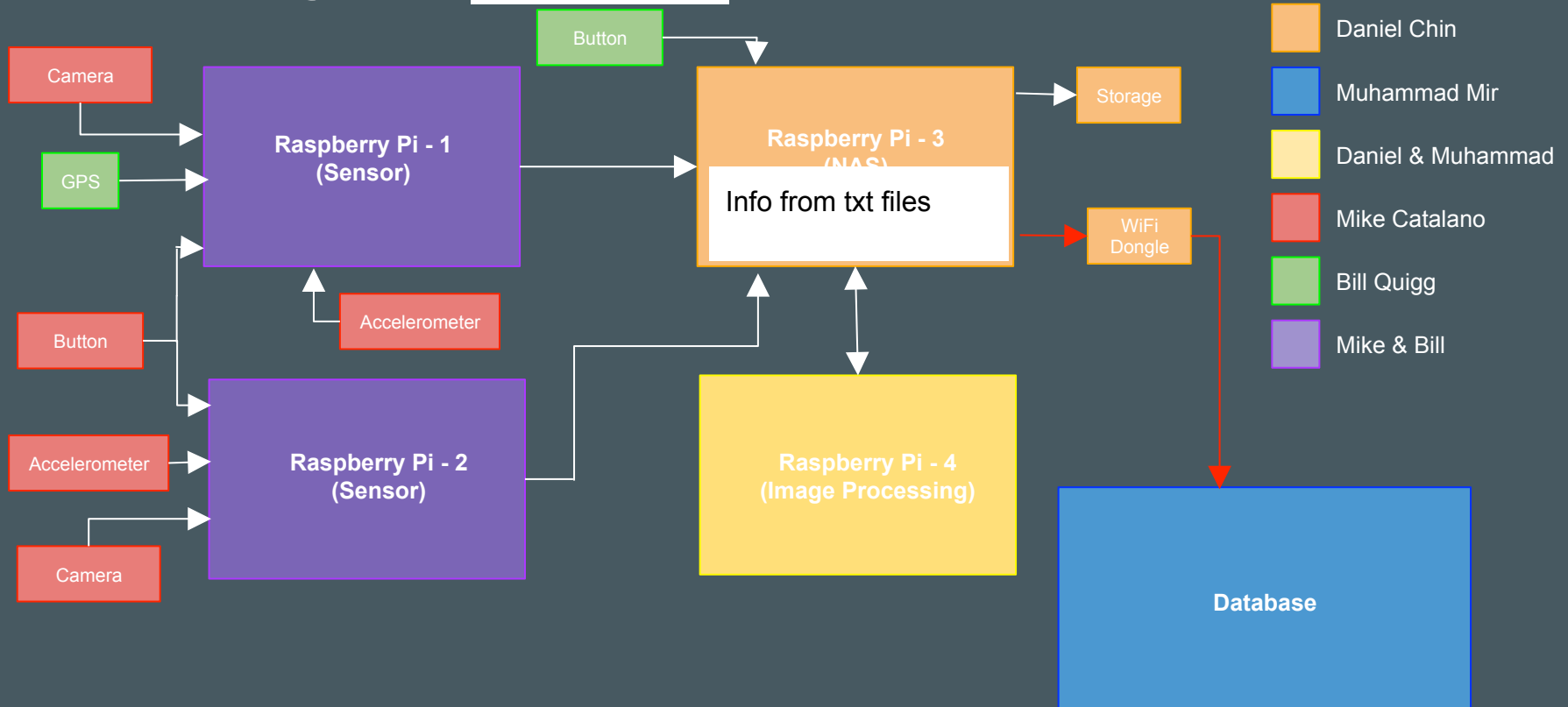


Block Diagram



Block Diagram

Button is pressed!



File Naming Scheme

a = accelerometer, g = gps, p = pothole image, i = processed image

Board Number

Folder Number

File Extension(.txt or .jpg)

Examples

a. a24.txt

b. g11.txt

c. p23.jpg

d. i12.txt

CDR Deliverables

Muhammad

- a. Create webpage displaying map and pothole locations

Daniel

- a. Setup NAS and send/receive data to/from usb storage

Daniel and Muhammad

- a. Improve image processing
- b. Be able to calculate depth and size of pothole

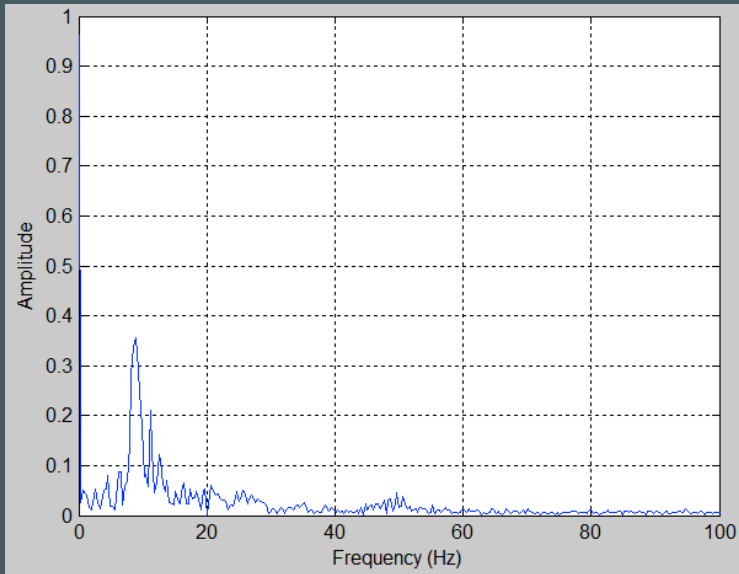
Mike

- a. Mount accelerometers and apply filter circuitry

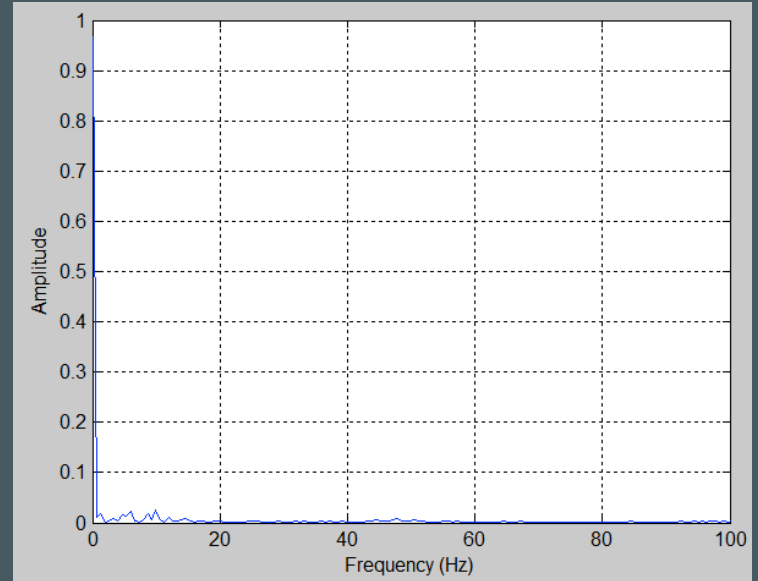
Filter Design

- Sampled potholes ranging in depth from 1" - 3"
- Pothole frequencies typically 10 - 15Hz

2" pothole



no pothole



Delays

Folder increment: 400us - 500us (For FDR Folder # will be incremented after sensor data is retrieved)

Camera: 710ms average delay, ranges from 700ms-750ms.

GPS: 950ms avg delay, ranges from 600ms - 1400ms

Accelerometer: 9ms delay (3 second runtime)

FPR Deliverables

Muhammad

- a. Send pictures from NAS to Image Processing board
- b. Send data to database at button press

Daniel

- a. Gather data from text files to send to database

Mike

- a. Finalize filter design
- b. Solder components to board

Bill