

Matthew Petersen

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EDUCATION

Sc.B. Hon. Mechanical Engineering, A.B. Assyriology. *Magna Cum Laude* (GPA: 3.7/4.0)
Brown University, Providence RI, May 2017

COURSES

Engineering: Focus on solid mechanics and mathematical methods, including soil mechanics. Other courses: Electricity and Magnetism, Power Engineering, C++, Heat and Mass Transfer, Thermodynamics, Circuits and Signals, Basic Geology. *Assyriology:* Focus on ancient cities and relations to modern city planning, ancient Mesopotamian technical texts, and middle Babylonian irrigation.

POSITIONS

3/2021 - Present	Test Engineer (PT)	Folia Materials, Woburn, MA
12/2018 - Present	Campaign Lead (PT)	TransitMatters, Boston, MA
10/2019 - 10/2020	Test Engineer	Infinite Cooling, Somerville, MA
6/2019 - 9/2019	Mechanical Engineer	De-Ice Technologies, Inc., Somerville, MA
9/2017 - 3/2019	Development Engineer	Festo Corporation, Billerica, MA
5/2016 - 8/2016	SULI Intern	Tribology Group, Argonne Natl. Lab, Lemont, IL
2/2014 - 5/2017	Research Assistant	Henann Lab, Brown University, Providence, RI
5/2014 - 8/2014	Intern	NuScale Power LLC, Corvallis, OR

SKILLS

Experimental Work and Hands-On Experience

- Test fixture development and field work on large-scale electromechanical systems to validate prototypes; extensive experience with quick-build Arduino-based sensor systems and sensor drivers
- Experimental design and measurements utilizing gravimetric and photometric methods to evaluate and develop liquid handling systems. Use real-time systems to perform rapid control prototyping.
- Experimental tribological measurements
- Digital image processing-based flow characterization
- Skilled in fabrication and construction experience - machining, welding, other hand and machine operations

Writing and Communication

- Extensive technical and academic writing experience
- Public speaking, presentation, and meeting skills
- External communications management and coordination
- Outreach and survey organization and planning
- Intermediate German proficiency
- Fluent in L^AT_EX document preparation language
- Proficient in Microsoft Office and Adobe graphics and publication products
- Basic web design proficiency; HTML and CSS literate

Analysis and Design

- Custom image analysis to combine with environmental conditions
- Component and system analysis using FEA, FEM and Matlab/Simulink models
- Mechanical design analysis using ANSYS Mechanical simulation software and SolidWorks
- Geometric product specification analysis
- ANSYS Mechanical simulation software and SolidWorks
- Heat Transfer models in COMSOL

Proficient with: ArcGIS Pro, MATLAB/Simulink, UNIX, ImageJ, ANSYS simulation software, COMSOL Multiphysics, CAD (SolidWorks, Autodesk Inventor, Creo/ProE) Some experience with C++, QGIS GIS Package, R; Fast learner for all software packages.

Program Management and Leadership

- Managed a complex collaboration project, partnering with volunteers, non-profits, and municipalities. Coordinated outreach activities and managed stakeholder relationships.
- Mentored interns on their projects
- Lab organization and management
- New product development planning and development, including intellectual property analysis
- Experience in working with suppliers for both goods and services; procurement and sourcing experience

References available upon request

Experience detail on reverse

**EXPERIENCE
DETAIL**

Folia Materials

- Developed and assembled test equipment and documentation for product testing and evaluation
- Performed sourcing and procurement tasks
- Reviewed and developed internal program and project proposals

TransitMatters

- Worked with other partners to coordinate a complex streetscape redesign collaboration project with non-profit and municipal partners. Worked with the City of Everett, ITDP, and other groups.
- Led production of whitepapers and prospectuses as Campaign Lead for TransitMatters.
- Coordinated volunteer activities and managed deliverables for multiple volunteers on a diverse team.
- Led meetings and outreach activities

Infinite Cooling

- Designed lab-scale cooling tower test stand in collaboration with other engineers.
- Performed cooling tower plume image analysis for use in combination with weather data.
- Developed test fixtures for high-voltage experimentation and conducted extensive fieldwork and installation of plant-scale functional prototypes.
- Worked extensively at the MIT Nuclear Reactor Laboratory to install test systems on a cooling tower and instrument with temperature and humidity sensors.
- Experience with boom lift operation. Managed sensor calibration procedures and vendors. Extensive work with assembly and on-site trouble-shooting of large and complex electromechanical systems.
- Worked with interns to support their individual projects and provide technical help and mentorship.
- Coordinated lab activities and managed lab cleaning and organization.

De-Ice Technologies

- Developed heat transfer and phase change models in COMSOL.
- Performed lab experiments to ground-truth simulation work.

Festo

- Worked using commercial and proprietary engineering component analysis tools, make use of FEA and FEM to drive design decisions.
- Performed system design modeling and simulation using Matlab/Simulink
- Familiar with geometric product specification standards.
- Conducted experimental design for product development, utilizing gravimetric and photometric methods to evaluate and develop liquid handling systems.
- Utilized real-time systems to perform rapid control prototyping.
- Worked as product developer for liquid handling products. Responsible for technical planning and development work.
- Performed market and background research for product development. Analyzed patent and technical documents for relevance.

Argonne National Laboratory

- Performed metallographic sectioning
- Operated micro-pitting rig tribometer to investigate white etching cracks.
- Characterized crack structure and compared cracking in field specimens and laboratory samples.

Henann Group

- Developed models for granular flow. Built a bench-top lab setup to obtain experimental data.
- Worked with Franck Lab to mechanically characterize a novel polymer foam using digital image correlation.
- Wrote analysis protocol in MATLAB to process images and analyze data.

Nuscale Power

- Worked in Reactor Module Design Group on mechanical design analysis using ANSYS Mechanical simulation software and SolidWorks. Prepared mechanical simulation models.
- Worked with industry professionals to prepare calculations and documents.
- Reviewed supplier drawings and created derived CAD files. Worked in an organization conforming to ASME Nuclear Quality Assurance standards.
- Experience with image processing and spatial data analysis in MATLAB