Paul Nadan

SAG Reflection – Spring 2019

This spring I continued work with Olin's RoboLab to develop a hexapod rover for applications in space exploration, using funding generously provided by SAG. While last semester was devoted to building up the basic platform, this semester we were able to focus on adding more advanced capabilities such as rough terrain traversal, obstacle detection, and custom electronics.

Through this project I gained significant experience in a variety of areas. Towards the beginning of the semester I looked into existing research papers about hexapod robots and legged locomotion, which both gave me practice at performing a literature review and helped me learn about current developments in the field. Developing the new rough terrain algorithms provided an opportunity to apply existing research and then try to improve upon it, as well as analyze design trade-offs between different desirable factors like stability, clearance, and versatility. I also got practice with mechanical design while designing the pivoting mount for the hexapod's LIDAR. Within all of these tasks I gained practice identifying points of failure and addressing problems as they arose.

Additionally, as the original leader of the research team was studying away this semester, I had to take on some of the organizational aspects of the project, such as recruiting new team members, making high-level design decisions, and dividing up tasks based on individual interests and skillsets. This also included setting project goals and adhering to a timeline while being able to adapt that plan on the fly to deal with unforeseen factors. Finally, I got practice documenting our research and communicating our work both through in-person conversations at Olin's Spring Expo and a written final report.

Overall, this was a very valuable learning experience, both from a technical and an organizational perspective, and I am grateful to SAG for providing us the funding to make this project happen.