

SIGNALS & NOISE

UNH DEPARTMENT OF ELECTRICAL AND
COMPUTER ENGINEERING

ISSUE 5 • MAY 2024



ECE UPDATES

Over winter break, our ECE student room was redone! This newly renovated room is now equipped with standing desks, wheeled chairs, desktop computers, lounge chairs, and white boards. This space allows ECE students to have a private and quiet space to study individually or even collaborate! Students are also provided with snacks and fidget toys to help them get through stressful times and late nights!

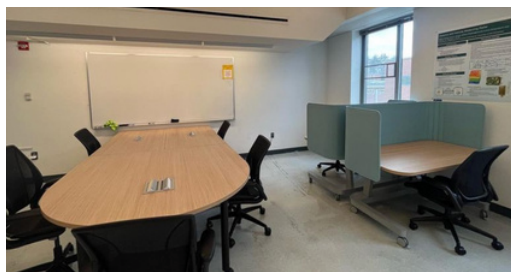


TABLE OF CONTENTS

Chairman's Corner • P. 2

URC Highlights • P. 3 -5

ASVD Recap • P. 6

Grad Student Update • P. 7

Faculty Highlight • P. 8

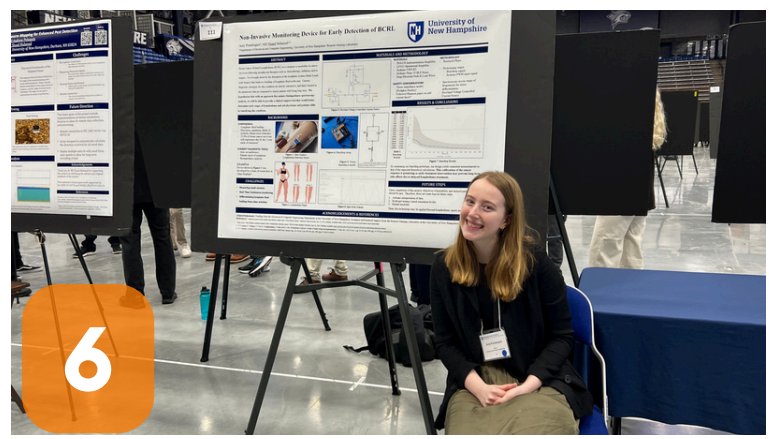
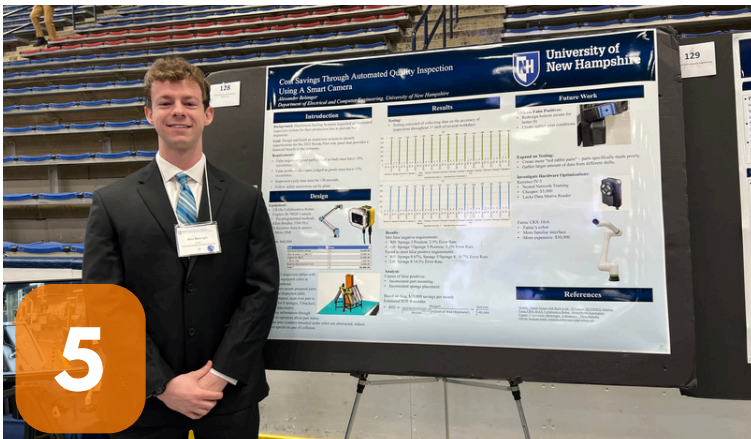
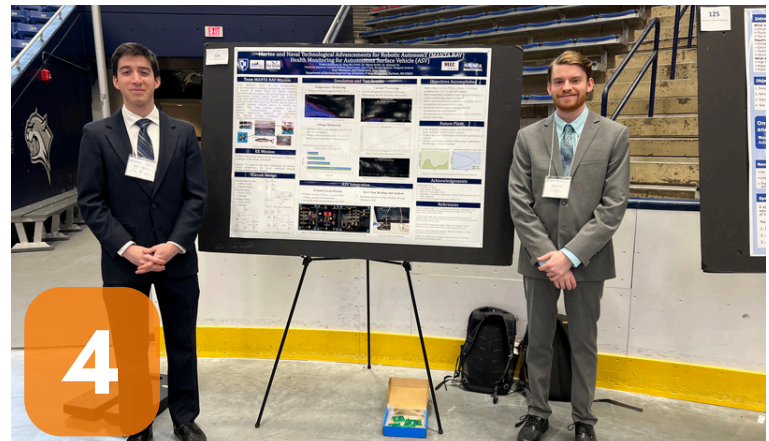
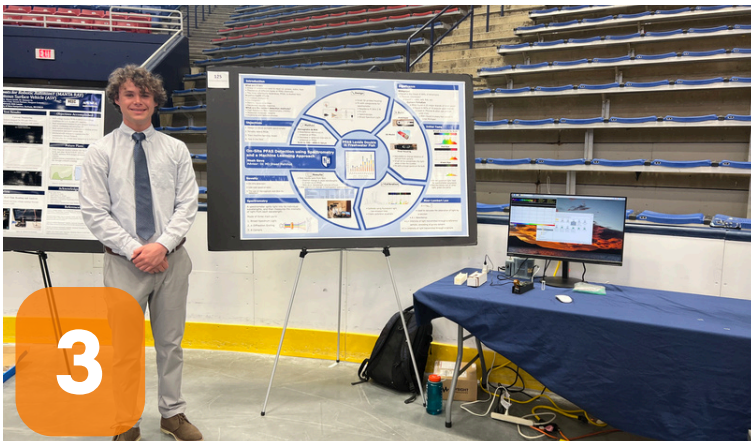
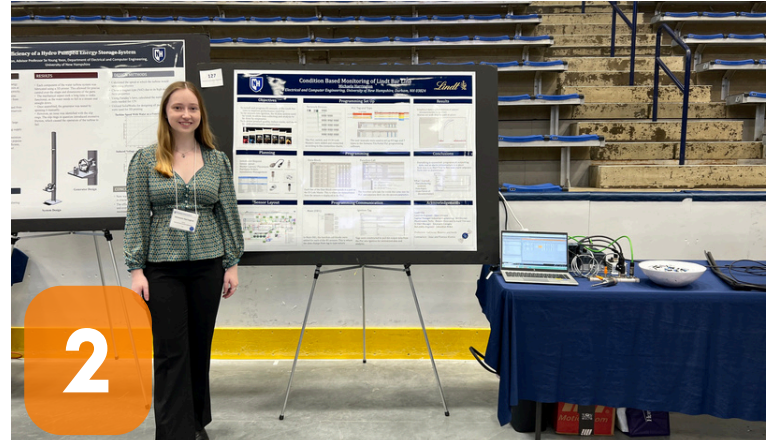
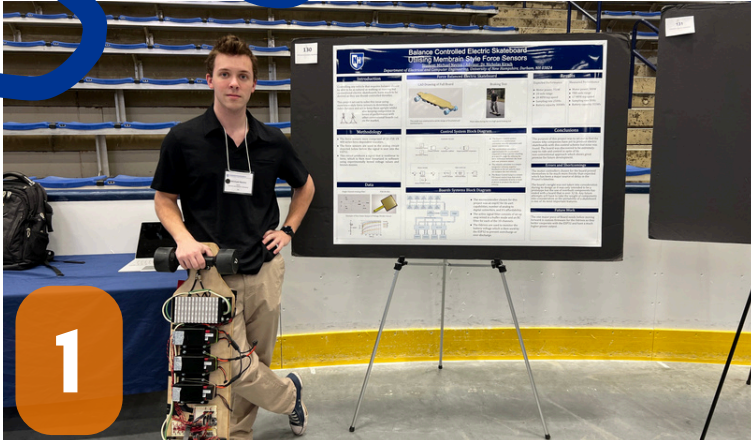
ECE Aborad! • P. 9

Brief Announcement and
History of ECE • P. 10

Check Us Out!



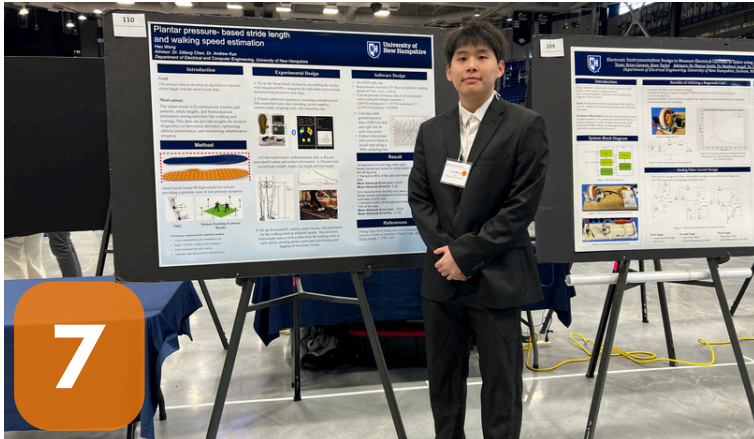
UNDERGRADUATE RESEARCH CONFERENCE (URC) PROJECT HIGHLIGHTS



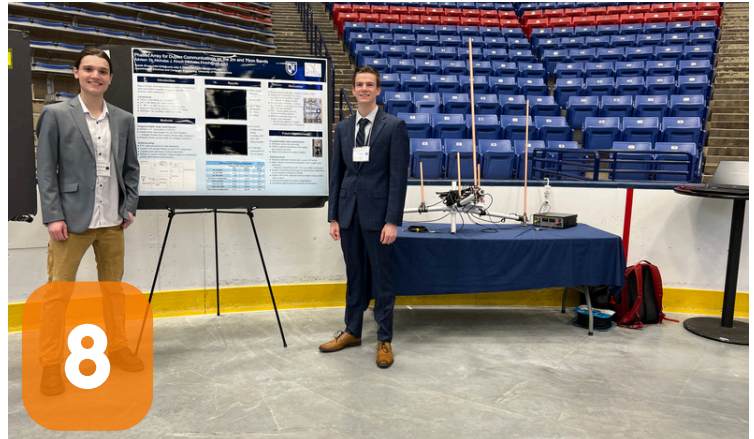
List of Projects:

1. Michael Nevins: Forced Balancing Electric Skateboard - URC ECE First Place Winner
2. Michaela Harrington: Conditional Based Maintenance on Lindt Bar Line: Sensor Implementation - URC ECE Honorable Mention
3. Noah Gove: Early Detection of PFAS/Chlorophyll-A in a Watershed using Machine Learning
4. Joel Pontbriand & Dale Lavoie: Autonomous Surface Vehicle
5. Alex Belanger: Machine Vision-Assisted Quality Assurance
6. Amy Pendergast: Tracking Secondary Lymphedema Progression with Wearable Patches

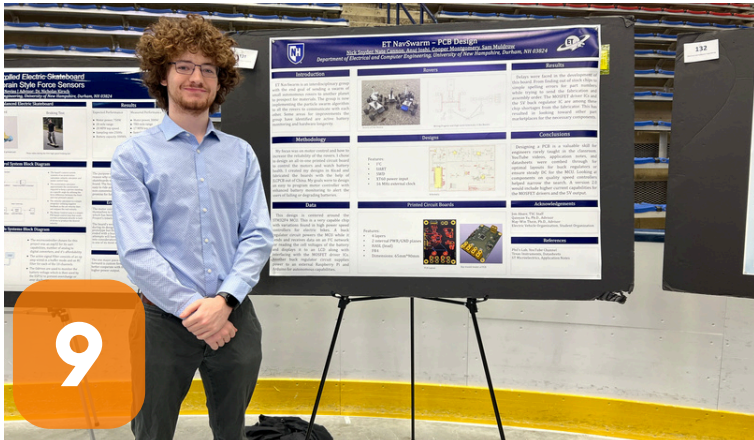
URC HIGHLIGHTS CONT.



7



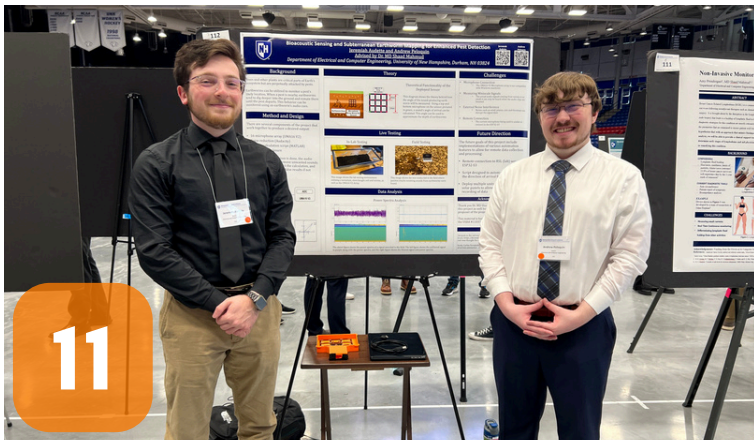
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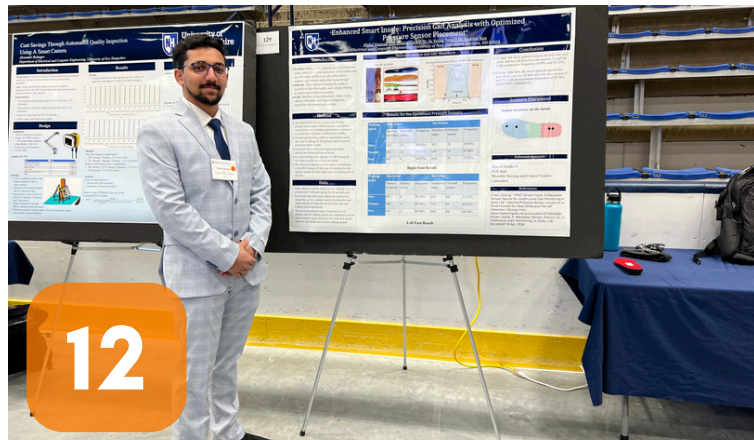
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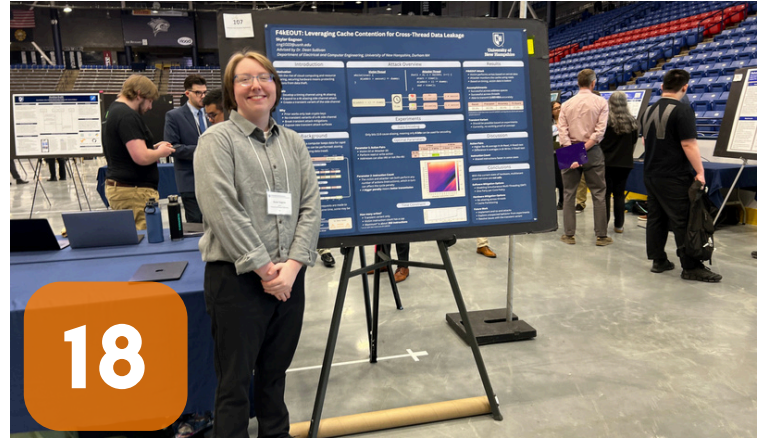
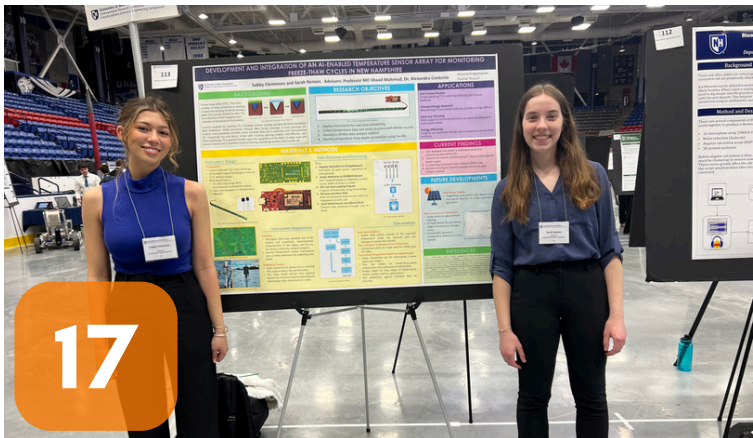
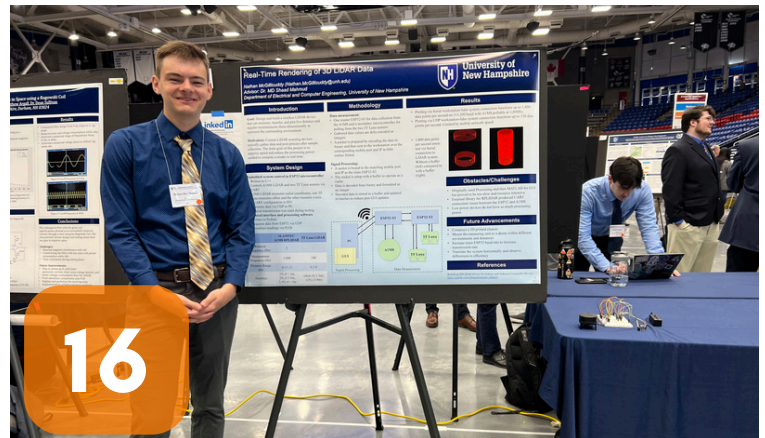
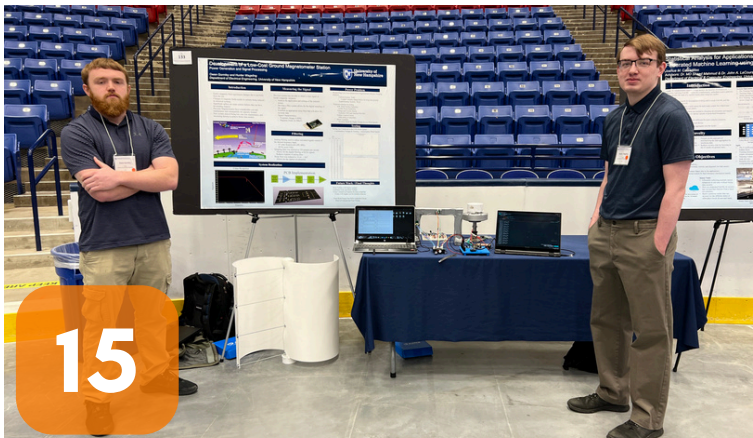
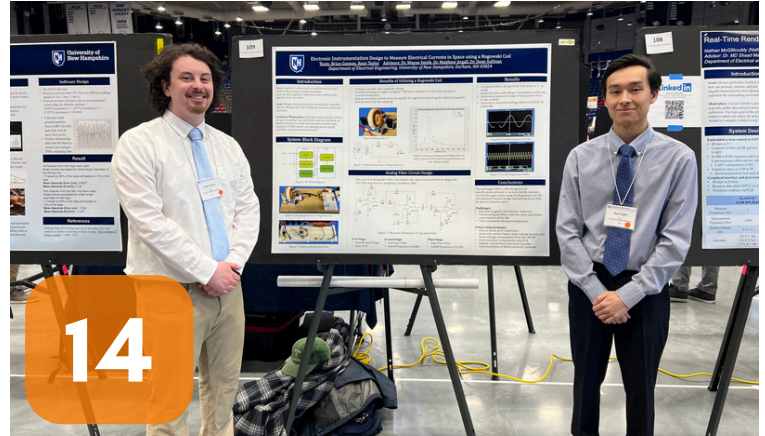
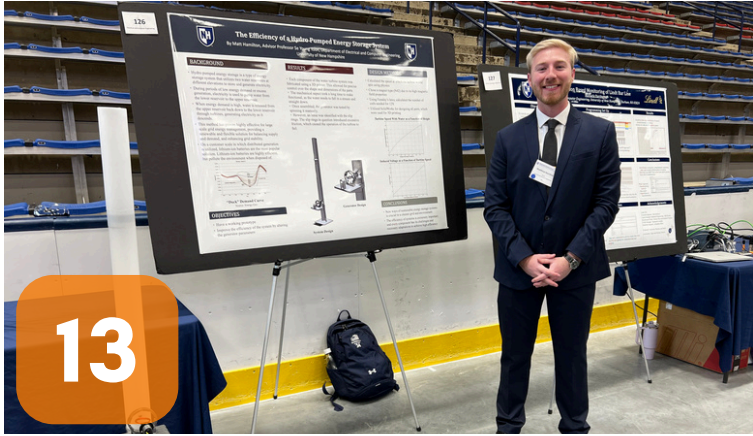


12

List of Projects:

- 7. Hao Wang: Plantar Pressure Based Stride Length and Walking Speed Estimation
- 8. Natalie Brown & Devin Eaton: Multi-Frequency Vertical Phased Array
- 9. Nick Snyder: ET NavSwarm-PCB Design - URC ME Honorable Mention
- 10. Joshua Calzadillas: Plant Environment Sensing
- 11. Andrew Peloquin & Jeremiah Audette: Bioacoustic Sensing and Subterranean Earthworm Mapping for Enhanced Pest Detection
- 12. Abdul Hannan: Optimized Smart Insole for Temporal Gait Parameters Measurement

URC HIGHLIGHTS CONT.



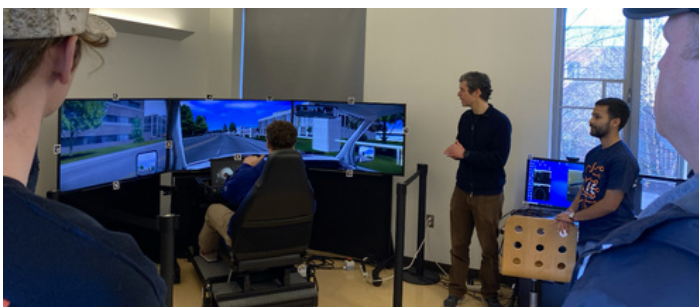
List of Projects:

13. Matthew Hamilton: The Efficiency of a Hydro Pumped Energy Storage System
14. Brian Gannon & Ryan Taylor: Electronic Instrumentation Design to Measure Electrical Currents in Space using a Rogowski Coil
15. Owen Gormley & Hunter Wageling: The Development of a Reliable, Low-Cost, and Autonomous Ground Magnetometer Station
16. Nathan McGillicuddy: 3D Light Detection and Ranging
17. Sabby Clemmons & Sarah Remeis: Development and Integration of an AI-Enabled Temperature Sensor Array for Monitoring Freeze-Thaw Cycles in New Hampshire
18. Skylar Gagnon: F4kEOUT: Leveraging Cache Contention for Cross-Thread Data Leakage

ADMITTED STUDENT VISIT DAY (ASVD) RECAP!



We had the pleasure of hosting over 100 students and families for this year's Admitted Students Visit Day (ASVD) in March! With the help of our student tour guides (see photo below), we were able to show perspective students insight into what our program is about and were able to show them some of our classrooms and labs. We hope the perspective students that came were able to envision themselves in ECE!



Graduate Student Highlight

Habib Ahmad



Habib Ahmad is a Ph.D. candidate at the BioMEMS and Nanoelectronics Lab directed by Prof. Edward Song. Habib Ahmad earned his MS in ECE from UNH in 2020 and started his PhD journey. His current research interests are on the interface of electrochemistry and biosensors, with the goal of contributing unique insights and enhancements to the electrochemical biosensor. Currently he is working on developing an electrochemical platform to monitor change in serotonin dynamics real-time in physiological solution. Before working on this project, he was involved in developing novel polymer based electrochemical sensor in collaboration with the Department of Chemistry at UNH. He also worked on a project related to novel 2D materials based energy storage solution during his MS work at UNH. Apart from being an enthusiast in electrochemistry he also worked in numerous research projects in the field of telecommunication, signal processing and the VLSI field.

Habib was recently awarded the UNH Dissertation Year Fellowship. He has also worked as a teaching assistant in the ECE dept. He conducted the laboratory segment for ECE 543: Introduction to Digital Systems, ECE 617: Junior Lab I and ECE 618: Junior Lab II. Apart from academic life, he loves to travel and spend time with family and friends.



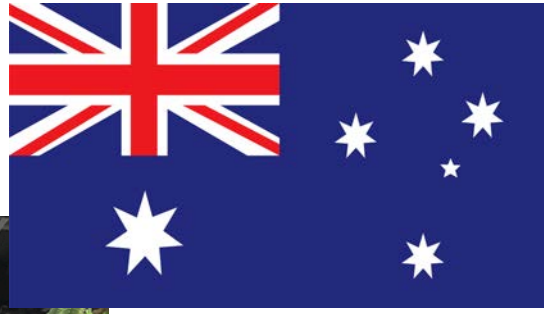
FACULTY HIGHLIGHT:

Professor Arezoo Hasankhani



Prof. Arezoo Hasankhani joined the faculty in January 2024, and leads the Energy Control and Optimization (ECO) Lab. Her research interests are marine renewable energy systems, autonomous underwater vehicle, design, control co-design, control, and optimization to enhance blue economy - the sustainable use of ocean resources to benefit economies, livelihoods and ocean ecosystem health. Prof. Hasankhani is leading an interdisciplinary group with expertise in control and power to mechanical design leveraging new methods, e.g., reinforcement learning and machine learning algorithms to address challenges in the ocean energy. Her close collaboration with the ocean engineering program provides an optimal environment for her research endeavors in the marine energy domain. Sample research in her lab include (i) Design optimization and control co-design for marine renewable energy systems; (ii) Model and optimization of marine energy systems for powering the blue economy, e.g., aquaculture farms; (iii) Conceptual design and optimization of a marine energy-powered smart microgrid. Prior to joining UNH, Prof. Hasankhani was a postdoctoral researcher at Cornell University working on the design and optimization of marine renewable energy-powered aquaculture farms. She received her Ph.D. from Florida Atlantic University in Electrical Engineering in 2022 with a focus on the path planning and control co-design of marine renewable energy systems. The ECO Lab welcomes all the passionate students about the renewable energy and enthusiastic about contributing to an interdisciplinary research group.

ECE ABROAD: ANDREJ MISTRIK



Andrej Mistrik is a EE sophomore. This Spring semester, Andrej had the amazing opportunity to study abroad in at the University of New South Wales in Sydney, Australia. He describes his experience as:

"The study abroad experience here in Sydney has been absolutely wonderful, and it opens my eyes to a new style of living. While it is more high tech and advanced in many areas due to being in a busy city, the people here seem a lot more relaxed and amicable."

The scholarship I received gave me the opportunity to dedicate some time for city exploration, where I got to experience Chinese new year festivals, local celebrations like Australia Day, and many more culturally-enriching experiences."

Andrej was the only CEPS scholarship applicant, and he was able to receive two scholarships to fund his experience abroad. There are many study abroad opportunities, not only for CEPS students, but for all students. If you are a CEPS student, and are interesting in studying abroad, you can visit <https://ceps.unh.edu/academics/study-abroad> for more study abroad information.

ECE NEWSLETTER HISTORY



Did you know that two buildings on campus were named after EE faculty?

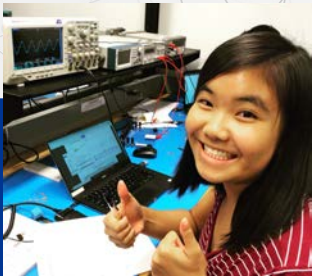


Hewitt Hall: Constructed in 1893 and formerly known as the "Shops Building," Hewitt Hall was named for Charles Elbert Hewitt (1869-1934) in 1942. Hewitt was the first student to enroll in the electrical engineering course at New Hampshire College, graduating in 1893 and going on to obtain a master's at Cornell. In 1908, he became the head of the electrical engineering department and later the first dean of the engineering division at the University.

Hitchcock Hall: Hitchcock Hall was designed by Irving W. Hersey Associates and built by Blanchard Stebbins, Inc. Completed and occupied in the fall of 1959 as a men's dorm, Hitchcock Hall was dedicated April 24, 1960, in honor of Leon Whitney Hitchcock. Born in 1886, Hitchcock came to New Hampshire College in 1910 and taught electrical engineering as an assistant professor, associate professor, professor, and department head until his retirement in 1956. During his tenure at the University, Hitchcock served under nine of the institution's 13 presidents up to that time. He was chairman of the department for 31 years and saw his department grow from two men to 12. During World War II, he served as acting dean of the College of Technology.



STAY CONNECTED!

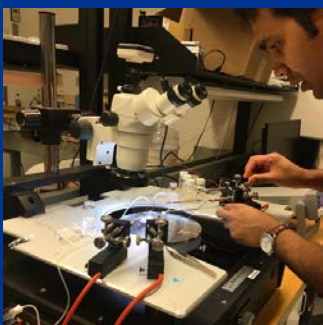


We would like to stay connected with our alumni and friends. We also welcome newsletter contributions and suggestions.

Please send in your news items, e.g., awards, promotions, personal updates, memories of UNH, and suggestions to Lauren Foxall at lauren.foxall@unh.edu.



The Electrical and Computer Engineering Faculty, Staff, Graduate Students, and Undergraduate Students immensely appreciate the support we have received from our generous donors. Thank You!



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