Frederick Wachter | 205 N 36th Street, Apt. 2M Philadelphia, PA 19104

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Education

Bachelor's and Master's of Science in Mechanical Engineering
Drexel University, Pennoni Honors College | Anticipated Graduation: June 2018
Undergraduate GPA: 3.91 | Graduate GPA: 3.93 | *Focus in Controls & Systems*

Engineering Work Experience

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 a controls system in order 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
Arduino

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

Software
ProE/Creo (Working Prof.)
SolidWorks (Working Prof.)
Microsoft Office (Proficient)

Manufacturing
3D Printing (Proficient)

Languages
English
French (Working Proficiency)

Specialized Courses

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

Undergraduate
Intro. to Robotics (Stanford)
Machine Learning (Stanford)
Mechanics of Materials II
Numerical Analysis I
Computer Programming I
Basic Robotic Simulation
Leadership
Mentorship

Extracurricular Activities

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