

**Adela Wee, Olin College (2014), NREIP Summer 2013 Intern, Unmanned Systems Group (7171)
Mentored by Bart Everett, Technical Director for Robotics, Advanced Systems Division (71705)**

Background

- Mechanical engineer at Olin College with a focus in robotics ('14)
- Have developed intense interests in research and application of robotics technology in many fields
- SPAWAR's Unmanned Systems Group has many resources and unique opportunities available to its interns and employees in addition to challenging research and development projects

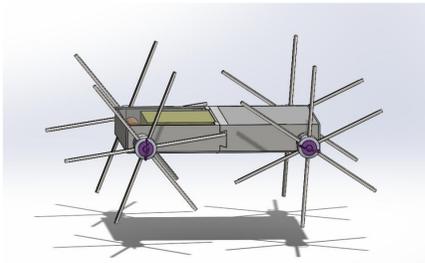
Experiences I want to gain from my internship

- Achieve a better understanding of computer programming, particularly ROS
- Gain more practical mechanical engineering skills by learning how to operate CNC machine tools
- Further develop design skills and knowledge

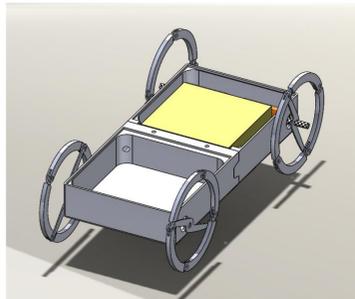
Project Overviews

Throwable Robot (ThrowBot)

Since most deployed robots are large and cannot be carried over long distances, design a compact and robust system that can be carried in the pockets of a warfighter that could be deployed for reconnaissance. Responsible for further iterations of the design, including more compact wheels and a dual-bay payload configuration.



Iteration 1 used "whegs" or wheeled legs and a quick disconnect hub



Iteration 2 had folding wheels and a more robust joint

ONR Vehicle Autonomy Program

Through the use of multi-spectral onboard cameras, develop a vehicle that can autonomously navigate and assess terrain traversability. Application is logistics support for widely distributed USMC units. Responsible for data collection and tuning object-classification system.



EV1 Semi-Autonomous Vehicle that has been field tested

MagCrawler

The goal of this project is to be able to traverse ferrous surfaces such as the sides of cargo containers or the hulls of ships by embedding magnets in the wheels of a flexible linked robot. Responsible for implementing radio control and field testing.



MagCrawler with RC control



MagCrawler climbing a vertical wall

Reconnaissance and Detection Expendable Rover (RaDER)

Porting of our ONR autonomy payload (see above) onto a custom-built chassis using drivetrain from an existing vehicle as a part of a joint effort with NSWC Panama City. Responsible for initial airflow simulation and design of autonomy payload.



View of RaDER custom chassis designed by NSWC Panama City

Related Work

Development of an Interactive Robot

In addition to all the projects I have been involved with at SPAWAR, I am also working on another system after hours. As if building robots during the day wasn't enough....

Autonomous robots are going to play a larger role in our lives. To make this more practical, we need a more intuitive form of communication. What if the human was the controller, and talking to a robot was just as natural as talking to another human being?

