FlyNet Team Minutes

1 September 2015 3:00PM – 4:50PM

Recorded by: Austin Anderson

Attending: Drew, Austin, Steve, Matt, Bryce, Taylor, Tyler, Prashant

The PM gave updates

- A telecon with the sponsors is scheduled for 9/3

- An issue with US person requirements is being sorted out by Joe Tanner/Eric Frew

- The existing project goals are encapsulated on the slides presented by Joe Tanner

- An overview of the example code on github was presented

- Time cards are to be turned in weekly

- The scope document is due on 9/21

Steve began distributing Vms and gave a demo of his vision based tracking research

- This demo showed the tracking of a calibration target

- Quality of lens was identified as an item of concern  
The team discussed the current scope of the project and compiled a list of questions:

- Search:

- What are we searching and tracking?

- Is there a team of vehicles performing this?

- Is the team homogeneous or heterogeneous?

- Will ground vehicles play a roll?

- What sensors should we be expected to search/track with?  
 - How many targets must we search/track?  
 - Is the map known ahead of time?

- What role is SLAM expected to play?

- Will the target move?  
 - Is the team expected to build the target as well?  
 - Must the robots work together?  
 - What roll is vicon expected to play?  
 - Will this be indoors or outdoors?  
- Track  
 - How is track association expected to be handled?  
 - Will the track be based on radio beacons, radar, or visual updates?

- What FOV must the sensors have?  
 - What ranges?  
 - What is assumed of target dynamics?  
 - Or optical properties?  
 - Are active sensors permissible?

- Ie RGBD or LIDAR?

-Tag

- What or how are we to “tag” something?

- Like a magic marker?

- Generally what is meant by tag?  
- Secure Coms  
 - Range? Security?  
 - A 900 MHz serial link could work  
 - Encrypting packets could be a low cost solution to security  
 - Generally assumed to be a solution that could be purchased  
 - What is being communicated between platforms?  
 - Is a ground station present?

- Gestures Control  
 - Team feels this should be a reach goal  
 - What is imagined by this?  
 - Use of Kinect for this is well documented, but it's not understood how that's better than tablet  
 - Would voice commands or interaction be permissible?  
- Traverse Harsh Terrain  
 - Will this be outdoors or indoors

- If indoors are we to simulate that?  
 - If indoors, does that include walls, obstacles, what SLAM is required?

The team briefly discussed goals they thought could be accomplished in the first semester:

- Visual tracking and localizing of a target using a single drone and a static target was thought to be a reasonable goal to prove algorithms and hardware

- The drone would approach the target keeping constant pointing towards it

- It was also thought that following the target that moved after being localized was a reasonable goal

Topics relevant to the project were identified for literature review:

- Reliable indoor flight

- Search using visual data

- Search using radio emissions

- Visual optometry

- Swarm flight

- Lenee effects on visual tracking

- Robust flight control for quadcoptors

- Teams were assigned to these

Action Items:

Item Status Due Issued Owners Description

1 open 9/4 9/1 Austin/Drew Meet with sponsors

2 open 9/21 9/1 All Scope document

3 open 9/8 9/1 Steve Make a vicon tutorial

4 open 9/8 9/1 All Have VM installed

5 open 9/15 9/1 Steve Lit. Rev.: Visual Tracking/Odometery/Lens

6 open 9/15 9/1 Austin Lit. Rev: Radio tracking/Indoor Flight/Cntrl.

7 open 9/15 9/1 Bryce Lit. Rev.: Indoor Flight/Cntrl.

8 open 9/15 9/1 Tyler Lit. Rev.: Indoor Flight/Cntrl.  
9 open 9/15 9/1 Matt Lit. Rev: Swarm Flight  
10 open 9/15 9/1 Taylor Lit. Rev.: Swarm Flight/Vis. Od.

11 open 9/15 9/1 Prashant Lit. Rev: Swarm Flight

12 open 9/15 9/1 Ed Lit. Rev.: Pick one from the topics above

Literature Review

Team members should come having researched at least one paper for each area they were assigned and present a 5 minute talk about what was relevant in the paper and what could be applied to our project. If you have more than one category, you need a talk for each. These talks are very informal. People researching the same topics should coordinate to not overlap.