

Jay'len Alcin

Wimauma, FL 33598 | Jalcin@siue.edu | 813-638-5566

SUMMARY

Energetic, eager, and effective Mechatronics and Robotics Engineering student with hands-on experience leading cross-functional teams, prototyping autonomous systems, and managing technical engineering projects. Proven track record in CAD design, rapid prototyping, international team collaboration, and community-focused research.

TECHNICAL SKILLS

- **CAD & Design Tools:** SolidWorks, 3D Printing / Additive Manufacturing, Rapid Prototyping, Metal Fabrication
- **Programming Languages:** C++, Python, Arduino C/C++
- **Electrical & Hardware Systems:** Circuit Design, Embedded Systems, DC Worm Gear Motors, Transistors (IRFZ44N), Potentiometers, Wireless RF Controllers, Battery Power Systems (LiPo/12V)
- **Engineering Principles:** Kinematic & Dynamic Statics, Torque & Power Calculations, Payload Stabilization, Mechanical Linkages

EDUCATION & INTERNATIONAL EXPERIENCE

Southern Illinois University Edwardsville (SIUE) | Edwardsville, IL

Bachelor of Science in Mechatronics and Robotics Engineering | **GPA:** 3.0

Expected Graduation: May 2028

- **Scholarship:** Community Oriented Digital Engagement of Scholars (CODES) Cohort Member

Study Abroad Program – "Mast Crawler Project" | Germany

Engineering Project Coursework

- Collaborated in a 9-person international team across 3 sub-groups to design, prototype, and test an autonomous vertical pole-climbing robot to assist elevated-height service workers.
- Engineered force, torque, and power equations ($P = m_{total} \cdot v \cdot g = 6 \text{ W}$) to select 12V worm gear DC motors (0.7 Nm, 200 RPM) for optimal ascension speeds.

- Upgraded structure using modular aluminum T-slot item profiles and custom 3D printed components to accommodate variable pole diameters (125 mm–160 mm).
- Designed RF wireless remote control circuitry using 12V 4200 mAh battery supplies, MOSFET transistors, and custom triple-tire guiding wheels to stabilize climb.
- Achieved project requirements by delivering a functional prototype capable of climbing vertical masts with a 1.0 kg payload.

Earl J. Lennard High School | Ruskin, FL

High School Diploma | **GPA:** 4.5 (Top 5% of class)

- **Honors:** National Honor Society (NHS), National Society of High School Scholars (NSHSS), The Honor Society
- **Coursework:** Completed 11 Honors classes and 1 AP course

ENGINEERING & LEADERSHIP EXPERIENCE

Autonomous Robotics Club (ARC) | SIUE

Team Captain

- Led end-to-end design and assembly of a multi-axis custom robotic arm using SolidWorks for CAD modeling.
- Managed a multidisciplinary team by delegating responsibilities across 3 sub-teams: Electrical, Mechanical/Design, and Software.
- Directed cross-functional integration meetings to merge structural frames, wiring harnesses, and microcontrollers.

Robotics Club | SIUE

Team Member

- Designed and built a tethered underwater vehicle operated via external remote control.

PERSONAL ENGINEERING PROJECTS

- **Companion Robot Buddy:** Built an interactive companion robot running custom Python and C++ scripts on an Arduino microcontroller to drive actuators and sensor logic.

- **LED Amulet Necklace:** Designed custom wearable circuitry featuring programmable micro-LED light sequences.
- **Custom Electronic Clock:** Assembled and programmed a digital clock interface, managing breadboard wiring and power efficiency.

RESEARCH & COMMUNITY ENGAGEMENT

CODES Scholarship Program & Missouri Botanical Garden (MOBOT) | St. Louis, MO

Research Team Member

- Researched reparative justice by analyzing historical connections between founder Henry Shaw and enslaved labor.
- Evaluated colonial extractive practices at MOBOT, collaborating with cohort members to translate complex historical data into public awareness initiatives.

Key Club | Ruskin, FL

Member & Volunteer

- Organized local community clean-up initiatives and provided academic tutoring to youth.

VOLUNTEER & WORK EXPERIENCE

Southshore Regional Library | Ruskin, FL

Student Tutor | Aug 2022 – Oct 2022

- Conducted academic tutoring sessions, building personalized learning plans to improve student performance.

Feeding Tampa Bay | Ruskin, FL

Community Volunteer | Aug 2022

- Supported hunger-relief distribution operations using interpersonal communication skills.

Hillsborough County Public Library | Ruskin, FL

Library Intern | Jun 2022

- Developed social media content for Instagram, Twitter, and Facebook, and assisted staff with research.