Jakub Wolsza

jakubwolsza2023@u.northwestern.edu ❖ (773) 501-2624 ❖ Niles, IL

EDUCATION

Northwestern University **Expected June 2023**

Bachelor of Science Electrical Engineering *Evanston, IL*

- **GPA**: **3.9/4.00**
- **Awards**: High Honors (5/9 Quarters), Dean's List (2 Additional Quarters)
- **Relevant Coursework**: Analog & Digital Circuits, Digital Design, Signals, C/C++, Python, E&M, ASIC and FPGA design, Control Theory, Digital Control, Data Structures and Algorithms.

EXPERIENCE

Boeing – *Electrophysics Survivability Intern* **June 2022 - Present**

- Analyzed ESD threats on satellite unit by modeling 20+ schematics in PSpice. Generated MathCad files to simplify active component burnout analysis. Wrote official report with analysis results for unit
- Aided in set up and use of spectrum analyzers, signal generators, and antennas in RF lab

Solar Car – *Electrical Team Member* **Sep. 2021 - Present**

- Designed CV/CC battery charger controller circuit between power supply and vehicle battery system
- Remodeled all Low Voltage PCBs via EAGLE to fit changing vehicle power and communications requirements

Acorn Genetics – *Director of Engineering* **Feb. 2020 – Sep. 2021**

- Lead product development for genetic testing kit, distributed engineering tasks, enforced accountability system
- Automated three processes in 4th prototype of machine at 13% of the cost of equivalent lab equipment
- Modeled schematics using EAGLE. This included several iterations of: water level sensor amplifiers, power supplies, buck converters, pump controllers, stepper motor controllers, thermal controls and sensing modules
- Drafted over 50 parts in SolidWorks for design documentation and 3D printing, including 2 electronics boxes
- Invented thermocycling algorithm that is 55% more precise than open-source alternative and takes up 15% less storage space on embedded controllers

PROJECTS

Muscle-Controlled Robot Arm (Spring 2022):

- Modeled, Printed, and Calibrated robot arm consisting of 5 servo motors and 40+ parts
- Designed amplifier and filter circuitry to use 14 EMG sensors to measure 7 different muscle groups. Created PCB with only SMD components, with tunable gains for amplifiers.
- Programmed ESP32 websocket server to provide user choice between joystick or muscle control of robot arm
- Wrote signal processing code on ESP32 client to distinguish muscle movement based on data from EMG PCB..

Solar Panel Array (Summer 2020):

- Built a small, portable solar panel array that outputs an adjustable voltage between 5V-9V. Array is mostly used to recharge small electronic devices (phones, flashlights, power banks).

SKILLS

- **Skills:** Analog and Digital Design, Schematic Capture, PCB Layout, Oscilloscopes, C/C++, Embedded Development, PSpice, SolidWorks, SMD Soldering, VHDL, Python, MATLAB, MathCad, WiFi & HTTP