

# Ross Baer

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## Objectives

To learn and develop strong foundations in mechatronics and to expand my horizons and future possibilities.

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## Education

**Widener University**, Chester, PA - B.S in Robotics Engineering Expected 05/23  
Minors if time permits: Electrical Engineering

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## Relevant Coursework

301 - Linear Systems	302 - Mechanics of Robotic Systems	104 - 3D Modeling and CAD
471 - Control Systems	202 - Object-Oriented Coding	323 - Mechanics of Deformable Bodies
331 - Linear Algebra	347 - Electronic Circuits	201 - Robotics Control System

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## Experience

**Business Owner**, BaerEmber - Laser Engraved Products - Etsy.com 01/2021 - Present

- Sold 120 sets with gross revenue over \$23,000 with a net profit of about \$13,000
- Time managed to ensure completed classwork and delivered products on time
- Consulted with customers to develop a product that was precisely attuned for each customer
- Maintained a 5-star rating for the entirety of the year

**Head of Electrical/Electronics Development**, Rockledge Model Railroad Museum 05/2020 - Present

- Leads a team working on electrical projects within the museum
- Developed implementation strategies and timelines for projects
- Trained and advised other members on implementation, diagnosis, and repair of electrical systems
- Designed standards and practices to provide strong foundations to ensure long term reliability
- Lead electronics development to replace outdated electrical components with more modern digital components
- Prototyped and completed advanced controllers; with simplified control methods to increase usability within the membership

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## Projects

**High-Speed Stationary Decoder** 05/2019 - Present

- Researched and developed wiring schematics for integration between a Digitrax System, an Arduino, and a PCA9685 16 channel servo controller
- Coded the integration between Digitrax hexadecimal packets and corresponding servo command movements through an I2C serial interface to the PCA9685 in C/C++
- Prototyped electronic circuits to ensure cohesion between all components and stable reliability
- Designed custom PCB boards which were manufactured with integrated components and quick deployment capabilities
- 3D Modeled and fabricated Servo mounts with the versatility to be mounted in various configurations

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## Activities

**FTC Robotics Team Captain**: Springfield township CyberSpartans 08/2017- 05/2019

- Lead a team of students to design, fabricate, and test a robot to participate in competitions
- Oversaw the iterative design process for the robot's improvement
- Managed and mediated the information between groups such as code, design, outreach, and financial to ensure effective cooperation

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## Skills

**Design:** AutoCad Inventor, Fusion360, EaglePCB, EasyEDA, Lightburn, Adobe Illustrator

**Programming:** C/C++, C#, MATLAB, Java, Python

**Fabrication:** Laser Engraving/Cutting, 3D printing (FDM/SLA), Soldering, Woodworking, PCB design