Dwight Look College of
ENGINEERING
TEXAS A&M UNIVERSITY

Team 36: Voice-Controlled Wheelchair
Bi-Weekly Update 2

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TA: Hadiur Khan

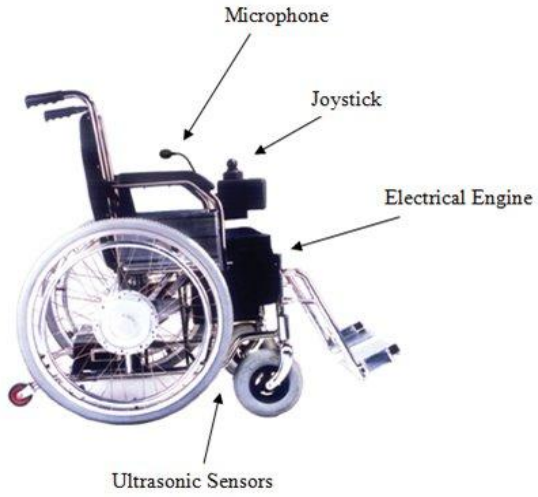
Project Summary

Problem:

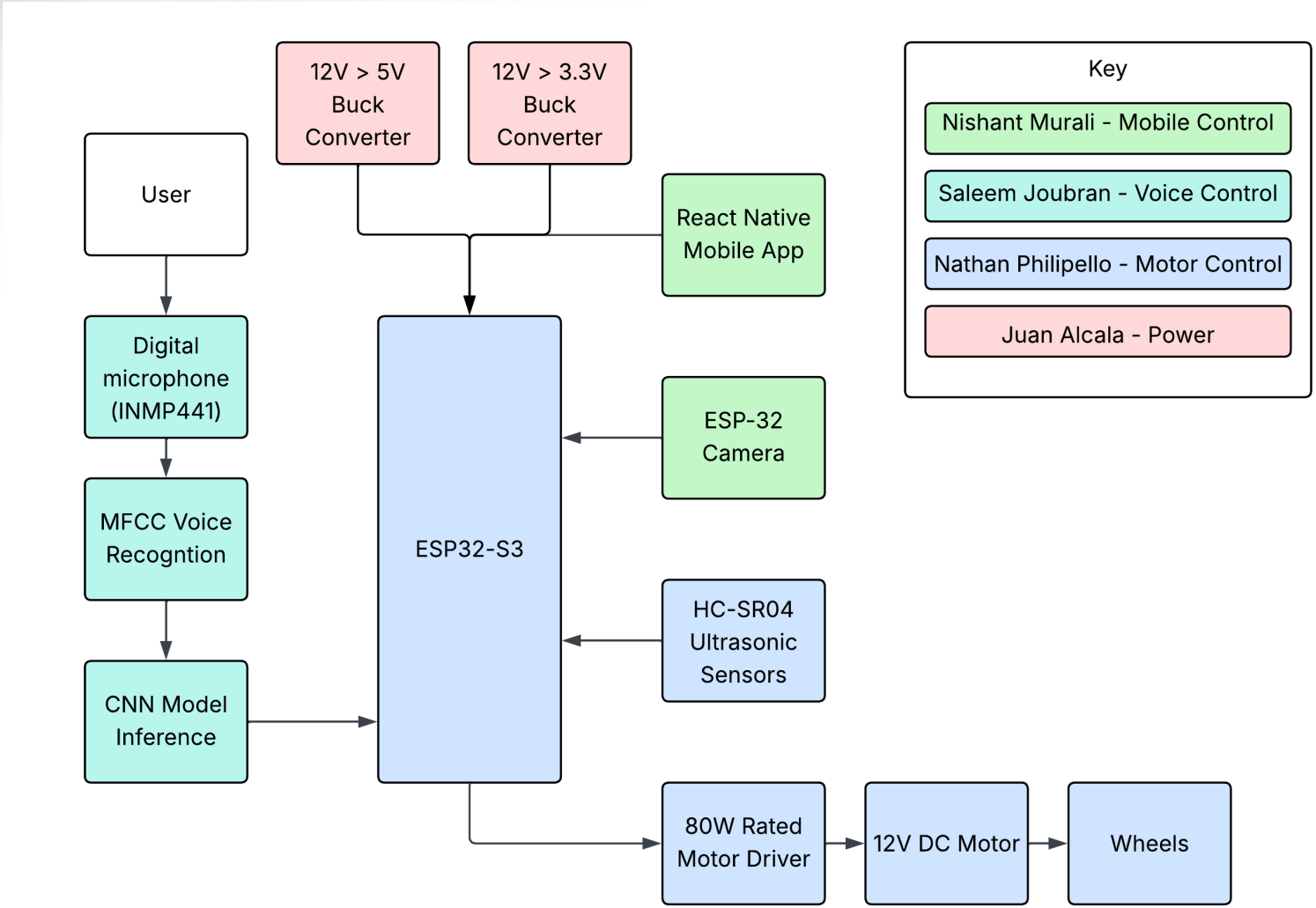
Many wheelchair users with limited upper-limb mobility often need caregiver assistance for navigation

Proposed Solution:

Voice control navigation will provide increased independence and safety



Project/Subsystem Overview



Project Timeline

Order designed PCB (Completed 9/18)	Integrate voice command on the motors (Completed 9/18)	Integrate voice command to the app (Complete by 9/26)	Integrate mobile app to motor control (Complete by 10/1)	Validate Drivetrain can handle weight limit (Complete by 10/7)	Validate control and response time (Complete by 11/7)

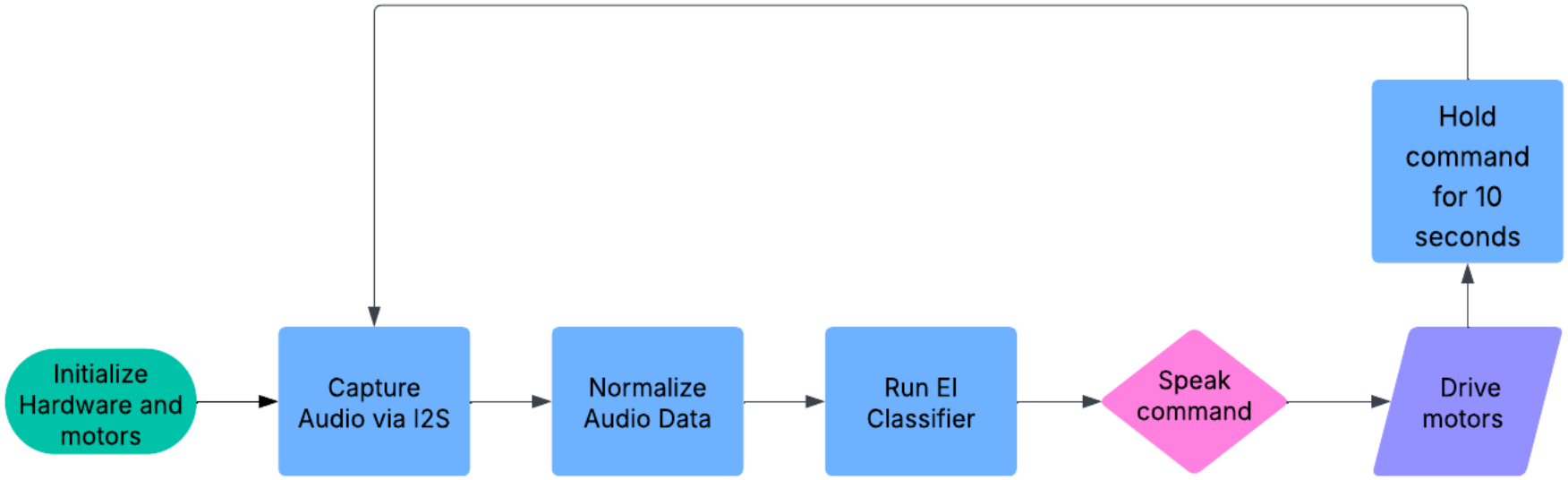
Voice Command Recognition

Saleem Joubran

Accomplishments since last update 16 hours of effort	Ongoing progress/problems and plans until the next presentation
• Integrated and tested voice command recognition with motor controls	• Integrate voice commands onto the App • Validate control response time and sensor feedback

Voice Command Recognition

Integrated Code Flow:



Mobile Control and Monitoring

Nishant Murali

Accomplishments since 403 16 hrs of effort	Ongoing progress/problems and plans until the next presentation
• Implemented login system with authentication and optional account creation. • Designed Voice control UI	• Ongoing integration with voice control system

Mobile Control and Monitoring

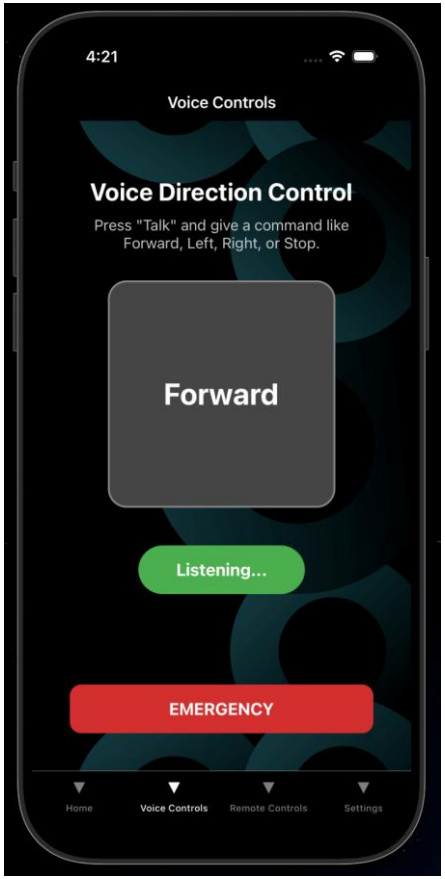
Nishant Murali

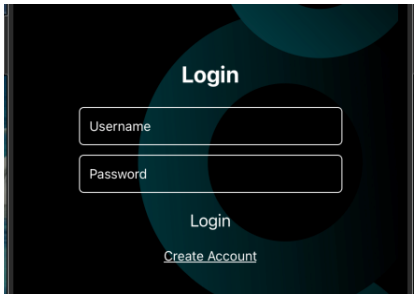
Updates and Ongoing

- Authentication feature
- Voice control screen UI
- Edge impulse alternatives
  - Native apple ML model

Issues

- Loading edge impulse into React Native





Motor Driver & Sensors

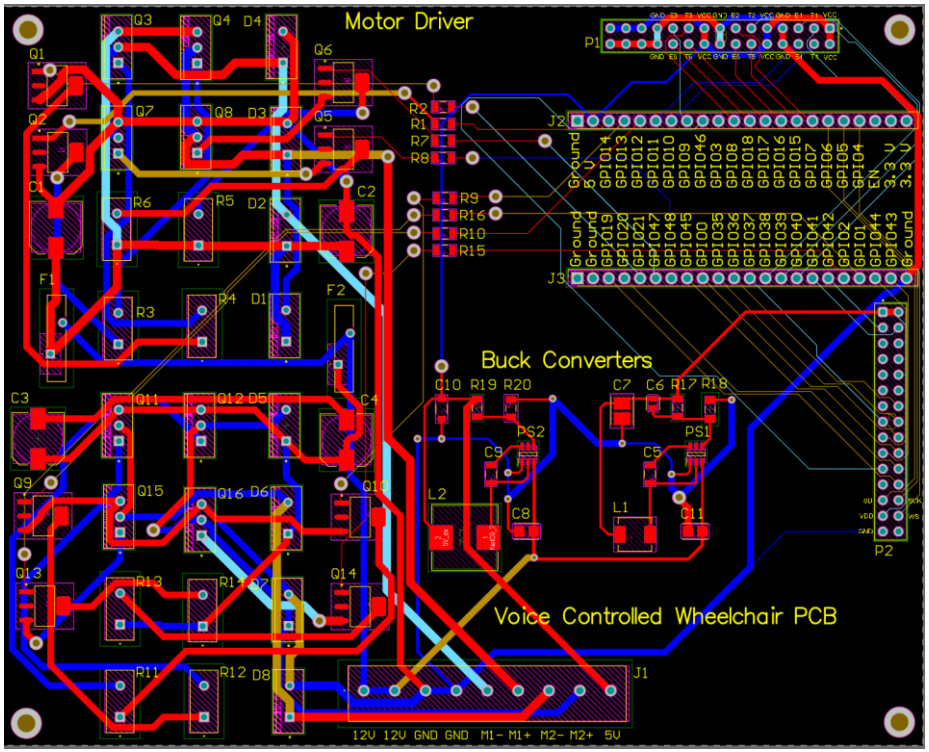
Nathan Philipello

Accomplishments since last presentation 24 hrs of effort	Ongoing progress/problems and plans until the next presentation
• Created new mechanical drive system to meet speed requirements. • Ordered fully integrated PCB • Redesigned PCB to incorporate Heatsinks	• Stress Testing Drive System • Wiring sensors neatly into PCB

Motor Driver & Sensors

Nathan Philipello

- Redesigned PCB with space for heatsinks
- Full overhaul of drive system



Motor Driver & Sensors

Nathan Philipello

Old Drive System

New Drive System

Power

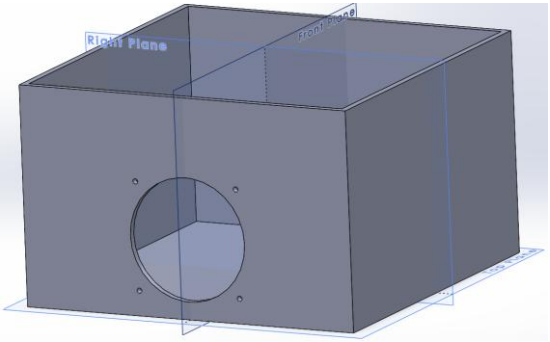
Juan Alcala

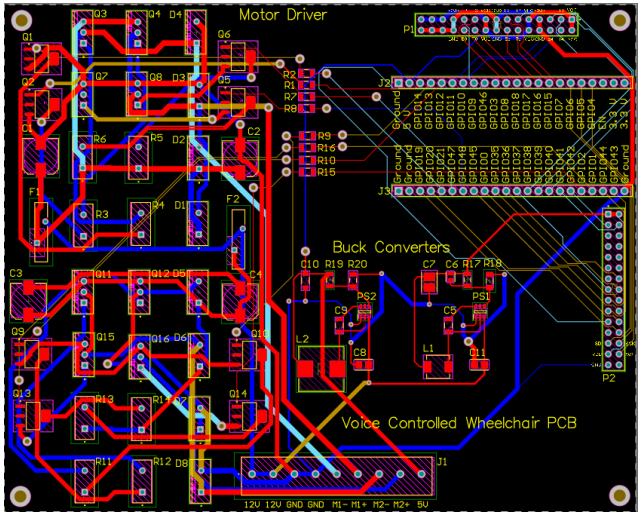
Accomplishments since 403 12 hrs of effort	Ongoing progress/problems and plans until the next presentation
• Ordered new redesigned fully integrated PCB. • Ordered off-the-shelf lead acid battery charger	• Designing enclosure using SolidWorks

Power

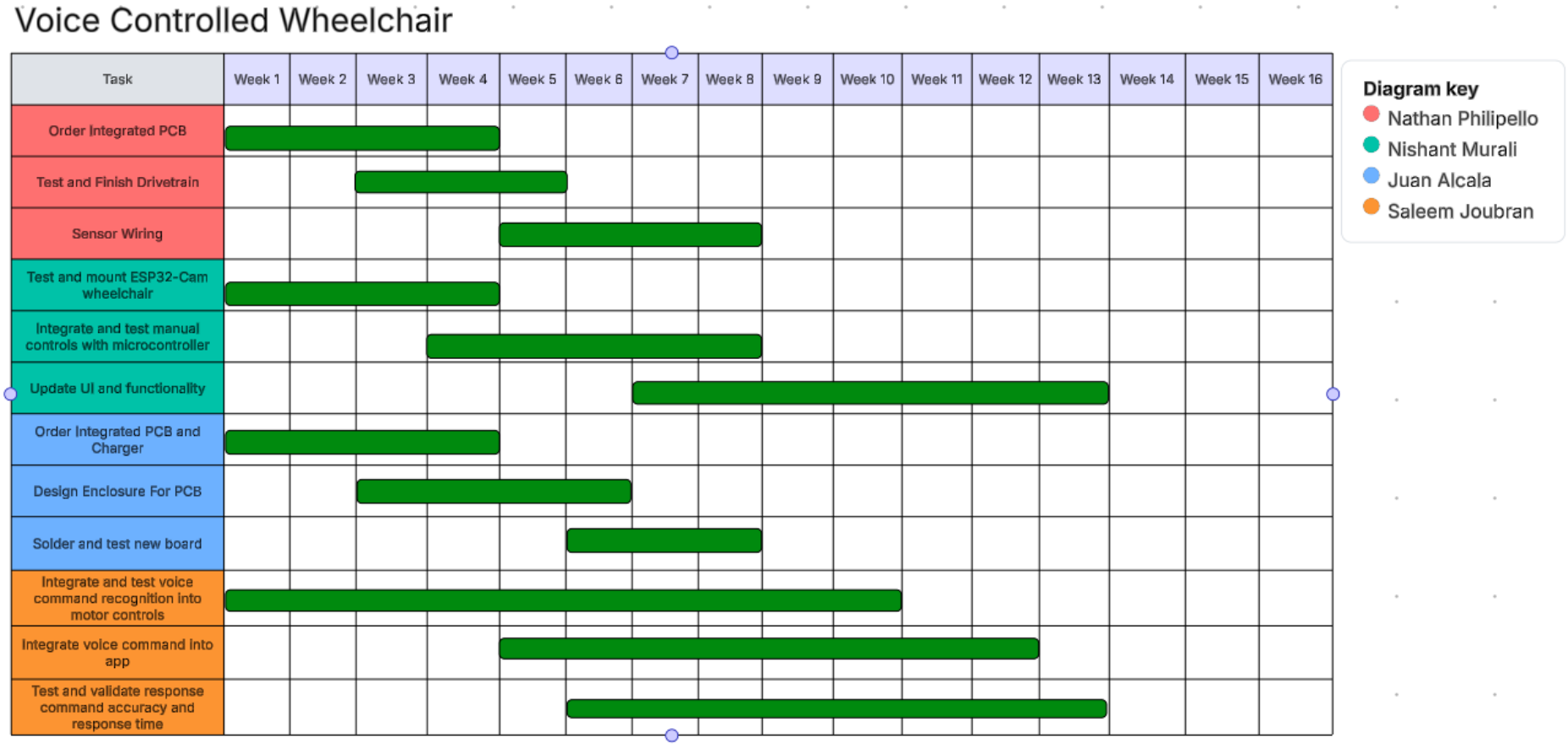
Juan Alcala

- Fully integrated PCB is designed and ordered
  - Input via a 12V 35Ahr lead acid battery (unregulated)
    - Peak power consumption: 135.5W
  - 3.3V and 5V supply via buck converters (regulated)
    - Line and load testing successful in ECEN 403
  - Waiting for order to arrive – solder and test
- Working on enclosure for the PCB
  - Intake fan below exhaust
  - 200x170x125mm





Execution & Plan



Thank you!