Kelly O'Connor

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EDUCATION

University at Buffalo, The State University of New York, Buffalo, NY
Bachelor of Science, Electrical Engineering August 2021-May 2025 (expected)

GPA: 3.99

Relevant Courses: Electronic Devices and Circuits (I, II), Electronic Circuits Lab. Communication Systems I, Embedded Systems, Fundamentals of Energy Systems, Applied Electromagnetics, Introduction to Electronics Lab, Signals and Systems, Digital Principles, Circuit Analysis, Introductory C/C++ Programming, Introductory MATLAB Programming, Calculus (I, II, III), Differential Equations, Applied Probability, Physics (I, II, III), General Chemistry (I, II)

ENGINEERING PROJECTS/ EXPERIENCES

Frogger - Using Xilinx Vitis on Zybo Z7 Board - Spring 2024
Programmed classic video game Frogger in C on an ARM processor on Zybo Z7 board. The game is played using the buttons on the board and is displayed on a PMOD display screen attached to the board. The game has a 90 second timer that ends the game if time runs out. When the game ends the score is displayed in the center of the screen.

Multi-Stage Amplifier – Spring 2024
Designed, simulated using Multisim, and built on a breadboard a three-stage amplifier with the design goal of an output impedance less than 200Ω, input impedance greater than 200kΩ, gain over -300V/V, upper cutoff frequency of greater than 100kHz, and lower cutoff frequency of 50Hz. Obtained output impedance of 68, input impedance of 330k, gain of -352V/V, upper cutoff frequency of 120kHz, and lower cutoff frequency of 32Hz. This device was constructed using common collector style amplifiers as the first and third stage. First and third stage utilized Darlington pairs to increase input impedance of stage and decrease loading effect. The center stage used a common emitter configuration to provide adequate gain.

Two Tone Oscillator – Spring 2024
Designed, simulated using Multisim, and built on a breadboard an oscillator using two 741 operational amplifiers, The design goal was to change between 500Hz, and less than 300Hz every 0.5 seconds within 10 percent. The final design alternated 510Hz for 0.472 seconds, and 260Hz for 0.452 seconds.

IEEE Battle Bots - Fall 2023, Spring 2024
Remodeled IEEE Battle Bot from previous year for UB Engineering Week Bot Wars. Aided team in design of modifications from previous year, including switching from a steel chassis to a plexiglass chassis with a steel frame to reduce weight and damage points. Responsible for testing motors for movement and weapon to find and correct issues. Tested batteries to ensure they met specifications for the bot. Bot won the 2024 UB Engineering Bot Wars.

UBNL Short Cycle Lab - Spring 2023
Attended lab session twice weekly to learn skills needed to work in the UB Nanosatellite Lab. Sessions included programming Arduinos, through hole soldering, surface mount soldering, and documentation.

Prototype Heating Glove for CRPS Patients – Fall 2022
Researched, designed, built and presented a look-like prototype of a glove to ease symptoms for patients suffering from Complex Regional Pain Syndrome.

Turbine Design Project for UB Seminar (EAS 199) - Fall 2021
Designed small scale wind turbine in group of four to increase power output. Experiments to increase power output included number of blades, blade material, angle of blade, angle of cut on blade, gear ratio, one vs two motors, and low torque vs high torque motor. Initial testing yielded a power output of 1.4Ws. Final testing yielded a power output of 11.9Ws. Final design included four balsa wood blades cut at 15 degrees placed at 45-degree angles, 64:8 gear ratio, and one low torque motor.

SKILLS

Multisim, MATLAB, C, C++, ARM Assembly, Microsoft Office, Google Workspace

WORK EXPERIENCE

Substation Operations Intern - Central Hudson **Summer 2024**

- Performed infrared thermography on 84 substations as part of yearly maintenance.
- Identified, classed, and reported hotspots found on substation equipment.
- Assisted engineer in battery resizing project for three substations.

Student Assistant **Spring 2024**

Courses: EE 205 Signals and Systems and EE 178 Digital Principles

- Led weekly recitation (EE 205, EE178).
- Held weekly office hours (EE 205).
- Graded course assignments (EE205)
- Assisted Teaching Assistant in hands on digital logic laboratory (EE 178).
- Aided in creation of answer keys to homework exercises (EE178).
- Offered one on one sessions to aid students in understanding course materials (EE 178).

Housekeeper - Northgate Resorts **Summer 2022, Summer 2023, Summer 2024**

- Worked with a team of 14 to clean and stock public restrooms and cabins.
- Laundered and delivered linens to cabins daily.

ACTIVITIES

Tau Beta Pi New York Nu - Webmaster — April 2024 – Present
IEEE — February 2023 – Present
Women in Science and Engineering (WISE) — August 2021 - Present
Girl Scouts of the USA – Lifetime Member — September 2008 - Present

HONORS AND AWARDS

Grace W. Capen Award – May 2023

- Awarded to sophomores who have completed three semesters of full-time work at the University at Buffalo and have a GPA of 3.95 or better.

Excellence in General Chemistry Award – May 2022

- The Excellence in General Chemistry Award honors the top one percent of freshman students for academic excellence in CHE 101-102, 105-106, and 107-108, based on cumulative rank.

Girl Scout Gold Award – Database of Veterans in St. Mary's Cemetery – December 2019

- Database included full name, data of birth, date of death, branch of service, and special awards, and GPS location of resting place. Distributed to caretaker of cemetery, VFW, and American Legion.