

# JOSEPH RUAN

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## EDUCATION

### Purdue University - West Lafayette

Aug 2024 - May 2027

Bachelor's, Mechanical Engineering

- Minors in Computer Science, Economics
- Relevant Coursework: Statics (ME27000), Thermodynamics (ME20000), Linear Circuit Analysis (ECE20001)

## PROFESSIONAL EXPERIENCE

### Purdue Electric Racing

West Lafayette, IN, USA

Chassis Team

Aug 2024 - Present

- Designed harness tabs, chassis closeouts, and battery mounts using NX
- Validated all parts using ANSYS to verify compliance with rigidity and deformation targets
- Utilized composite manufacturing techniques such as wet layups and vacuum infusion to manufacture closeouts
- Manufactured chassis components using multi-axis manufacturing methods and designed jig/tooling for assembly
- Welded chassis tubes together and validated welds using non-destructive testing techniques

### Collaborative Robotics Lab

West Lafayette, IN, USA

Chassis Team and Harness Project Owner

Aug 2024 - Present

- Designed, assembled, and programmed robot to measure soil microbiome emissions; presented findings to USDA
- Developed low-cost inertia measuring and position estimation solutions to study animal behavior patterns
- Built electro-mechanical assemblies for papers published in IEEE and Journal of Animal Science
- Wrote co-processor transmission layer for real-time SLAM/edge computing in embedded C to offload data collection

### Global Active Problem Solving (EPICS)

Barranquilla, AT, Colombia

Camera Designer

Aug 2024 - Present

- Designed a wildlife monitoring solution for the Universidad del Norte to monitor the ecosystem around the university
- Utilized design-for-manufacturing techniques to comply with client requirements for additive manufacturing

### Miso Mechanics 9442

Seattle, WA, USA

Captain and Lead Programmer

Oct 2023 - May 2024

- Founded and led rookie FIRST Robotics team and fundraised over \$30,000 USD for competition and robot costs
- Utilized 3D printing and laser cutting for rapid prototyping and iteration, reducing traditional timelines by half
- Designed multiple subsystems in Onshape on award-winning competition robot which ranked 20th offensively internationally
- Developed computer vision system using PhotonVision and custom camera assemblies to detect game objectives
- Created motion planning system for autonomous routines allowing for real-time decision-making to aid in gameplay

### BSA Troop 647

Mercer Island, WA, USA

Eagle Scout & Patrol Leader

Jun 2018 - Jun 2024

- Planned, designed, and led construction of a new freestanding structure on charter organization property
- Organized outings and service projects for patrol members as well as troop camping trips and conservation projects.

## PROJECTS & OUTSIDE EXPERIENCE

### Soil Microbiome Measuring Robot (SoMMR)

Ames, IA, USA

Collaborative Robotics Lab

2024 - Present

- Designed slip ring assembly for reel of robot to allow for easy unspooling as well as sensor array and module mounting system
- Developed data parsing script to sync timestamps of photos and sensors for more precise research
- Presented findings at the United States Department of Agriculture's Ames National Laboratory

### Streaming Service

Seattle, WA, USA

Self-Employed

Jun 2023 - Present

- Utilized various public Docker containers to build a streaming service used by 50K active users
- Implemented user SSO with AniList and Trakt APIs to automatically synchronize user data to service
- Employed reverse proxy and various web technologies to maintain service stability and load-balance

## SKILLS

**Skills:** MATLAB, Excel/Numbers/Sheets, Git, Java, Python, Bash, CAD, C/C++, Development Operations (DevOps), Docker, FEM/FEA, Linux/Unix, Netlify, SolidWorks, NX, Ansys, Embedded Programming

**Languages:** Chinese