

Hersch Nathan

They/Them/Theirs | Hersch.Nathan@uky.edu | 317-272-4525 | HerschNathan.com

EDUCATION

Bachelor of Science, Electrical Engineering Aug 2022 – Expect May 2026
Bachelor of Arts, Theatre Arts GPA: 3.8
Minor in Mathematics University of Kentucky
Lewis Honors College Lexington, Kentucky

Relevant Coursework: Topics in EE: Intro to Robotics, AC Circuits, Intro to Embedded Systems, Differential Equations, Scenic Design

EXPERIENCE

Undergraduate Research Assistant, University of Kentucky Jan 2023 - Present
Advisor: Dr. Biyun Xie (PI)

Conducting research in the Intelligent Robotic Arms (IRA) Lab. My ongoing project is titled: "Using Hybridization Of Trajectory Planning Algorithms To Optimize Multiple Cost Functions With Different Priorities." I am exploring artificial intelligence and machine learning techniques to apply multiple static trajectory planning algorithms to minimize multiple priorities (such as path length, computational latency, and radiation). The original premise was an interdisciplinary project between Electrical Engineering and Theatre Arts by developing a Scenic Automation System prototype using an unmanned ground vehicle (UGV) to develop global pathfinding algorithms.

NSF-REU Undergraduate Researcher, University of Maryland Baltimore County June 2023 - Aug 2023
Advisors: Dr. Nirmalya Roy (PI), Dr. Anuradha Ravi, Mr. Mohammad Saeid Anwar

Conducted research in the domains of asynchronous networking and robotics through a research experience for undergraduates hosted by Mobile, Pervasive, and Sensor Computing (MPSC) Lab in the Department of Information Systems. I also worked in the Center for Real-time Distributed Sensing and Autonomy where I assisted with a demonstration for the Army Research Lab. The project I worked on supported the viability of using a low bandwidth and low power protocol (LoRa) for transmitting a large amount of data (i.e. images) in search and rescue applications. My research was presented as a poster at University of Maryland Baltimore County's College of Natural and Mathematical Sciences' Summer Undergraduate Research Fest entitled, "Performance Analysis Of Heterogeneous Networks For Robotic Navigation".

Project Manager of Active Control Research and Controls Specialist, SpaceLex May 2023 - Present
Advisors: Dr. Muhao Chen (Project Advisor), Dr. Savio Poovathingal (Club Faculty Advisor)

Serves as the student lead and proposer of our active control research project for the University of Kentucky's rocketry and propulsion team. The goals of this project are to develop the knowledge of the team in applying controls systems while proposing a novel approach. Within the team, I work on the flight computer with electronic design and embedded software design.

Technical Director/Sound Designer, Brebeuf Jesuit Preparatory School Jan - Mar 2022

Served as the Technical Director and Sound Designer for *The Addams Family*. I led the technical team and coordinated the needs of the departments. I deployed and maintained multiple fiber links for audio and video to and from the remote pit for audio and conducting video to be transmitted. As the Sound Designer, I used my artistic and technical skills to build a sound scape while dealing with technical challenges.

LEADERSHIP

Amateur Radio Club, University of Kentucky, **Vice President** Jan 2023 - Present

Formed a new club to foster interest, experience, and education around Amateur Radio. Devised a plan for sustainability as well as directed the effort to maintain the Amateur Radio Lab (Ham Shack) on campus.

STEMqiQueers, University of Kentucky, **Officer/ESC Rep** Sep 2023 - Present

Serves as an officer of STEMqiQueers. I work on securing funds as well as organizing joint meetings with other clubs. I serve as the club's representative on the College of Engineering Student Council. I am working with the Dean of Diversity Equity and Inclusion on college level initiatives.

POSTER PRESENTATIONS

H. Nathan, M. Saied Anwar, A. Ravi, N. Roy, "Performance Analysis Of Heterogeneous Networks For Robotic Navigation," Summer Undergraduate Research Fest, UMBC 2023

HONORS

Chellgren Student Fellowship	Spring 2023
Alpha Delta Lambda Honor Society	Spring 2023
ECE Undergraduate Research Fellowship, University of Kentucky	Spring 2023
Dean's List, University of Kentucky College of Engineering	Fall 2022 - Spring 2023
Otis A. Singletary Scholarship, University of Kentucky	2022
Academic All American, National Speech & Debate Association	Spring 2023

SKILLS

Coding Languages/Hardware Description Languages: MATLAB, C++ , C, Python, Verilog
Libraries and Frameworks: libmodal_pipe , ROS 1, ROS 2,
Development Boards: Arduino, Raspberry Pi Pico, Raspberry Pi (assorted), Nvidia Jetson Nano
CAD/EDA: Fusion360, Onshape, EasyEda
Office365/Google Workspace: Word, Excel, Docs, Sheets
Fabrication: Woodworking, Metalworking, Sewing, Fabrics, Carbon Fiber
Amateur Radio: Technician License (Call sign KD9POY - Completed June 2020)

PROFESSIONAL INVOLVEMENT

Institute of Electrical and Electronics Engineers, University of Kentucky
Member March 2023-Present

Puppeteers of America, United States of America
Puppeteer/Member Aug 2017-Present

CAMPUS INVOLVEMENT

Studio Season, University of Kentucky
Lighting and Sound Designer Sept 2022 - Present

Engineering Student Council, University of Kentucky
Representative Sept 2022 - Present

SpaceLex, Rocketry and Propulsion, University of Kentucky
Electronics Sub-team Member, RF Specialist, Controls Specialist, Vice President of Personal/Outreach,
Project Manager of Active Controls Research Project Aug 2022 – Present