**Tyra Correia** correitr@rose-hulman.edu | +1 812 240-6190 | Terre Haute, IN

Education:		Master of Science, Electrical Engineering, Concentration in Control Systems University of Michigan-Dearborn, Dearborn, MI	Jan 2025- May 2026
		Master of Engineering Management, Awarded Graduate Assistantship Rose-Hulman Institute of Technology, Terre Haute, IN Bachelor of Science, Electrical Engineering, Minor in Language and Literature	Feb 2024- Nov 2024 GPA: 3.87 Sept 2020- Feb 2024
		Rose-Hulman Institute of Technology, Terre Haute, IN	GPA: 3.62
Skills:		<b>Software:</b> Java, Python, PLC, C, MATLAB, TensorFlow, PyTorch, GitHub, Simulink, Ar- Modelsim, Quartus, PSPICE, NI LabVIEW, CST, DesignSpark, SolidWorks, AutoCAD, & Systems, MPLAB, ANSYS HFSS, Allen Bradley PLC, Ignition HMI	duino IDE, Maple, R, GCAD, Eagle Test
		<b>Equipment:</b> Oscilloscopes, Digital Multimeters, Microcontrollers, Automatic Test Equip Systems, 3D printers, Logic Analyzers	nent, VNAs, Vision
Experience:	•	<b>Electric Vehicle Engineering Intern</b> / <i>Hitachi Astemo, Greenfield, IN</i> Investigated root causes for critical electromechanical and controls failure on power cont production line to reduce down time, improve fault identification and decrease manufact Addressed production and efficiency concerns through Allen Bradley PLC and Ignition H Prepared test procedures and debugged faults on electrical characteristics and insulation is	May 2024-Aug 2024 rol unit assembly uring cycle time IMI updates resistance testers
	•	<b>Sophomore Resident Tutor</b> / <i>Rose-Hulman Institute of Technology, IN</i> Facilitated over eight exam review sessions and held weekly individual study hours grou Received positive feedback from participants leading to a notable increase in exam score	<b>Sep 2023- Dec 2024</b> ps of students s by two letter grades
	•	<b>Grader and Lab Assistant</b> / <i>Rose-Hulman Institute of Technology, IN</i> Graded assignments and lab assisted for six courses in 200 and 300 level electrical engin	Sep 2022- Dec 2024 eering courses
	•	<b>STEM mentor for EMERGE program</b> / <i>Rose-Hulman Institute of Technology, IN</i> Led mentorship or thirty freshmen female high school students, enhancing awareness of pathways through interactive discussions and activities	Oct 2022- Feb 2024 STEM career
	•	Monitored three field trips to enhance the students' experience of STEM industry and un	iversity environment
	•	Solar Power Engineering Intern/ ALEC Energy, Dubai, UAE Studied load schedules and single line diagrams for Dubai Hills Mall solar project Observed operation of solar inverters and learned about design parameters for Solar PV p Analyzed efficiency of solar power control system for Nestle Solar Plant	olants
Projects:		Real-Time ASL Detection	Jul 2024- Aug 2024
-	٠	Leveraged transfer learning on AlexNet to recognize and translate American sign language 98.5% accuracy	ge gestures with
	•	Applied live updating text translations with real-time webcam footage with 3s delay for (	CNN classification
	•	Fruit Finder Algorithm Implemented pre-processing, pixel extraction, threshold detection, masking and morphol recognize key fruit objects in images Assessed performance of algorithm across three key test images with bounding boxes ass	ogy techniques to
	•	Function Generator Devised PCB for direct digital synthesis AWG using ATmega328p microcontroller and A Developed daughter board for DC-DC 120V-12V-5V buck power supply for function ger	<b>Jul 2024- Aug 2024</b> D9833 chip herator
	•	<b>Buck-Boost Power Supply</b> Designed 12V to -25V DC-DC negative voltage power supply with 2A current limit and Streamlined PWM circuitry for IC control and isolated gate driver with over-voltage clip Engineered a charge pump for the negative voltage supply and ensured reliability with op monitoring system	<b>Feb 2024- May 2024</b> 100mV output ripple ping circuit perational amplifier
	•	<b>Low Pass Filter Power Integrity Analysis</b> Constructed 2 <sup>nd</sup> order low pass pi-filter for frequencies less than 100MHz with 40dB/dec Refined the parasitic model using ANSYS HFSS, ensuring accurate simulation results th measured outputs and enhanced overall design reliability for frequencies below 100MHz	Dec 2023- Feb 2024 drop off at aligned closely with

# **DAC and ADC Testing**

Performed continuity, offset, gain, and linearity tests on TLV5616 and ADC0831 chips using ETS ATE programmed through LabView

#### Senior Design Open-Source Syringe Anesthesia Pump Project

- Managed cross-functional collaboration on a modular affordable anesthesia syringe pump developed under \$150 targeting low-resource countries; design employed open-loop control and touch screen LVGL-based UI
- Co-ordinated assembly of PCB with dual power regulation, sound integration, SD card slot, WIFI connectivity, • USB power delivery and stepper driver daughter board

#### **Advanced Error-Correcting Encoding**

- Generated MATLAB scripts to implement convolutional encoding and Viterbi decoding for rate 1/2 convolutional codes, applying trellis termination and decoding optimization for error-correcting codes
- Simulated Bit Error Rate (BER) performance for coded versus non-coded BPSK transmission over AWGN channels, plotting performance against Eb/N0 values
- Implemented a Log-MAP BCJR decoder for recursive convolutional codes, incorporated into a turbo coding scheme with iterative decoding, which achieved BER improvements with systematic doping

### **Robotic Car Power Supply and Controller**

- Composed PCB power supply to deliver 6V-12V to the robotic car system at a cost of under \$120; tested power drawn and performed PSPICE calculations for manual and Bluetooth charging
- Programmed a line following PID controller in C, ensuring that the robotic car maintained stability across two different test environments

#### **DTMF Decoder**

- Programmed decoder system to load audio recording of sixteen DTMF tones in LabView using MathScript RT
- Calculated the DFT spectrum for the DTMF tones across sub-ranges and decoded the processed input using desired threshold values to confirm the decoded result

### Pseudorandom Infrared Communication System and DataLink Simulator

- Constructed a pseudorandom transmitter by building and connecting the PSG, modulator, and infrared LED
- Produced transmitter counterpart using a trans-impedance amplifier, BPF, envelope detector, Comparator and flip flop to process signals at a range of 20m

#### **Medical Diagnosis Embedded Detector**

- Programmed MSP432P4111 to display a UART interface in C which gathered patient information to store in a database
- Prompted user for temperature reading through two wire TMP101 sensor, counted down time taken for procedure on 7 segment display and displayed final diagnosis

Leadership:	Alpha Omicron Pi, Director of Chapter Property	Activities:	IEEE, Member
	Feminist Engineers Movement, Secretary		Engineers for a Sustainable World, Member

# Feb 2023- May 2023

Sep 2023- Nov 2023

# Feb 2022- May 2022

# Sep 2023- Dec 2024

Feb 2023- May 2023

# Sep 2023- Feb 2024

Dec 2023- Feb 2024