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

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 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

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

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.)

Machining
Lathe (Limited Working Prof.)

Languages
English
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

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