EE CprE SE 491
MicroCART Senior Design Team

Meeting Minutes - Week 3

September 16, 2014

Attendance:

Team Members: All present
Paul Gerver
Tyler Kurtz
Joe Benedict
Jacob Rigdon
Matt Vitale
Adam Campbell
Ravi Nagaraju

Advisors: All present
Dr. Nicola Elia
Dr. Phillip Jones

Agenda Items and Discussion

1) Dr. Jones reviewed last week's status report and asked for details and updates from each team member
2) Reviewed faculty feedback from WSR - Week 1 and discussed improvements
   - Will add a "Pending Issues/Roadblocks" section on future reports
   - Will include the weekly meeting minutes in future reports
   - Will follow the WSR format template posted on Blackboard
3) Matt reported that he reviewed the specs of the onboard sensor module and created summary sheet posted to the drive
4) Discussed data acquisition using MATLAB
   - Need to capture data from the following sources:
     a) High-speed cameras
     b) Omnibot
     c) Quadcopter
     d) Command GUI
   - Paul will coordinate with the Omnibot team and begin data collection process assessment

- Need to develop a stand-alone application to replay and analyze data in an adaptable format

5) ZYBO programming method
   - PS/Processor will be programmed in C/C++
   - FPGA/PL will be programmed in VHDL

6) Uploading ZYBO programming via SD card or USB
   - Both methods are possible and both will be explored for possible advantages over the other and/or unforeseen issues

7) Signal mixing on the ZYBO
   - Tyler will coordinate with the Omnibot team to begin research and implementation

8) Simulation software for modeling quadcopter
   - Advised to use Simulink and to contact Matt Rich and Paul Uhing with any questions

9) Altitude measurements during flight
   - Barometer will be used for heights greater than 20 feet
   - Ping sensor used for will be used for heights less than 20 feet

10) Chassis/Board/Hardware
    - ZYBO will have an independent power supply
      a) Reduce or eliminate the signal noise from motors
      b) Keep the integrity of the ZYBO data intact
      c) Voltage regulator needed for power supply to provide consistent input voltage regardless of battery output
    - Safety switches needed for both power supplies to avoid damaging the batteries due to over-discharging when left connected to the system
    - Need to find out maximum size SD card the ZYBO can accept and source one

Deliverables for next week

Adam
- Implements "Hello World" program and blink some LEDs on ZYBO board
- Continuing to go through the old system code and getting more comfortable with it

Matt
- Parsing through the ZYBO board and the sensor module's board and provide a summary of the more important/relevant parts with a high-level diagram with the part in question's position
- Begin installing the software needed to implement communication between the ZYBO board and the onboard sensor module, and if successful, start creating a design that will talk between them

Paul
- Get the MATLAB scripts running and making my own parser based off data files

Ravi
- Designing and building the voltage regulator for the ZYBO board

Jacob
- Implementing "Hello World" program on the ZYBO board

Joe
- Finalize the designs to mount Zybo board and sensor to the chassis and begin sourcing any parts needed
- Continue with online controls course via Georgia Institute of Technology