

Seth Pearl

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EDUCATION

The Pennsylvania State University

College of Engineering

Doctor of Philosophy in Mechanical Engineering

Master of Science in Mechanical Engineering

University Park, PA

May 2025

May 2023

State University of New York at New Paltz

School of Science and Engineering

Bachelor of Science in Mechanical Engineering

Minor in Digital Design & Fabrication

New Paltz, NY

May 2021

Magna Cum Laude

SKILLS

- Proficient in CAD and Design Software (SolidWorks, Rhino, OnShape, PTC Creo, AutoCAD, Adobe Illustrator)
- Expertise in Additive Manufacturing (AM)/3D Printing and Design for Additive Manufacturing (DfAM)
- Expertise in Software relevant to Additive Manufacturing (Atlas 3D, Materialise Magics, nTopology, Ultimaker Cura)
- Expertise in Desktop AM (Crealty Ender-3 V2, Prusa MK4S, Bambu Lab X1 Carbon, MakerBot Replicator+)
- Proficient in Software used for Statistical Analysis (SPSS, R, RStudio, NVivo)

PUBLICATIONS

Journal Papers

- **Pearl, S., & Meisel, N. A.** (2025). Evaluating the Timing of DfAM Interventions on Students' Early-Stage Designs for Additive Manufacturing. *ASME Journal of Mechanical Design*, In Review
- **Pearl, S., & Meisel, N. A.** (2025). Exploring the Influence of Reference Example Modality and Relevancy on Students' Designs for Additive Manufacturing. *ASME Journal of Mechanical Design*, 148 (3), 032001 <https://doi.org/10.1115/1.4069040>
- Rokade, S., Gross, E., **Pearl, S., & Meisel, N. A.** (2025) Investigating the Variation in Design for AM Challenges on Suitable Design Creation for AM. *ASME Journal of Mechanical Design*, In Preparation
- **Pearl, S., & Meisel, N. A.** (2024). Exploring the Manifestation of Design for Manufacturing Heuristics in Students' Early-Stage Engineering Design Concepts. *ASME Journal of Mechanical Design*, 147(3), 032001. <https://doi.org/10.1115/1.4066687>
- **Pearl, S., & Meisel, N. A.** (2024). Assessing the Manufacturability of Students' Early-Stage Designs Based on Previous Experience with Traditional Manufacturing and Additive Manufacturing. *ASME Journal of Mechanical Design*, 146(1), 012301. <https://doi.org/10.1115/1.4063564>

Peer-Reviewed Conference Papers

- **Pearl, S., Gambhir, A. A., Brown, D. Y., Peng, A., Beaty, R., & Miller, S.** (2025) Enhancing Usability and Functionality: A Study of Prototyping and Testing for a Creativity Assessment Platform. *ASME Computers and Information in Engineering Conference (CIE)*, In Press
- **Pearl, S., & Meisel, N. A.** (2025). Investigating the Timing of DfAM Interventions on Students' Early-Stage Designs for Additive Manufacturing. *ASME International Conference on Design Education (DEC)*, In Press
- **Pearl, S., & Meisel, N. A.** (2024). Evaluating the Effectiveness of Heuristic Cards with Varying Example Specificity in Design for Additive Manufacturing Education. *ASME International Conference on Design Education (DEC)*, In Press
- **Pearl, S., & Meisel, N. A.** (2023). Exploring the Manifestation of Design for Manufacturing Axioms in Students' Early-Stage Engineering Design Concepts. *Volume 4: ASME 20th International Conference on Design Education (DEC)*, V004T04A007. <https://doi.org/10.1115/DETC2023-116667>

- **Pearl, S., & Meisel, N. A. (2022).** Assessing the Manufacturability of Students' Early-Stage Designs Based on Previous Experience with Traditional Manufacturing and Additive Manufacturing. *Volume 3A: ASME 48th Design Automation Conference (DAC)*, V03AT03A034. <https://doi.org/10.1115/DETC2022-91101>

Additional Publications

- Wulandana, R., Foote, D., **Pearl, S.**, & Ilyayev, N. (2022). Power Production and Drag of Autorotating Cross Cylinder Turbine Models. *International Journal of Advanced Technology in Mechanical, Mechatronics and Materials*, 3(1), 1–17. <https://doi.org/10.37869/ijatec.v3i1.52>
- Huang, W., Wang, P.-C., & **Pearl, S.** (2021). A Pilot Interdisciplinary Robotic Mentorship Project to Study Engineering Soft Skill Development. *2021 Fall ASEE Middle Atlantic Section Meeting Proceedings*, 38420. <https://doi.org/10.18260/1-2--38420>
 - Recipient of the Fall 2021 Best Paper Award
- Wulandana, R., & **Pearl, S.** (2021) Energy Harvesting Potential of Autorotating Turbines. *2020 ASEE Northeast Section Meeting Proceedings*, 36260. <https://doi.org/10.18260/1-2-60-36260>
 - Recipient of the 2019 Summer Undergraduate Research Experience Award
 - Recipient of the Third Position in Best Student Paper Category

TECHNICAL PRESENTATIONS

Additive Manufacturing: Transforming the Designs we *Could* Create into Designs we *Should* Create *Pennsylvania State University, December 2024*

- Invited to give a lecture on DfAM based on the work from my doctoral research
- Learning outcome for attendees will emphasize the need to approach the design process with the design considerations of AM already in mind

Why Graduate School? Exploring Potential Options for the Next Steps after Graduating from SUNY New Paltz *SUNY New Paltz, November 2024*

- Invited to give a lecture detailing my mindset as I enrolled in graduate school to pursue a doctoral degree immediately after graduating from SUNY New Paltz
- Learning outcome will advise the attendees on what to consider when evaluating graduate school options and what attendees can currently do to set themselves up for future success in their careers

Evaluating the Effectiveness of Heuristic Cards with Varying Example Specificity in Design for Additive Manufacturing Education *ASME IDETC, August 2024*

- Presented my research findings to an audience interested in the intersection of engineering design, engineering education, and additive manufacturing

Exploring the Manifestation of Design for Manufacturing Axioms in Students' Early-Stage Engineering Design Concepts *ASME IDETC, August 2023*

- Presented my research findings to an audience interested in the intersection of engineering design, engineering education, and additive manufacturing

Designing for Additive Manufacturing: A Hands-On Redesign Challenge for a Golf Putter *Pennsylvania State University, May 2023*

- Led an activity for students where I educated them of the design considerations for additive manufacturing and how to redesign objects to improve their additive manufacturability
- Positive reception to this activity led to developing an expanded two-week design for additive manufacturing challenge for students which took place October 2024

3D Printing Through the Perspective of Design Thinking - What Influences the Design Decisions You Make?

SUNY New Paltz, March 2023

- Educated attendees about my transition from undergraduate studies to graduate work and my research overview
- Provided insight to students of the potential options for what they can do after graduating from SUNY New Paltz

Assessing the Manufacturability of Students' Early-Stage Designs Based on Previous Experience With Traditional Manufacturing and Additive Manufacturing

ASME IDETC, August 2022

- Presented my research findings to an audience interested in the intersection of engineering design, engineering education, and additive manufacturing

Computational fluid dynamics (CFD) Simulation of a Bladeless Turbine for Hydrokinetic Energy

SUNY Undergraduate Research Conference, April 2021

- Presented my research findings to an audience interested in understanding vortex oscillations of bladeless turbines which were analyzed using COMSOL simulations

Energy Harvesting Potential of Autorotating Turbines

ASME Northeast Section Conference, October 2020

- Presented my research findings to an audience that wanted to learn about the effects of varying the turbine geometry, fluid medium, and fluid flow speed on hydrokinetic energy generation

Renewable Energy Harvesting of Vortex-Induced Rotational Turbines

SUNY New Paltz Student Research Symposium, May 2020

- Presented my research findings to an audience that wanted to learn about the effects of varying the fluid medium and fluid flow on hydrokinetic energy generation

Design of Drag Experiment for SUNY New Paltz Engineering: Determining Drag Coefficient from a Water Flow Tank

SUNY New Paltz Student Research Symposium, May 2020

- Presented my research findings of the drag forces observed on a rod submerged in a custom-built flow tank and how the findings would be integrated into future SUNY New Paltz Engineering Thermo-Fluids Lab sections

Generating Hydrokinetic Energy from Auto-Rotating Turbines

ASME Mid-Atlantic Fall Conference, November 2019

- Presented my research findings to an audience that wanted to learn about the effects of varying the fluid flow on hydrokinetic energy generation
- Recipient of the Third Position in Best Student Poster Category

Multi-Material Testing of 3D Printed Specimen

SUNY Undergraduate Research Conference, April 2019

- Presented my research findings to an audience that wanted to learn about the effects of varying printing process parameters on a part's structural strength by evaluating stresses after undergoing modified three-point bend tests

TEACHING EXPERIENCE

Pennsylvania State University College of Engineering

Guest Lecturer, Introduction to Design for Additive Manufacturing

University Park, PA

March 2022-March 2022

- Lectured students about design for manufacturing principles
- Facilitated a discussion surrounding DfAM concepts for those seeking fundamental knowledge of AM

Pennsylvania State University College of Engineering

Guest Lecturer, Design for Additive Manufacturing

University Park, PA

November 2021-March 2022

- Taught students design for manufacturing principles through giving lectures
- Facilitated a discussion surrounding DfAM concepts for those seeking advanced knowledge of AM

Pennsylvania State University College of Engineering
Guest Lecturer, Engineering Design and Analysis with CAD

University Park, PA
October 2021-March 2022

- Taught students design for manufacturing principles through giving lectures
- Educated students about DfAM considerations and how it relates to CAD

Pennsylvania State University College of Engineering
Guest Lecturer, Mechanical Engineering Design

University Park, PA
September 2021-Present

- Taught students design for manufacturing principles through giving lectures
- Led lab activities for +1000 students to educate them about the design considerations for additive manufacturing

SUNY New Paltz Division of Engineering Programs
Student Assistant, Design with Additive Manufacturing

New Paltz, NY
August 2020-May 2021

- Developed lectures and class demos for teaching students how to use basic tools in SolidWorks
- Introduced students to DfAM concepts and troubleshooted the students' 3D printed objects for class

SUNY New Paltz Division of Engineering Programs
Student Assistant, Dynamics

New Paltz, NY
January 2020-May 2021

- Gave weekly lectures on course content and assisted students during designated office hours
- Gained skills in effectively teaching remotely when classes abruptly switched to virtual learning due to the COVID-19 pandemic

SUNY New Paltz Division of Engineering Programs
Student Assistant, Design Using Reverse Engineering

New Paltz, NY
January 2020-May 2020

- Developed lectures and class demos for teaching students how to use advanced tools in SolidWorks
- Provided guidance to students as they troubleshooted their CAD files and 3D printed objects for class

SUNY New Paltz Division of Engineering Programs
SUNY New Paltz Lead Engineering Student

Hopewell Junction, NY
September 2019-May 2021

- Taught students in the John Jay High School Robotics Program how to use Creo and OnShape
- Led the formal collaboration between SUNY New Paltz and John Jay High School as undergraduate engineering students mentored the high school robotics program that would proceed to win the 2021 FIRST Inspire Award

SUNY New Paltz Division of Engineering Programs
Student Assistant, Introduction to Engineering

New Paltz, NY
August 2019-December 2020

- Assisted students as they learned the fundamentals of CAD, coding, and prototyping
- Helped students acclimate to college as they transitioned from high school

WORK EXPERIENCE

Pennsylvania State University College of Engineering
Graduate Research Assistant

University Park, PA
August 2021-Present

- Conducted NSF-funded research at an R1 University
- Published research findings in peer-reviewed conference and journal publications

JFK&M Consulting Group LLC
Intern

New York, NY
December 2019-January 2020

- Developed HVAC and AutoCAD skills through working on assigned projects for the firm's partnered companies
- Assisted in developing the firm's organizational system for managing new projects

SUNY New Paltz Division of Engineering Programs*Research Assistant***New Paltz, NY***May 2019-August 2019*

- Developed skills in conducting research at a university
- Presented research findings at multiple conferences and through multiple publications

SUNY New Paltz Digital Fabrication Lab*Assistant Lab Technician***New Paltz, NY***January 2019-May 2020*

- Operated the lab's laser cutter and vinyl cutter for manufacturing student's submitted class assignments
- Developed Adobe Illustrator and Photoshop skills to assist students as needed during designated lab hours

LEADERSHIP EXPERIENCE

Made by Design Lab*Graduate Lab Manager***University Park, PA***August 2024-Present*

- Organized lab meetings and events that promoted skill development and team building
- Peer reviewed papers submitted to the Solid Freeform Fabrication Symposium across multiple years

Pennsylvania State University College of Engineering*Mentor, Multi-Campus Research Experience for Undergraduates***University Park, PA***May 2024-July 2024*

- Mentored an undergraduate student and provided advice as they conducted research for the first time
- Held Q&A panels where I addressed students' questions about graduate school options and research advice

Chabad of Penn State*President, JGrads Student Chapter***State College, PA***August 2022-Present*

- Helped coordinate and promote the student organization's monthly events for students and community members
- Volunteered at the Jewish Discovery Zone to teach children in the community basic Hebrew and facilitate learning activities

Penn State Student Affairs*CAD Chair, 3D Printing Club***University Park, PA***January 2022-May 2022*

- Led workshops on how to use SolidWorks and Rhino for members of the student organization
- Worked with members as I troubleshooted their CAD files and assisted in 3D printing their designs using the student organization's 3D printers during designated office hours

SUNY New Paltz Division of Engineering Programs*President, New Paltz Engineering Club***New Paltz, NY***August 2020-May 2021*

- Maintained an active organization through the COVID-19 pandemic as I learned how to engage student interaction through facilitating virtual events and activities
- Oversaw substantial executive board turnover as I oversaw the transition from the departing graduating class to a new executive board consisting of previously involved general members

American Society of Mechanical Engineers*President, New Paltz ASME Student Chapter***New Paltz, NY***August 2018-May 2021*

- Organized workshops, seminars, and tours of local industries for members to participate in
- Gained notoriety within the engineering department and established the student organization as the primary student group for the engineering department to refer to when looking to collaborate with students

SUNY New Paltz Division of Engineering Programs*Public Relations Manager, New Paltz Engineering Club***New Paltz, NY***January 2018-May 2020*

- Initiated the public relations division and social media platforms for the newly created student organization
- Documented events through photographs and detailed notes for the executive board to evaluate how to improve events in future semesters

American Society of Mechanical Engineers

Public Relations Manager, New Paltz ASME Student Chapter

New Paltz, NY

August 2017-May 2018

- Established and operated the student organization's social media platforms
- Trained the new members of the public relations team how to effectively promote the student organization

SUNY New Paltz Office of Undergraduate Admission

Volunteer, Campus Recruitment

New Paltz, NY

March 2017-April 2017

- Provided campus tours to visiting families and prospective students at SUNY New Paltz
- Facilitated discussions about academic and personal development opportunities at SUNY New Paltz

CERTIFICATIONS, AWARDS, AND PROFESSIONAL MEMBERSHIPS

- ASME 21st International Conference on Design Education (DEC) Committee Member, *August 2024*
- ASME 36th International Conference on Design Theory and Methodology (DTM) Committee Member, *August 2024*
- ASME 50th Design Automation Conference (DAC) Committee Member, *August 2024*
- Passed the NCEES FE Exam – Mechanical, *July 2021*
- SUNY New Paltz Division of Engineering Programs Princeps Achievement Award, *May 2021*
- ASME Student Section Recognition Program Award Recipient, *May 2021*
- The American Society of Mechanical Engineers Membership, *October 2016-Present*
- The American Society for Engineering Education Membership, *January 2025-Present*