Chirayu M. Salgarkar
264 Adams Lake Drive
Lawrenceville, GA 30046
(770)-608-9702 • Chirayu.Mihir.Salgarkar@live.mercer.edu

EDUCATION

Mercer University, Macon, GA
Bachelor of Science, Biomedical Engineering and Mathematics; GPA: 3.6 Expected May 2024

Budapest Semesters in Mathematics, Budapest, Hungary Summer 2023
Advanced Mathematics Coursework in Measure Theory and Network Science

Relevant Coursework:

Graduate Coursework: Linear and Nonlinear Control Systems, Biomaterials, Thermodynamics of Biofluids, Design and Manufacturing of Orthopedic Rehabilitation Devices

Undergraduate Coursework: Biomechanics, Data Structures and Algorithms, Tissue and Cell Engineering, Real Analysis I + II, General Chemistry, Organic Chemistry 1, Genetics, Basic Transport Phenomena, Thermal Systems Analysis, Differential Equations, Measure Theory, Mathematics of Network Science, Abstract Algebra, Applied Mathematical Modeling

HONORS

Stamps Scholarship (full-ride undergraduate scholarship)	2020-2024
Outstanding Junior in Mathematics (top junior student studying mathematics)	2023
P.W. Bean Award, awarded to one student building mathematical community at Mercer University	2023
Outstanding Student in Multivariable Calculus	2021
Outstanding grade (highest score given) in SCUDEM international modeling challenge	2021
NPDA National Debate Champion – Novice Division	2022
Georgia Governor's Honors Program – Biology	2019

RESEARCH EXPERIENCE

Mercer University: Department of Electrical Engineering, Cyber-physical Systems and Control Lab
Research Assistant, October 2020 - present
Advisors: Dr. Makhin Thitsa
Designed control optimization strategies for various dynamical systems, such as drone control and internet traffic systems. Collaborated with researchers at various R1 universities for Control Barrier Function algorithm development. Developed MATLAB code to model various control techniques. Current research focus: Non-smooth control barrier function development

Georgia Institute of Technology: LIDAR-FACTS Lab
Undergraduate Team Lead, May 2021 – February 2022
Advisors: Dr. Ye Zhao, Dr. Samuel Coogan
Assistant team lead for Cassie Bipedal robot – drone collaboration project. Developed feedback control strategies, including control barrier functions, between drone-robot systems for formal safety guarantees. Helped implement Model Predictive Controller for UAV-robot collaboration, as well as a QP control law, run in ROS Gazebo simulator. Funded by NSF Award #1924978 (NSF-REU) from May – August 2021.

PRESENTATIONS

SoCon Undergraduate Research Forum, Wofford College, Spartanburg, South Carolina, October 2022. Salgarkar, C. Medlin, Z. "Non-smooth Control Barrier Functions for Safety Critical Systems" (talk).

SURE Robotics Research Symposium, Georgia Institute of Technology, Atlanta, Georgia. August 2021. Salgarkar, C. "LIDAR-FACTS Lab NSF-REU Project: Drone-Robot Collaboration" (poster and talk).

Mercer University BEAR Day, Macon, Georgia, April 2022. Nguyen, M.; Ong, Q.; Salgarkar, C. "EMG Controlled Prosthetic Arm Design: Year One." (poster and talk).

PUBLICATIONS:

One paper currently in review.

Topic: High-order Nonsmooth Barrier Functions, with Jimenez-Cortes, C., Thitsa, M. Coogan, S. Sent to *Controls Systems Letters.*

LEADERSHIP/SERVICE

Mercer Debate
Varsity Member, August 2021 – Present
Member of Varsity Team for nationally ranked collegiate parliamentary debate team. Winner of national championship for novice division in 2022, strong performance in varsity national competition in 2023. Southeastern representative for national convention for 2023-2024 season.

Mercer Binary Bears
Varsity Member, August 2023 – Present
Member of Mercer University's top school competitive programming team. Placed third at regional competition held at Coastal Carolina University, and will compete at ACM regional competition.

Mercer Prosthetics and Orthotics Club (MPOC)
Laboratory Secretary, August 2022 – November 2022
Student club head of Gait Analysis Laboratory and MPOC Machine Fabrication Laboratory. Act as Lab mentor for students, and help students with use of various machinery in labs, in training for MOM: Vietnam/Cambodia Program. Fabricated prosthetic hand from 3-D components in preparation of role

Mercer Prosthetics Program - Preah Vihear, Cambodia
Prostheses fitter: May – July 2022
Constructed and fitted above and below-knee prostheses for disabled persons in Preah Vihear, Cambodia. Fabricated sockets, pylon, and corrected for deformities, such as valgus and varus legs. Individually fitted over 20 patients.

Mercer University Mathematics Department
Mathematics Preceptor, August 2022 – January 2023
Serve as Calculus Preceptor (equivalent of Teacher Assistant). Meet with professors weekly to discuss ways to improve student performance in Calculus 1.

Gwinnett County Board of Voter Registrations and Elections
Poll Manager, August 2018 – Present, during election cycles
Oversee, manage polling location of over 500 voters (per 2020 election cycle). Handle issuing of provisional ballots (including out-of-precinct and challenged ballots), issue electronic ballots on Poll Pad. Provide language assistance for Spanish-speaking voters

PROFESSIONAL WORK EXPERIENCE

Georgia Tech Research Institute (Electronic Systems Laboratory)
Research Intern, October 2023 – present
Developing front-end tools to simulate electronic systems used at Robins Air Force Base.

Harris Computer
Software Engineering Intern, February 2023 – August 2023
Developed front-end and back-end tools for preauthorization of care for hospitals, using React and SQL.

CERTIFICATIONS

MSI Six Sigma Lean Green Belt: Government, Certified EMT-B and Wilderness First Responder, Certified in Prosthetic Design, Biomechanical and Clinical Fitting of Prostheses, Qualified to fit Universal Socket Prosthesis – Hanger Clinic

TECHNICAL SKILLS

ROS, MATLAB + Simulink, AutoCAD + Autodesk Inventor, Fusion 360, LABVIEW, C++, Python, Java, ANSYS, LTSpice, JavaScript, Typescript.

Experience with fabrication tools, including CNC and lathe. Experience with oscilloscope practice.

LANGUAGES

English (fluent)
Marathi (conversational proficiency)