Devi Yuliarti

devi.yuliarti@duke.edu | (919) 641-2103 | www.linkedin.com/in/deviyuliarti

EDUCATION

Duke University, Durham, NC *May 2026*

Bachelor of Science in Mechanical Engineering with Robotics and Automation Certificate

- GPA: 3.69
- United World Colleges (UWC) - Davis International Scholarship
- Relevant Coursework: Dynamics, Mechatronics, Control Systems, Fluid Mechanics, Materials Science, Introduction to Robotics, Data-Driven Controls and Machine Learning, Intro to Medical Robotics and Surgical Technologies

RESEARCH EXPERIENCE

Brain Tool Lab

Undergraduate Researcher *January 2025 - Present*

Multimodal Tactile Sensor for Tissue Palpation

- Designed, fabricated, and iterated multiple versions of a pneumatic tactile sensor with integrated acoustic and pressure sensors for soft tissue palpation
- Developed hardware architecture, data collecting pipeline, and validated sensor performance across hard materials, tissue phantoms, and ex vivo biological tissues
- Conducted palpation experiments on a UR3e by using admittance control based on force threshold to ensure consistent palpation.

Automated Robotic Laser Ablation

- Designed and optimized an optical experimental setup for an Optical Coherence Tomography (OCT) imaging system and laser focus alignment
- Developed a robust UR5e end effector system for OCT, optical components, and precision mounting systems for the automated robotic laser ablation project
- Built a Raspberry Pi laser controller for precise control of power, duty cycle, and frequency modulation

PUBLICATIONS

Yuliarti, D., Prakash, R., Cheung, H. C., Strong, A. K., Codd, P. J., & Lin, S. (n.d.). PalpAid: Multimodal Pneumatic Tactile Sensor for Tissue Palpation. *IEEE 9th International Conference on Soft Robotics (RoboSoft)*, 2026. (accepted) [Project Website] [arXiv]

Prakash, R., Wang, V. Y., Mishra, A., **Yuliarti, D.**, McNabb, R. P., Codd, P. J., & Bridgeman, L. J. (n.d.). See, Plan, Cut: MPC-Based Autonomous Volumetric Robotic Laser Surgery with OCT Guidance. *IEEE International Conference on Robotics and Automation (ICRA)*, 2026. (accepted) [Project Website] [arXiv]

TEACHING ASSISTANT EXPERIENCE

Introduction to Robotics (Cross-listed Undergraduate/Graduate Course) *Fall 2025*

- Hosted office hours to support both undergraduate and graduate sections to understand fundamental concepts
- Facilitated quiz review session on robot dynamics, forward kinematics, velocity kinematics, and inverse kinematics
- Graded assignments and provided guidance for final projects

EMPLOYMENT EXPERIENCE

Trio Labs

Mechanical Engineer Intern *May 2024 - August 2024*

- Assembled three patented metal Resin Infused Powder Lithography (RIPL) 3D printers designed for precision micro-scale medical device parts with tolerances as tight as 0.0005”.
- Troubleshot various printer subsystems using relevant testing experiments.
- Developed comprehensive documentation covering hundreds of wiring configurations, hardware specifications, vacuum systems, and various operational protocols.
- Contributed to weekly progress reports with company executives

Duke Innovation Co-Lab

Makerspace Technician *February 2023-Present*

- Manage and maintain various equipment such as 3D Printers, Laser Cutters, Protomax Waterjets, electric hand tools, Shopbot Desktop 3-axis CNC router, drill press, Tormach 440 CNC mill, etc.
- Provide design support and consultations on CAD, 3D printing, Adobe software, and operating the machines and equipment.

Mechanical Design Engineer *October 2023 - August 2024*

- Performed structural calculations and failure mode analysis to validate material and design choices for an art installation project.
- Applied DFM and DFA principles to design an easy-to-assemble 3D-printed electronics enclosure project.

PROJECT EXPERIENCE

Autonomous Maze-Solving TurtleBot *October 2024 - December 2024*

- Worked on a DFS and Greedy BFS-based autonomous maze-solving Turtlebot using ROS2 and Nav2 navigation stack, and Simultaneous Localization and Mapping (SLAM)
- Created maze environments in Gazebo and resolved challenges by modifying Nav2 parameters and configuration files to improve system efficiency

Emotion Classification of Speech Data using MFCC Features *March 2025 - May 2025*

- Developed a full machine learning pipeline for emotion recognition through raw speech data in MATLAB
- Implemented Mel-Frequency Cepstral Coefficients (MFCC) feature extraction to process audio data and applied Principal Component Analysis (PCA) to reduce dimensionality
- Trained and evaluated the performance of Support Vector Machine (SVM) and K-Nearest Neighbors classifiers

Duke AERO High Powered Rocketry Team *September 2022 - July 2025*

Structures Engineer - Team Lead, Strategic Initiative Chair

- Instructed team members on composite materials, airframe fabrication, and advanced manufacturing techniques, including molding, waterjet cutting, and machining using CAD/CAM software.
- Spearheaded a mentorship program that supports underclassmen to acquire and apply hands-on skills to smaller-scale projects that they can take ownership of.
- Contributed to achieving the 2nd highest design build quality score at Spaceport America Cup 2023, and a perfect score in 2024.

Payload Engineer *September 2023 - May 2024*

- Researched and designed the payload cubesat landing legs mechanism.
- Fabricated fiberglass components, machined aluminum parts, and assisted with the successful integration of the payload system into the rocket design.

Duke Motorsports (FSAE)

Vehicle Dynamics Engineer *September 2023 - May 2024*

- Conducted topology studies and FEA on SolidWorks to validate suspension bell crank designs
- Designed 3D-printed jigs for suspension control arm assembly

SKILLS

CAD/Analysis: Solidworks, Fusion 360, Onshape, FEA, FMEA, GD&T, Engineering Drawing
Manufacturing: CNC operations, 3D Printing, Waterjet, Laser cutting, Casting and Molding
CS/EE: Python, MATLAB, LabVIEW, Arduino, Raspberry Pi, ROS2, Gazebo, RViz, MoveIt, Git
Languages: English, Indonesian, Javanese, Chinese (intermediate), French (beginner)

VOLUNTEER EXPERIENCE

United World Colleges - Indonesian National Committee *September 2022 - Present*

A global movement making education a force to unite people, nations, and cultures for peace and a sustainable future.

- Reviewed applications and nominated candidates for the annual national selection process
- Organized outreach workshops to help future changemakers pursue world-class IB education in UWC Schools around the world