# Jakub Wolsza

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## EDUCATION

**Northwestern University** **Expected June 2023**

*Bachelor of Science Electrical Engineering* *Evanston, IL*

- **GPA**: **3.9/4.00**
- **Honors**: Eta Kappa Nu member, High Honors (5/9 Quarters), Dean's List (2 Quarters extra)
- **Relevant Coursework**: Analog & Digital circuits, C/C++, ASIC and FPGA design, Python, Digital design, Data Structures & Algorithms, Control Theory, Digital Control

## 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 burnout analysis. Compiled report with analysis results.
- Verified radiation threats were properly dealt with via circuit analysis, PSpice, and consultation with designers.

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

- Designed CV/CC battery charger controller circuitry for power supply to pre-charge 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 lab processes in 4th prototype of machine at 13% of the cost of equivalent lab equipment
- Modeled all 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
- Wrote thermocycling algorithm that is 55% more precise than open-source alternative and takes up 15% less storage space on embedded controller

## PROJECTS

**Muscle-Controlled Robot Arm (Spring 2022):**

- Modeled, printed, and calibrated robot arm consisting of 5 servo motors and 40+ parts
- Designed tunable amplifiers and filters for 14 EMG sensors to measure 7 different muscle groups. Created and compact PCB in EAGLE with only SMD components for low power design
- Developed signal processing algorithm on ESP32 client to control arm based on EMG muscle data
- Wrote ESP32 websocket website server to provide user choice between joystick and muscle control of arm

**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 & Digital Circuit Design, Schematic Capture, PCB Layout, C/C++, Embedded Development, PSpice, ARM, VHDL, SolidWorks, SMD Soldering, Oscilloscopes, Python, MATLAB, MathCad, WiFi