

Frederick Wachter

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Professional Profile

A **Robotics Engineer** with a background in mechanical engineering and over a year of professional and academic experience with **ROS**. Frederick has experience with full-cycle design, integration, and testing for **platform development** for maritime, aerial, and ground vehicles. Frederick has also has taken **multiple leadership roles** in teams ranging from 4 to 100 student and professional members along with experience with project management, product development, sponsorship, and website development.

Education

Bachelor's and Master's of Science in Mechanical Engineering – Minor in Mathematics

Drexel University, Pennoni Honors College | Anticipated Graduation: June 2018

Undergraduate GPA: 3.94 | Graduate GPA: 3.95 | *Focus in Controls & Systems*

Engineering Work Experience

Lockheed Martin Robotics and Intelligent Systems Group – *Robotics Engineer*

Cherry Hill, New Jersey | March 2017 to September 2017 | *Advanced Technologies Lab*

- Robotic platform developer for unmanned maritime and aerial vehicles
- Performed full system design, development, and integration
- Performed software development and controls in ROS framework

Autonomous Systems Laboratory – *Robotics and Development Engineer*

Zürich, Switzerland | March 2016 to September 2016 | *Swiss Fed. Inst. of Tech. (ETHZ)*

- Interfaced ABB YuMi with MoveIt! software in ROS C++ to automate kinematic and dynamic model and to integrate existing algorithms for path planning and controls
- Integrated the Leap Motion and VI sensor with YuMi for interactive manipulation
- Worked with machine shop to develop a stand and a new attachment for YuMi
- Presented work to the President of ABB Switzerland and his colleagues

Production Technology West – *Research Engineer*

Trollhättan, Sweden | September 2014 to March 2015 | *University West*

- Developed algorithms to determine robustness of weld defect detection from an IR camera with various light sources
- Built a GUI in MATLAB to interface with algorithms to display defect locations to user
- Developed tests to image defects on welds using an IR camera with various light sources in order to benchmark the defect detection algorithms
- Designed and built a borescope for an IR camera to image welds inside of vanes

Engineering and Leadership Experience

Drexel Hyperloop Team – *Project Manager, Sponsorship Head, Steering Committee*

Drexel University | June 2015 to Present

- Interfaced between subsystems as project manager to develop project schedule, deadlines, and manage team resources to keep the project on track for competition
- Interfaced between university advisors, university staff, and sponsors
- Developed organizational structure, grew team of 5 to over 100 students
- Raised over \$65,000 as sponsorship head for developing a scaled pod prototype

Micromouse Competition – *Small mobile robotics maze competition*

Drexel University | June 2016 to Present

- Working with a mechanical and computer engineer along with a professor in mechanical engineering to develop a fully custom robot and controls system to autonomously move the robot through a maze for a grand prize of \$2,000
- Developed the simulation of the robot in a maze in MATLAB as a visualization tool for testing mapping and maze solving algorithms for further optimization of algorithms

THOR Mobile Robot – *Three Omni-Wheeled Robot*

Drexel University | March 2015 to September 2015

- Developed controller for three omni-wheeled robot using an Arduino
- Used PID, interrupts, SMA, remote radio, and sensor feedback

Skills

Robotics

ROS (Robot Operating System)

ABB Industrial Robots

Embedded Systems

Software Development

Full-Cycle Design/Integration/Testing

System Architecture Design

Programming

MATLAB

HTML/CSS

C++

Python

JavaScript

RAPID

Bash

LaTeX

Software

ProE/Creo

SolidWorks

Microsoft Office

Manufacturing

3D Printing

Auto Lathe

Milling

Power and Hand Tools

Electrical

Soldering

Wiring (crimping, layouts, etc.)

Languages

English

French (Working Proficiency)

Standards and Practices

Programming

Google C++ Style Guide

ROS C++ Style Guide

Non-required Coursework

Undergraduate

Numerical Analysis I

Linear Algebra II

Computer Programming I

Basic Robotic Simulation

Leadership

Mentorship