

# Frederick Wachter | 205 N 36<sup>th</sup> Street, Apt. 2M Philadelphia, PA 19104

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🔗 github.com/FWachter

## Education

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

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

Undergraduate GPA: 3.92 | Graduate GPA: 3.89 | *Focus in Controls & Systems*

## Engineering Work Experience

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### 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 in MATLAB to interface with algorithms to display defect locations to user
- Developed tests to image defects on welds using an IR camera and 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

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### 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

### Micromouse Competition – Small mobile robotics maze competition

Drexel University | June 2016 to Present

- Developed GUI integrated with the A\* algorithm for solving mazes as a global planner

### THOR Mobile Room – 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

### 2D Mapping Mobile Robot – Freshman Design Project

Drexel University | March 2014 to June 2014

- Designed PCB, designed controller in Arduino, 3D printed base, fused sensor data
- Used with encoders, accelerometer/gyroscope, XBee, NAND gates, and H-Bridge's

## Extracurricular Activities

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### 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

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### 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

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### 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.)

### Machining

Lathe (Limited Working Prof.)

### Languages

English  
French (Working Proficiency)

## Specialized Courses

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### Graduate

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

### Undergraduate

Numerical Analysis I  
Computer Programming I  
Basic Robotic Simulation