

Ethan F. Meleen

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Education

Cornell University | Ithaca, NY

December 2022

Bachelor of Science - Electrical and Computer Engineering

Skills

Programming: Java, C, C++, MATLAB, Python, Tcl

Software: Git, Jira, Tk, SQL

Hardware: Oscilloscope, Function Generator, SMU, DMM

Work Experience

SKF Aeroengine | Falconer, NY

June 2020 – August 2020

Electrical Engineering Intern

- Refactored report generation program written in Tcl and utilizing Tk that was used daily by members of multiple teams to compile information about batches of parts for tracking and data retention purposes
- Optimized the structure of the program using principles of functional programming, increased its modularity, decreased its length and complexity, and wrote documentation to facilitate future maintainability
- Decreased machine downtime by handling software installation and license management on manufacturing laptops

SKF Aeroengine | Falconer, NY

February 2019 – January 2020

Laboratory Technician

- Performed hot-acid etching on bearing ring sections and carried out x-ray diffraction testing on the exposed subsurface at various depths to measure residual stress and retained austenite
- Worked as part of a large team in a fast-paced laboratory environment, and maintained workspace tidiness according to the 5S methodology
- Sequenced work carefully so that testing on high-priority ring sections could be completed quickly on short notice

Projects

OFDM Communication

Spring Semester - 2022

Digital Communications

- Designed in MATLAB encoder and decoder programs to transmit data over a channel with unknown characteristics
- Used orthogonal frequency-division multiplexing to make data packets resistant to corruption by time-domain noise, and transmitted a known data packet periodically to characterize and nullify the channel's frequency response
- Optimized program parameters through automated testing, resulting in a 25% increase in bitrate and an 80% reduction of bit errors compared to the initial versions of the encoder and decoder

Pathfinding Robot

Fall Semester - 2021

Intelligent Physical Systems

- Designed and built a wheeled, autonomous robot controlled by an Arduino microcontroller
- Developed an autonomous navigation algorithm in C, which used information from three ultrasonic sensors to simultaneously map and traverse a randomized maze
- Detected radio beacons scattered throughout the maze using the FFT algorithm, and used a pair of RF transceivers to transmit the beacon's location to a second Arduino

Maze Game

Spring Semester - 2021

Embedded Systems

- Wrote a maze generator in C on a microcontroller based on an ARM Cortex-M0+ processor, and displayed the maze using a Python script on a computer, synchronizing it over a serial UART connection
- Collected player input using a capacitive touch sensor integrated into the board, allowing the maze to be navigated