Weekly Status Report 1

Quadcopter Cameraman

sdmay19-42
January 15 – January 30

Aamid Ahbab (Lead Engineer) & Client
Zhengdao Wang (Team Advisor)
Alex Nicklaus (Lead Test Engineer)
Isaac Holtkamp (Web Manager)
Nate Allen (Report Manager)
Luke Rohl (Meeting Facilitator)

This week's accomplishments

Summary

This WSR covers a 2 week period as we are getting everything back in order with the new semester. We spent time reviewing where we left off and pointing ourselves in our new directions. One of the new directions we have officially taken, is to abandon the facial and human recognition as it is too unreliable and the tracking is too sophisticated as well as processing heavy. Instead, we are headed in the direction of FRC where we will use retro reflective tape and a special camera attachment to see our targets.

- Alex
  - Multiwii is now properly configured; it compiles, uploads to the Flight Controller, and is calibrated
  - The group's Flight Controller is not functioning properly. The Power LED does not go on and Multiwii fails to upload. The successful run was done on a backup Flight Controller.
  - Mir and I worked on the physical design of the quad
- Nate
  - Followed Luke's opencv install tutorial
  - Appended final dependency steps to the tutorial
  - Successfully set up environment on Pi
  - Successfully ran main.py on the Pi
  - Updated git with end of semester code from last semester
  - Retroreflective Tape
    - Researched the needed materials and parts
    - Sent order list to Alex
  - Pi Camera
    - Worked out kinks in a program to take photos on the Pi
    - Learned how to give commands to Camera through OS command line
- Luke
  - Researched roadblock pertaining to raspberry pi and OpenCV

- o Created installation guide to successfully installed OpenCV
- o Researched roadblock pertaining to raspberry pi and Android app communicating over Bluetooth
- o Created guide to allow bluetooth to connect on the pi.
- o Test Bluetooth connection
- ● Isaac
  - o Worked on Android App code
    - ▪ Edited layout and comments to android app code
    - ▪ Added communication cases
- ● Aamid
  - o Worked on hardware design and layout for quadcopter
  - o Got dimensions for acrylic printing - Motor Mounts and Chip Mounts
  - o Came up with two designs and chose the one best suited to minimize risk and weight
    - ▪ Original design from last semester was too "tall" and risked wires getting cut by propellers
    - ▪ Suffered from needing to add weight for "shelves" to store hardware
    - ▪ Choosing to use landing skids idea instead of "shelves"
      - ● Put battery and pi power source on top of each other with an insulator and strap underneath frame
      - ● Move flight controller to the bottom shelf above the PDB and pi to the top of the frame
  - o Attempted to install MultiWii firmware to flight controller

Planned to accomplish next week

- ● Nate
  - o Research FRC
    - ▪ Learn what filters are needed to highlight retro reflective tape
    - ▪ Find out how to apply those filters
    - ▪ Find samplel footage of rrtape (since we haven't recieved our own parts yet)
- ● Luke
  - o Raspberry Pi - Android App Bluetooth Communication
  - o
- ● Alex
  - o Work on Pi to Flight controller communications. This work will encompass many iterative steps. To start I will need to get square wave function generated off of the Pi. Then I will need to review documentation on the board and any standards it may adhere to. From there I will generate a library of commands that other programs can use to talk from the Pi to the Flight Controller.
- ● Isaac
  - o Android App Communication - Raspberry Pi
  - o Go through Raspberry Pi code and work with its communication
  - o Get a Raspberry Pi from ETG
- ● Aamid
  - o Find skids and other items such as insulator and proto boards for hardware

      o   Flight controller debugging

Roadblocks

- ~~MultiWii isn't compiling~~
- Group's Flight Controller is powering up but not connecting to PC for MultiWii firmware update

Hours Spend

Team member	Hours This Week	Hours Total
Nate Allen	8	8
Alex Nicklaus	4	4
Luke Rohl	8	8
Mir Ahbab	6	6
Isaac	5	5