

Portland State Remote Operated Vehicle

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ROV Team

2010 Team at regionals



2011 Team at a meeting



ROV 2009 and 2010

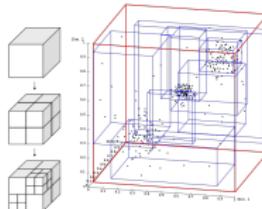
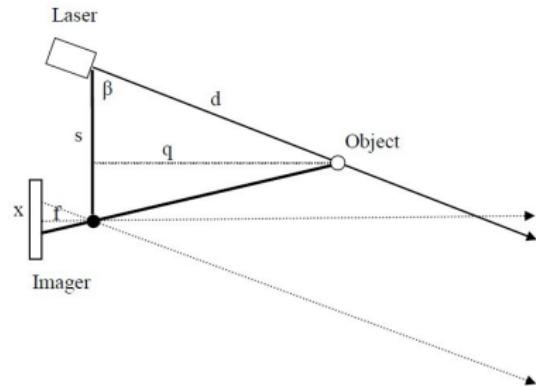
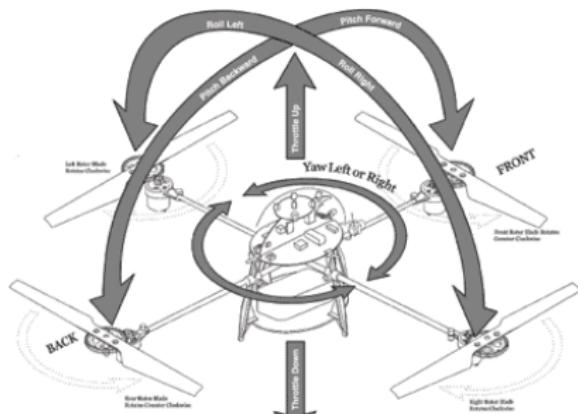
- ▶ 2009 and 2010
- ▶ Underwater Remote Operated Vehicle
- ▶ Marine Advancement for Technology Education (MATE) Center
- ▶ 2009 - Boston, Mass. - 28th
- ▶ 2010 - Hilo, Hawaii - 18th
- ▶ No members of the 2009 team remain, the torch has been passed
- ▶ Switched away from MATE in 2011, seeking new challenges

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

The collage includes the following screenshots:

- IARC (Top Left):** A screenshot of the IARC website showing a list of members and their roles.
- Google Groups (Top Middle):** A screenshot of the "PSU ROV" group discussion board with several messages from different users.
- GitHub (Top Right):** A screenshot of the PSU-ROV GitHub organization page showing multiple repositories.
- Google Docs (Bottom Left):** A screenshot of a Google Doc titled "PDX-2011-Budget" containing a table of parts and their costs.
- IARC (Bottom Middle):** A screenshot of the IARC website showing a list of issues or tasks.
- Google Sheets (Bottom Right):** A screenshot of a Google Sheet titled "PDX-2011-Budget" showing a table of parts and their costs.

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
Power 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