**INGRID RUMBAUGH**

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**Active TS//SCI with CI Polygraph**

**OBJECTIVE**

To work as a robotics engineer leveraging both my engineering and programming skills. I enjoy the entire life cycle of systems development: conceptualize, design, build, and test robotic systems. I strive to continually improve my engineering skills, working in a team to develop robotic prototypes. I have a special interest in machine learning algorithms with recent research using Histogram of Oriented Gradients to train a Linear Support Vector Machine (SVM) to identify unique objects. I also value diversifying my set of skills by working on new projects that may be unrelated to robotics.

**B.S. Mechanical Engineering & Computer Science Minor,** GPA: 3.32

**Lafayette College Class of 2019**

**WORK EXPERIENCE**

**Software Engineering Intern, Booz Allen Hamilton,** Chantilly, VA **Summer 2018**

Supported the XIBus DoD contract to analyze message transmission performance. XIBus is an XML-based message translation software that helps facilitate communications between various Intelligence Community customers and formats. To evaluate the software, I researched and integrated Apache JMeter to perform load testing. I then analyzed the data to provide insight into XIBus’ daily capacity and the estimated maximum number of messages the software can handle. I then presented the collected data and its implications to the team, as well as demonstrating the use of JMeter. In addition to load testing, I researched front-end testing automation tools such as Selenium & Protractor and presented my research to the XIBus team so that one of these tools can be implemented for future use. I was actively involved in the Agile software development process including participating in daily scrum, sprint planning, and sprint retrospective activities.

**Integrity Applications Inc.,** Chantilly, VA

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| **Technical Robotics Intern,** **Summer 2016**  Designed, built, and tested a working autonomous robot prototype intended to show proof-of-concept for a platooning surveillance vehicle. Participated in 3D CAD modeling and system requirements documentation to define the scope and direction of the project. I started and maintained the team’s engineering notebook and was responsible for all microcontroller programming. | **Technical Intern, Orbital Debris Removal,** **Summer 2017**  Researched possible solutions for remediation of orbital debris. I summarized many technical articles, in addition to speaking with experts in the field to better understand the current state of activities in space. I also created a set of custom combined metrics to characterize and measure effectiveness of Active Debris Removal (ADR) and conducted a trade study evaluating ADR solutions. |

**Business Continuity Analyst/ FIRST Intern, Comcast Cable,** Philadelphia, PA **Winter 2014 & Summer 2015**

Helped develop a FIRST robotics sponsorship program and website to help Comcast’s outreach directed towards high school students. Planned and coordinated Comcast events and helped plan the WICT (Women in Cable Technology) 2015 Tech it Out! Conference (July 23, 2015). I helped coordinate and execute a mentoring-oriented session

**SKILLS**

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| **Software Engineering:**  Java, C++, Arduino, Matlab, Python  ARMv8 Assembly, Linux, UML, Jira  Confluence, Agile Project Mgmt.  Scrum, VirtualBox, Apache JMeter | **Machine Learning:**  Histogram of Oriented Gradients (HOG)  Support Vector Machines  Robot Operating System (ROS)  Computer Vision, SciKit-Learn  Image Processing, OpenCV | **Mechanical Engineering:**  Autodesk Inventor, ANSYS  Gantt Charts  Power tools, Machine shop  3D Printers, Soldering  Welding (MIG, Flux Core) |

**LEADERSHIP EXPERIENCE**

**Team Leader, Senior Design Project**, HAZMAT Assistance Robot, Lafayette College, Easton, PA **Fall 2017 – Spring 2018**

The goal of the project was to build a more affordable alternative to EOD robots, with an articulated arm to assist firefighters remediate gas leaks in a HAZMAT situation. As team leader, I helped the team to produce a successful prototype on time and under budget, while meeting most original design requirements. In addition, I ran weekly team meetings as well as organized design reports and presentations. I also kept track of team progress through Gantt charts and sub-team meetings. I facilitated discussions on design decisions, making sure that all team members were able to contribute, and that a mutual agreement was reached.

**President, ASME**, Lafayette College, Easton, PA **Spring 2016 – Fall 2017**

Lead the campus-wide organization by coordinating events, speakers, and engineering clubs. Handled ASME’s presence on campus and relationships with other engineering organizations. This greatly improved ASME’s involvement on campus including outreach to freshman, and students in other departments. Also initiated a succession program where leaders and board members would remain on the team the following year in order to mentor students new to that position.

**Leader, ASME Robotics Team,** Lafayette College, Easton, PA **Fall 2015 – Fall 2017**

Designed and developed projects for the ASME robotics team focused on teaching, building, programming, and design skills to new students. In charge of keeping track of team progress, purchase orders, and teaching new members both programming and mechanical skills.

**ENGINEERING EXPERIENCE**

**Robot Controls & Comms Lead, Sr. Design Project,** HAZMAT Assistance Robot, Lafayette College **Fall 2017 – Spring 2018**

Was in charge of designing, building, programming, and testing all control and some communication-related electronics on the robot. I designed and created a PCB to drive two stepper motors and a servo, as well as programmed a custom TCP-like protocol for wireless RF robot communication. I also designed the electronics for a custom controller to capture manual input from the user.

**FIRST FTC/FRC Robotics Teams** (**F**or **I**nspiration and **R**ecognition of **S**cience & **T**echnology, see usfirst.org)

Established and led multiple state-champion robotics teams. Worked with other team members and other teams to solve engineering problems creatively. Responsible for 5+ robotic system designs, winning multiple design & engineering awards in PA from 2011 – 2014. Serves as a robot inspector and field tech advisor volunteer for all of FIRST Pennsylvania.

**Engineering Notebooks & Technical Writing**

Spearheaded an award-winning engineering notebook at the state championship level and taught other team members that documentation is key. Won multiple awards for the robotics team at the State and Region-level.

**Published a collaborative paper on Automated Intelligent Systems for the Naval Academy Science and Engineering Conference in 2014.**

**AWARDS**

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| **Mechanical Engineering Design**  Lafayette College, Spring 2016  Awarded for an outstanding senior capstone design project. Received this award for helping a senior design team with microcontroller programming during my sophomore year. | **FIRST Dean’s List Finalist, World Championship,** Fall 2014  Recognized for technical contributions to the robotics team, as well as organizational skills and initiatives in community outreach. | **Lafayette College Dean’s List**  Fall 2014 & Spring 2018 |