School Address:
100 Institute Road
Box 6056
Worcester, MA 01609

Mitchell Jacobs

mrjacobs@wpi.edu
mitchell@mrj.design
(845) 721-5637

Home Address:
12 Lt. Crawford Wheeler Ct.
Blauvelt, NY 10913

OBJECTIVE

Full Time Position Focusing on Embedded Systems Signal Processing and Communications Systems

EDUCATION

Worcester Polytechnic Institute, Worcester MA, Expected May 2023

Maters of Science in Electrical and Computer Engineering

Worcester Polytechnic Institute, Worcester MA, December 2021 ***GPA 3.61***

Bachelor of Science in Electrical and Computer Engineering

Tappan Zee High School, Orangeburg NY, June 2018

SKILLS

Engineering: Project Management, Electrical Design, PCB Design (Eagle, Altium, and KiCad)
Programming Languages: Python, C, C++, Verilog, VHDL, MATLAB, adaptable to new languages
Equipment: Software Defined Radios (USRP, Pluto, HackRF One), Linux, Xilinx SoC, Arduino/Teensy
Relevant Coursework: Software-Defined Radio Systems and Analysis, Digital Circuit Design, Advanced FPGA Design, Computer Networks, Micro-Electronics, Introduction to Robotics, Various Computer Science Classes

PROJECTS

Graduate Thesis: Software Defined Radar Waveforms, August 2022 – May 2023

- Design a benchmark to evaluate radar waveforms using LFM as a baseline
- Apply software defined radio principles to generate new waveforms and compare performance
- Create an Machine Learning algorithm to generate better radar waveforms

Graduate Thesis: 5G Spectrum Sensing/Sharing, October 2021 – May 2023

- Developed a solution to overlay a non-licensed 5G network on top of a licensed provider
- Utilized real world data to create an accurate simulation using Open Air Interface

Software Defined Radio Digital Television Transmitter/Receiver, WPI ISP, Spring 2021

- Worked in a small team to develop a DTV Transmitter and Receiver using an ADALM PLUTO
- Utilized various specification documents to develop the transmit pipeline in python
- Began exploratory research into using the Zynq processor rather than the local pc

Quadruped MQP Project, WPI, September 2020 – June 2021

- Responsible for the design and implementation of the power system of the robot
- Designed and implemented a high-speed communication protocol allowing for a distributed computing approach to the project
- Designed custom PCB for Encoders and Control Board Interface
- Developed hardware and low-level code, wrapping the hardware level protocols

“Lights Up, A Musical Cabaret”, WPI, Producer, March 2020 – October 2020

- Produced a musical theatre production during the COVID-19 pandemic
- Adapted the format of the production multiple times throughout the planning and execution, as circumstances changed, insuring all 45 participants stayed engaged
- Collaborated with administration to create an approved safety plan, allowing the production to proceed in the adapted format

FIRST Robotics Tappan Zee HS, Founder and Captain, September 2017–August 2018

- Established and lead a FIRST robotics team comprised of over 50 members
- Insured proper allocation of funds in excess of $30,000 based upon the team’s goals

CyberAuto Challenge, Warren Michigan, July 2017

- Researched real solutions to the challenges posed by cybersecurity in automobiles

WORK EXPERIENCE

Teaching/Research Assistant, WPI WiLab, Worcester, MA, March 2021 – Present

- Research area is centered around spectrum sharing relating to 5G and Radar systems
- ECE 2305: Introduction to Communication Networks
- ECE 3311: Principles of Communication Systems
- ECE 4305: Software-Defined Radio Systems and Analysis

Research Intern, MIT Lincoln Laboratories, Lexington, MA, June 2022 – August 2022

- Received Secret Clearance
- Completed directed independent research relating to direction finding and 5G
- Collaboratively generated new research questions with other interns
- Furthered breadth of knowledge relating to phased antenna arrays

Wireless Communications Intern, SHURE, Niles IL, May 2021 – December 2021

- Worked on the FPGA team across multiple projects
- Continued development of a telemetry system to debug development hardware
- Increased efficiency of python API to allow real time parsing of data
- Developed real time visualization of signal data utilizing the API
- Began development on FPGA based serial bridge between hardware and telemetry system

Project Engineer, Bertussi's Plumbing and Contracting, Pearl River NY, Summer 2020

- Helped manage multiple simultaneous multi-million-dollar school renovation projects
- Facilitated communication between the field crews, office staff, and architects
- Developed RFIs for contract clarification
- Worked with manufacturers to write submittals defending the use of alternative equal products
- Learned the mechanical industry to be able to convey information concisely and accurately

Audio Engineer, Freelance, Blauvelt NY, Worcester MA, May 2014 – Present

Audio/Lighting and Technology Intern, PRG Secaucus, Secaucus NJ, Summer 2019

Counselor, Blue Rill Day Camp, Airmont NY, June 2015- June 2018

COMMUNITY INVOLVMENTS

VOX Musical Theatre, September 2018 – June 2023
President, January 2021 - January 2022
Technical Director, January 2020 - January 2021
COVID-19 Safety Committee Chair, August 2020 - November 2020

Skull Senior Honor Society, November 2020 – June 2022
President, August 2021– June 2022

Lens and Lights, September 2018 - June 2023
Active Member, January 2019 – June 2023

MASQUE Drama Theatre, September 2020 – June 2022
Member, September 2020 – June 2022

Underwater Hockey, September 2018 – June 2023
Secretary, January 2019 - January 2020
Member, September 2018 – June 2022

AYO Theatre Honor Society, November 2020 – June 2022
Active Member, November 2020 – June 2022

SOCSD Food Pantry, Orangeburg NY, January 2020 – June 2022
Volunteer, January 2020 – June 2022