Midterm Report

By: Andrew Tran (012394096), Hiromi Saito (014065129), Jonathan Austin (012148162)

**1. Accomplishments**

1. **Andrew:**
   1. Revised the Bill of Materials for the Current Sense Module, to accommodate chip shortage
   2. Helping Yun (a new member) get up to speed with OrCAD and basic knowledge of power module team
   3. Assisted Hiromi in redesigning the PCB for the Current Sense Module
2. **Hiromi:**
   1. Resized the silkscreen layer to follow selected PCB manufacturer’s capabilities and to be practically visible
   2. Readjusted pad connections on the high current components to be completely connected
   3. Added via stitching to the larger planes on the current sense PCB to lower the impedance
   4. Designated text boxes on the PCB file of the current sense to give viewers a better understanding of the different sections
   5. Removed/added inappropriate connections on the PCB file
3. **Jonathan:** 
   1. Read through, watched video documentation, and presentations of the existing main DSP project work
   2. Performed Lab Testing of existing DSP code on the existing hardware
   3. Helped implement a matrix-based sorting algorithm from Professor Badawy’s paper, A Modular Multi-Level Converter for Energy Management of Hybrid Storage System in Electric Vehicles
      1. Wrote out the logic in a separate test code
      2. Helped integrate the logic into the existing main DSP code
   4. Read through, watched video documentation, and presentations of the existing Linear Kalman Filter MATLAB work by Samuel

**2. Plan**

1. **Andrew:**
   1. Begin testing hardware once the PCB has been manufactured and assembled
   2. Research how to use Altium for the next revision of the boards
   3. Assist Yun for her upcoming work
2. **Hiromi:**
   1. Manufacture the current sense PCB and perform testing with the inverter PCB
      1. Record results and organize the data results into a report/presentation
   2. Research how to use Altium
3. **Jonathan:** 
   1. Continue understanding and researching the existing MATLAB work on the Linear Kalman Filter
   2. Integrate it into Maryam’s Model Predictive Control MATLAB project
   3. Document work in report and presentation

References

[1] S. S. George and M. O. Badawy, *A Modular Multi-Level Converter for Energy Management of Hybrid Storage System in Electric Vehicles*, 2018 IEEE Transportation Electrification Conference and Expo (ITEC), Long Beach, CA, USA, 2018, pp. 336-341, doi: 10.1109/ITEC.2018.8450237. Available at: <<https://ieeexplore.ieee.org/abstract/document/8450237>> [Accessed 14 March 2021].