**INGRID RUMBAUGH**

Cell: (484) 599-1173 751 Vandenburg Rd, Apt 3202 King of Prussia, PA [Ingrid.m.rumbaugh@lmco.com](mailto:Ingrid.m.rumbaugh@lmco.com)

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

**OBJECTIVE**

To work as a robotics, mechanical, or software engineer leveraging both my hardware and software skills. I enjoy the entire life cycle of systems development, such as designing, conceptualizing, documenting, and testing. I strive to continually improve my engineering skills, working in a team to develop robotic prototypes. I have a special interest in machine learning and deep learning networks & algorithms with research using Histogram of Oriented Gradients to train a Linear Support Vector Machine (SVM) to identify unique objects through ROS. I also value diversifying my set of skills by working on new projects that are unrelated to robotics. I am also a social advocate for those with disabilities.

**B.S. Mechanical Engineering & Computer Science Minor,** GPA: 3.30

**Lafayette College Class of 2019**

**Supplementary Mechanical Engineering Classes from Penn State and RWTH-Aachen University (Germany)**

**WORK EXPERIENCE**

**Software Engineer Lockheed Martin Space Division,** King of Prussia, PA **September 2019 – Present**

**Lead Software Development Consultant at Environmental Simulations, Inc.** Leesport, PA **July 2019 – Present**

Assisted with the planning and integration of machine learning algorithms to improve convergence algorithm performance. I am also working on migrating the Groundwater Vistas software from a Windows to a Unix-based OS in order to advertise to a broader market of programmers.

**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 facilitates communications between Intelligence Community customers. 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. In addition to load testing, I researched front-end testing automation tools such as Selenium & Protractor and presented my research to the XIBus team. I was actively involved in the Agile development process including daily scrum, sprint planning, and sprint retrospective activities.

**Integrity Applications Inc. (Now Centauri),** Chantilly, VA

|  |  |
| --- | --- |
| **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 Comcast events such as the Women in Cable Technology Conference (July 23, 2015).

**SKILLS**

|  |  |  |
| --- | --- | --- |
| **Software Engineering:**  Java, C++, Arduino, Matlab, Python  ARMv8 Assembly, Linux, UML, Jira  Confluence, Agile Project Mgmt.  Scrum, VirtualBox, Apache JMeter,  FANUC RoboGuide Software,  SAR, Kubernetes, Docker, Nexus | **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), Denavit-Hartenberg Notation |

**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.

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

I 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. I also initiated a succession program to help new leaders and board members.

**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** (**F**or **I**nspiration and **R**ecognition of **S**cience & **T**echnology, see usfirst.org) **Fall 2011 – 2014**

Established and led multiple state-champion robotics teams. Worked with other team members and teams to creatively solve engineering problems. Responsible for 5+ robotic system designs, winning multiple design & engineering awards.

**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.**

**SOCIAL ADVOCATE**

**Advocate for Student Disability Rights at Lafayette College**

**Writer for The Mighty** (<https://themighty.com/u/ingrid-rumbaugh/>)

The Mighty is an online newspaper for the chronic illness community. I write about my experiences with chronic pain and rare diseases so that others with these diseases don’t feel alienated in society, and also so that those without chronic pain understand what we go through in our day-to-day lives.

**AWARDS**

|  |  |  |
| --- | --- | --- |
| **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 |