

# Frederick Wachter |

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📄 fwachter.github.io

## Education

### Bachelor's and Master's of Science in Mechanical Engineering

Undergraduate GPA: 3.92 | Graduate GPA: 3.89 | *Focus in Controls & Systems*  
Drexel University, Pennoni Honors College | Anticipated Graduation: June 2018

## Engineering Work Experience

### Autonomous Systems Laboratory – Robotics and Development Engineer

Zürich, Switzerland | March 2016 to September 2016 | *Swiss Federal Institute of Technology*

- Developed ROS driver to interface with ABB YuMi robot from Linux
- Interfaced YuMi with the MoveIt! software in C++ to automate the kinematic and dynamic model and to integrate existing algorithms for path planning and controls
- Integrated the Leap Motion sensor with YuMi in C++ for interactive manipulation
- 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 to interface with algorithms to display defect locations to user

## Engineering and Leadership Experience

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

Drexel University | June 2015 to Present

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

### THOR – 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

## Extracurricular Activities

### Robotics Lecture Group – Founded a group focused on learning robotics concepts through online lectures and projects

Founder | September 2016 to Present

### Drexel Space Systems Laboratory – Developed lab website and advise projects running in the lab

Lab Manager and Webmaster | Spring 2015 to Present

### American Society of Mechanical Engineers – Worked with the committee to plan events and tours of local companies

Executive Board Member and previous Vice Chair | Fall 2013 to Present

## Honors and Awards

### Paul Peck Scholar – Mentoring incoming freshman in engineering and taking specialized courses in leadership

Drexel University | September 2016 to Present

### Hess Honors Research Scholar – Developed orbital trajectories in MATLAB for attitude control of CubeSat's

Drexel University | December 2015 to March 2016

## Skills

### Robotics

ROS (Robot Operating System)  
ABB Industrial Robots

### Programming

MATLAB (Proficient)  
HTML/CSS (Proficient)  
C++ (Working Proficiency)  
JavaScript (Working Proficiency)  
Java (Limited Working Prof.)

### Software

AutoCAD (Working Proficiency)  
Creo Parametric (Working Prof.)  
SolidWorks (Working Prof.)

### Languages

English (Native)  
French (Working Proficiency)

## Specialized Courses

### Graduate

Eng. Analysis & Methods I  
Aircraft Flight Dyn. & Control  
Non-Linear Controls I

### Undergraduate

Numerical Analysis I  
Computer Programming I  
Basic Robotic Simulation