Turibius Rozario

turibiusrozario@umbc.edu · Silver Spring, MD 20903

Objective

To pursue a PhD in Mechanical Engineering by exploring studies of performance optimization, process automation, energy conservation, and aeronautical systems.

Education

University of Maryland, Baltimore County (UMBC) — May 2025
BS in Mechanical Engineering (ME), Minor in Computer Science (CS) — 4.0 GPA
Currently Taking: Computational Methods, Circuits, Fluid Mechanics, Linear Algebra, Solid Mech. & Mat. Lab

Skills

Languages	C++, HTML / CSS, LaTeX, MATLAB & Simulink, Python
Software	AutoCAD, Betaflight, Inkscape, Keras, MS Office Suite, PyTorch, SolidWorks, UNIX
Hardware	Arduino, BeagleBone, Flight Controllers, GPS Modules, Inertial Measurement Units (IMUs)
Technical abilities	3D Printing, Flying Drones, Power Tools, Soldering

Awards & Honors

Meyerhoff Scholar — June 2021 – Present
President's List — July 2022, July 2023
S-STEM Scholar — June 2022 – June 2023
Certificate of Meritorious Service — June 2021
Certificate of Student Engagement — June 2021

Relevant Research Experience

Parameter Optimization for Autonomous Navigation — November 2021 – Present
ME Department, UMBC | Mentor: Dr. Ankit Goel (ankgoel@umbc.edu)

- Training neural networks using MATLAB, TensorFlow, and PyTorch by generating data, using gradient descent, and validating results to model real-world physics.
- Developing and utilizing parameter optimization techniques such as FSolve and random search method.
- Demonstrating finite-time convergence of novel Finite Time Estimation method by fine-tuning hyperparameters.

Design of a Hardware-in-the-Loop Test System for Wave Energy Harvesting — Summer 2023
ME Department, University of Minnesota (UMN) | Mentor: Dr. James Van de Ven (vandeven@umn.edu)

- Used equations for fluid flow and computations on system efficiency and size to scale down the full-scale system into lab space model validation purposes.
- Produced a bill of materials for the exact components needed to construct the system.
- Designed custom parts and fittings for hydraulic components, and drafted an overall assembly model.

Conferences & Competitions

Summer Undergraduate Research Expo, UMN — August 10, 2023
Abstract title: 'Design of a Lab-Scale Ocean Wave-Powered Desalination System'.

Undergraduate Research and Career Advancement Day, UMBC — April 12, 2023
Abstract title: 'A Tutorial on Neural Networks and Gradient-free Training'.

Design, Build, Fly 2022, AIAA DBF — September 2021 – April 2022

- Composed a technical design report for constructing RC cargo plane.

Extra/Co-curricular Activities

Retriever Robotics, *Secretary* — February 2023 – Present

- Collaborating, constructing, and testing a drone with image recognition and autonomous navigation capabilities.

American Institute of Aeronautics and Astronautics (AIAA), *Project Lead* — September 2021 – Present

- Planning and hosting general body meetings, speaker talks, and marketing.

Jujitsu Club, *Member* — September 2021 – Present