Portland State Remote Operated Vehicle

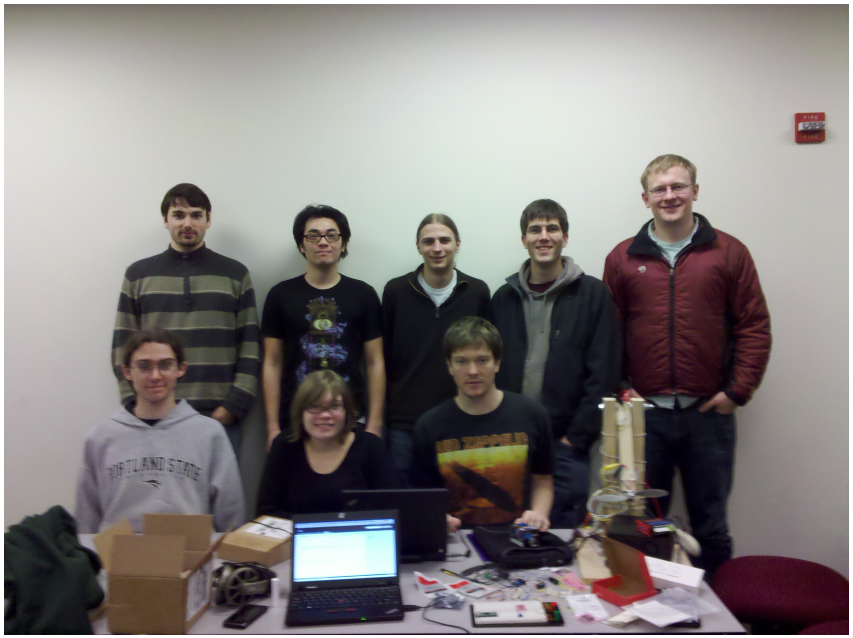
Spencer Krum, Patrick Bledsoe, Gregory Haynes

January 27, 2011

ROV Team

2010 Team at regionals

2011 Team at a meeting



ROV 2009 and 2010

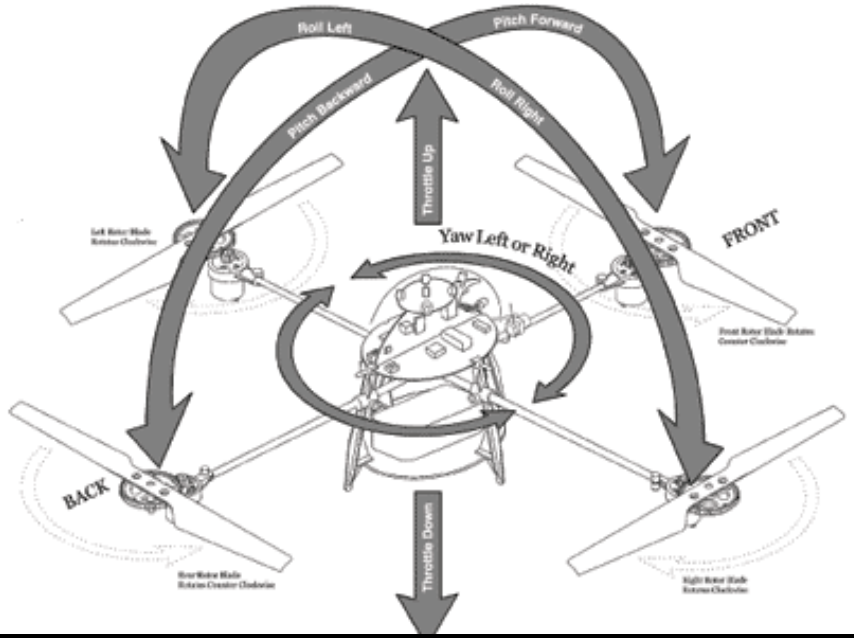
- 2009 and 2010
- Underwater Remote Operated Vehicle
- Marine Advancement for Technology Education (MATE) Center
- 2009 - Boston, Mass. - 28th
- 2010 - Hilo, Hawaii - 18th
- No members of the 2009 team remain, the torch has been passed
- Switched away from MATE in 2011, seeking new challenges

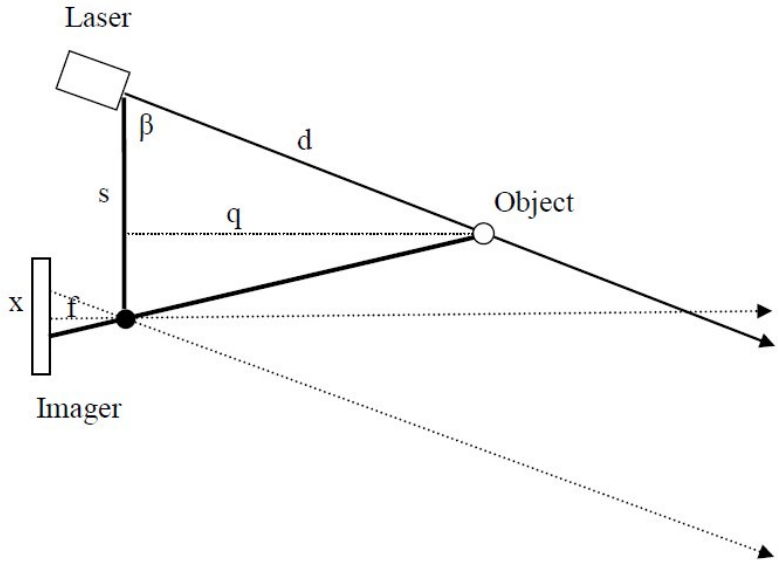
International Aerial Robotics Competition

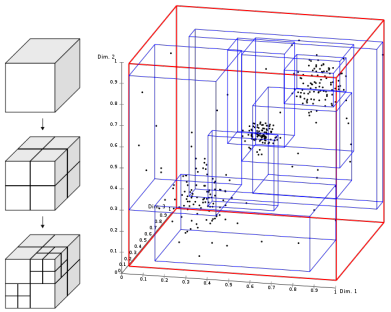
- Mission
  - Covertly infiltrate a secret installation
  - Recover and replace USB stick without being detected
- Rules
  - 10 Minutes
  - Cannot Land
  - Completely Autonomous
- IARC
  - 6th IARC Misson in about 20 years
  - 1k entry fee(hopefully get waived), 20k grand prize
  - Mission went uncompleted last year
  - Designed so that "No currently existing craft can complete the mission"
  - AUVSI, Association for Unmanned Vehicle Systems International

The very basics of the plan

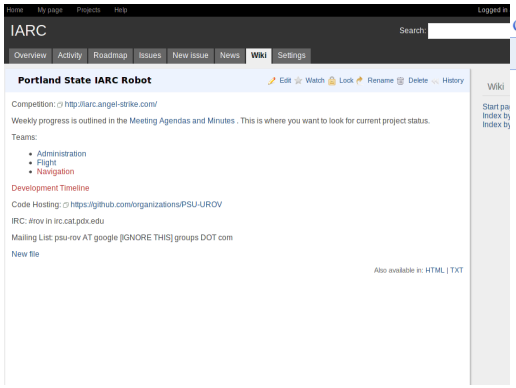
- Quadrotor
- Trig and lasers
- Mapping and Octrees
- Perform SLAM
- AI

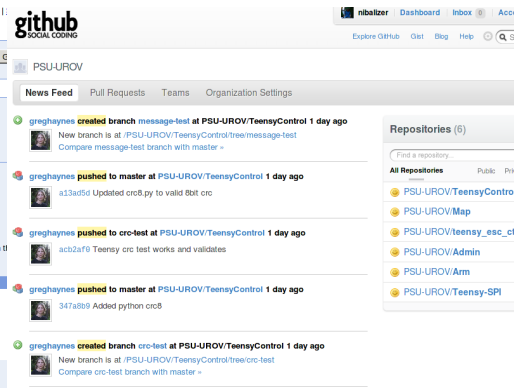


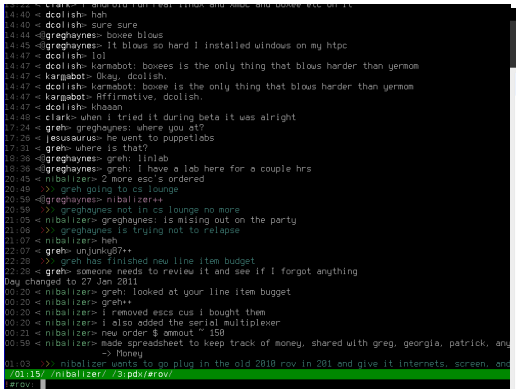


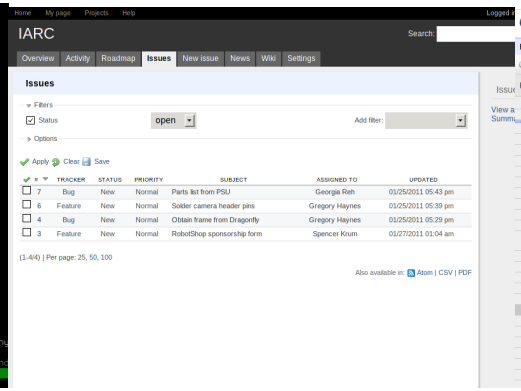


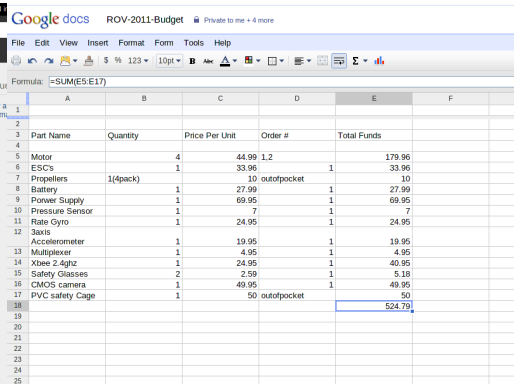
Using school and internet resources to increase efficiency











Q:How much does it cost to build and compete?

A: About a thousand dollars to build a quadrotor from parts.

Part Name	Quantity	Price Per Unit	Order #	Total Funds
Motor	4	44.99	1,2	179.96
ESC's	1	33.96	1	33.96
Propellers	1(4pack)	10	outofpocket	10
Battery	1	27.99	1	27.99
Porwer Supply	1	69.95	1	69.95
Pressure Sensor	1	7	1	7
Rate Gyro	1	24.95	1	24.95
3axis Accelerometer	1	19.95	1	19.95
Multiplexer	1	4.95	1	4.95
Xbee 2.4ghz	1	24.95	1	40.95
Safety Glasses	2	2.59	1	5.18
CMOS camera	1	49.95	1	49.95
PVC safety Cage	1	50	outofpocket	50
				524.79

Hokuyo Scanning Laser Rangefinder

- Returns distances to multiple points.
- Sweeps through 240°
- OpenCV feeds on data
- Speaks serial and SCIP(Sensor Communications Interface Protocol)
- RobotShop.com - applied for sponsorship
- Not Just a Stepper Motor and a Laser Rangefinder

Hokuyo Scanning Laser Rangefinder

$1,175.00

Yikes!

Thank You very much

- Once again, we're the PSU Remote Operated Vehicle Team
- I, and my teammates as well, strongly support this pilot program because our experience last year with getting involved in student engineering was the highlight of my college experience to date.
- Thanks Again!

We want you

- Google Group - psu-rov@googlegroups.com
- Redmine - rov.cs.pdx.edu
- Weekly Meetings - FABc 88-01 - 5:00pm Tuesdays
- IRC #rov, irc.cat.pdx.edu