

# CprE 491 Weekly Report - Week 2

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**Dates:** 9/8/15 - 9/15/15

**Group:** May1617

**Advisors:** Dr. Zambreno / Dr. Jones

**Client:** Matt Dresser (Vermeer Corporation)

**Members:** Brian Gillenwater, Nate Kent, Quinn Murphy, Bryce Poellet, Jon Schlueter

**Project Title:** Quadrotor Environment Mapping

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## Weekly Summary

- Discussed the project with the client and got clarification on the scope of the project and requirements
- Began research into possible quadcopter platforms to use and quadcopter regulations
- Began research into photogrammetry software to use for the 3D reconstruction from images

## Meeting Notes

Client Meeting - Wednesday 9/9 6:00 pm

**Attendees:** Brian Gillenwater, Nathan Kent, Quinn Murphy, Bryce Poellet, Jon Schlueter, Matt Dresser

### Project Goals:

- Fly quadcopter to location, capture a single, high-resolution image, return and transfer data to server for use with oculus rift.
- Group will handle everything from image capture to processing needed for use on oculus rift.
- Possible demo - use one or two oculus rifts to allow users to move around the mapped environment.

### Things to Look Into:

- Quadcopter Regulations - cautions with university and FAA
  - As a [model aircraft](#), we can fly under 400 ft no problem in unpopulated areas, not within 5 miles of an airport.
  - Beyond that, we'd need [civil operations authorization](#).
- <https://pix4d.com> - can do object mapping (use or make something similar?)
- look into height mapping tools and algorithms

- look into techniques as to stationary point vs “lawn mower”
- How to stabilize quadcopter to ensure images will match

**Other Notes:**

- Budget has some flexibility
- Is an R&D project so constraints will come and go
- Matt in Ames MWF until around 5:00 PM
- Meeting Logistics with Matt
  - Prefers face-to-face meetings
  - Can do mumble or email
  - Will try to make it to some Friday meetings with advisors
- Matt will send info and flow diagrams to help provide ideas

Advisor Meeting - Friday 9/11 4:30 pm

**Attendees:** Brian Gillenwater, Nathan Kent, Quinn Murphy, Bryce Poellet, Jon Schlueter, Dr. Zambreno

- Discussed initial client meeting.
- Look into open source vs closed source photo mapping software
- Image processing

TODO

- Mobile SDK vs Embedded SDK - Quinn
- Compare Differences between difference quadcopter - Brain
  - Phantom 3 Comparison: <http://store.dji.com/compare-phantom-3>
- Lasers vs Photogrammetry - Nate, Bryce
  - visualsfm
  - cmpmvs
  - bundlr
  - openmvg
  - Other software
- Functional requirements of the platform - Jon
  - Battery Life
  - Flight Stability
  - SDK
  - camera
- VR options and rendering solutions
- Product Specs

## Pending Issues

- None

## Plans for Next Week

- See TODO list from advisor meeting

## Individual Contributions

- Brian Gillenwater
  - Attended advisor meeting
  - First meeting with client
  - Quadcopter research
- Nate Kent
  - Attended advisor meeting
  - First meeting with client
- Quinn Murphy
  - Attended advisor meeting
  - First meeting with client
  - Researched DJI and Parrot SDKs
- Bryce Poellet
  - Attended advisor meeting
  - First meeting with client
  - Began researching photogrammetry software options
- Jon Schlueter
  - Attended advisor meeting
  - First meeting with client

Name	Hours this Week	Cumulative Hours	Role
Brian Gillenwater	1.5	2.5	Webmaster
Nate Kent	1.5	2.0	Productivity Officer
Quinn Murphy	2.5	3.25	Leader
Bryce Poellet	3.0	3.5	Communications
Jon Schlueter	1.8	1.8	Key Concepts