Adeline N. Ripberger

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EDUCATION

Purdue University, PhD Student
Materials Engineering

Scholarships & Awards
Presidential Doctoral Excellence Award, 2023; Purdue Doctoral Fellowship, 2023-2025

Rutgers University, Engineering Honors Academy, B.S. May 2023
Mechanical Engineering, Minor in Mathematics
James J. Slade Scholar, Thesis: Multiplexed 3D Printing of Thermoplastics, Advisor: Dr. Rajiv Malhotra

Scholarships & Awards
Merton D. and Sylvia Levey Scholarship, 2022; E. Wayne Kay Scholarship, 2022; School of Engineering Auchter 1912 Scholarship Award, 2021, 2020; Engineering Class of 1979 Scholarship, 2019

Core Competencies: **SolidWorks, MATLAB, Python, Modal Analysis, Additive Manufacturing, GD&T, OfficeSuite**

RESEARCH EXPERIENCE

Ray Ewry Sports Engineering Center (RESEC), Graduate Researcher, August 2023 – present
- designed and implemented test procedure to measure and analyze vibrational response of tennis rackets
- mentor undergraduate student research projects and teach associated skills
- developed method to visualize tennis racket "sweet spot"

Advanced Manufacturing Sciences Laboratory, Undergraduate Researcher, September 2021 – May 2023
- conducted experiments to optimize print characteristics
- designed and developed setup for multiplexed direct ink writing of epoxies
- performed throughput calculations to compare 3-D printing techniques

PUBLICATIONS AND PRESENTATIONS

Journal Article
Cleeman, J., Bogut, A., Mangrolia, B., Ripberger, A., Kate, K., Zou, Q., & Malhotra, R. (2022). Scalable, flexible and resilient parallelization of fused filament fabrication: Breaking endemic tradeoffs in material extrusion additive manufacturing, Additive Manufacturing, 56, https://doi.org/10.1016/j.addma.2022.102926

Conference Paper

Cleeman, J., Bogut, A., Mangrolia, B., Ripberger, A., Maghouli, A., Kate, K., & Malhotra, R. (2022). Multiplexed 3D Printing of Thermoplastics, Conference Proceedings - ASME 17th International Manufacturing Science and Engineering Conference, West Lafayette, Indiana. https://doi.org/10.1115/MSEC2022-80882

Presentations
Ripberger, A., Onder, Y., Plunkett, O., Reilly, C., Mansson, JA. (July, 2024). A Method of Parameterizing Feel and Control of Tennis Rackets. 15th International Conference on the Engineering of Sport, Loughborough University, Loughborough, United Kingdom.

Ripberger, A., Onder, Y., Plunkett, O., Reilly, C., Mansson, JA. (May, 2024). Tennis Racket Feel Parameters: Inter- and Intra- Racket Correlations. 2nd Annual Materials at Purdue Symposium, Purdue University, West Lafayette, Indiana.

Ripberger, A. (April, 2023). Automated Toolpath Generation for Multiplexed 3D Printing [Poster presentation]. 19th Annual Undergraduate Research Symposium, Rutgers Aresty Research Center, New Brunswick, New Jersey.

Ripberger, A. (April, 2023). Semi-Automated Toolpath Generation for Infill Patterns with Multiplexed 3D Printing [Poster presentation]. James J. Slade Research Symposium, Rutgers School of Engineering, Piscataway, New Jersey.

OUTREACH
Carnival at Klondike Elementary, MSE Graduate Student Association, Sand Casting Medallions, April 06, 2024
Purdue Space Day, MSE Graduate Student Association, Solar Sails, October 28, 2023
Purdue University Homecoming, MSE Graduate Student Association, Thermoset Resin Keychains, September 30, 2023

MENTORSHIP
Undergraduate Student Research

Students
The Effect of Tennis Racket Customization on Feel Parameters – Yagmur Onder '24, Owen Plunkett '24
Design of a Tuned Vibration Damper for Tennis Rackets – Lucas Goretta '25, Andrew Liu '25, Colin Reilly '25

Programming
- co-developed and implemented undergraduate research syllabus
- wrote and ran workshop on statistical analysis methods for research
- co-ran workshop on Overleaf online LaTeX editor

Advisor for Senior Design Project
Mechanical Engineering Student Team, SmartServe Instrumented Tennis Racket, Spring, 2024

Mentor for Society of Women Engineers Graduate Mentorship Program, February, 2024 – April, 2024

WORK AND CO-CURRICULAR EXPERIENCES
Rawlings Sporting Goods, Product Development Intern, St. Louis, MO, May, 2022 – August, 2022
- wrote and implemented Python script to analyze and characterize impact sound data
- performed modal analysis on baseball and softball bats
- conducted material property, quality, and durability testing using various instrumentation
- created visual data representations in Minitab based on statistical process and quality control principles
- utilized athletic experience to provide product feedback

Cubic Nuvotronics, Design Engineering Intern, Durham, NC, June, 2021 – May, 2022
- designed tooling for test and assembly applications and housings for component modules
- applied geometric dimensioning and tolerancing (GD&T) to drawings
- conducted Failure Mode Effects Analysis
- created JMP script to analyze SemDex measurement data and output necessary plots
- responsible for maintaining and updating documentation including ECNs, SCDs, and BOMs

Trenton-Mercer Airport, Operations Intern, Ewing, NJ, January, 2020, July – August, 2019
- used AutoCAD to create drawings for Mercer County's engineering division
- ensured that all aspects of the airport met national standards and regulations
- completed level 3 certification of the Airport Training and Safety Institute

Rutgers Formula Racing, Data Acquisition and Testing Team Member, September, 2019 – September, 2023
- developed MATLAB code to analyze driver data to improve driver performance
- machined aluminum car components using a mill and lathe
- used an Instron to test tensile strength of welds

STUDENT LEADERSHIP
Secretary, Purdue Materials Engineering Graduate Student Association, May, 2024 – present
- diligently document meetings with the association executive board
- plan outreach events to teach elementary and middle school students materials engineering fundamentals

Ambassador, Rutgers School of Engineering, June, 2020 – May, 2023
- lead department liaison committee focused on improving communication and providing feedback
- completed strategic planning process to develop new program goals and initiatives
- lead panel discussions and hosted events for prospective and incoming students
- created a new initiative to recruit underrepresented and underserved students