

# Yuanshao Yang

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2302 Somerset CT., Unit 209, Ann Arbor, MI 48105

## EDUCATION

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**Aug 2023 - Present**

**University of Michigan - Ann Arbor**

College of Engineering

BSE, Mechanical Engineering (Concentration in Robotics)

GPA: 4.00/4.00

**Sept 2021 - Present**

**Sichuan University, Chengdu**

Sichuan University - Pittsburgh Institute

BSE, Mechanical Engineering

GPA: 3.84/4.00

## HONORS & AWARDS

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Aug 2024, University of Michigan

**CoE Need and Merit-Based Scholarships (\$2,000)**

June 2024 / Dec 2023, University of Michigan

**College of Engineering - Dean's List**

May 2024 / Dec 2023, University of Michigan

**University Honors**

Oct 2023, Sichuan University

**Dean's List** (10 % Annual Tuition, 30/230)

Oct 2022, Sichuan University

**Academic Star Scholarship** (20 % Annual Tuition, 3/230)

Oct 2022, Sichuan University

**Comprehensive Academic Scholarship, 2nd Prize** (TOP 4 %)

Oct 2022, Sichuan University

**Outstanding Student Leader of the Year**

## PROJECTS

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### Series Spring Design & Evaluation for **Open-Source Leg**

July 2024 - Present

**Instructor: Prof. Elliott Rouse, Zachary Bons**

[Neurobionics Lab](#), University of Michigan

[GitHub Repository](#) [Posted](#)

Publication: In **Preparation**

- Generate a mechanical design of series spring with easier mounting strategies and better axial alignments
- Generate a design to measure the deflection angle of the series spring via Computer Vision
- Evaluate the hysteresis effect on assembly interfaces through different designs and manufacturing methods
- Evaluate the effect on broadening the design space from series springs

### Software Library Generalization for **Open-Source Leg**

Mar 2024 - Present

**Instructor: Prof. Elliott Rouse, Senthur Ayyappan**

[Neurobionics Lab](#), University of Michigan

[GitHub Repository](#) [Posted](#)

- Conducting review of literature on structure of prosthetic legs and 3-Phase Brushless DC Motors
- Redesign the Python Library for compatibility with alternative hardware
- Add support to alternative actuator controllers to broaden hardware choices
- Evaluate actuator performance through test of Step Response and Time-Domain Specifications

# Development & Motion Analysis of Robot Swimmer

Dec 2023 - Aug 2024

**Instructor: Prof. K. Alex Shorter**

Mechanical Engineering, University of Michigan

[GitHub Repository Posted](#)

Publication: **Accepted** for Conference Proceeding [1]

- Design & optimize the E-coli based robot CAD model for 2-D motion in uniform, viscous flow
- Validate the mechanical design by CFD analysis
- Develop a path-planning algorithm for obstacle avoidance
- Design the feedback control model to perform reference tracking

## WORK EXPERIENCE

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### Instructional Aid (IA) of ME360 - System Dynamics

Aug 2024 - Present

**Full Name:** [Modeling, Analysis and Control of Dynamic Systems](#)

**Instructor: Prof. Uduak Inyang-Udoh**

Mechanical Engineering, University of Michigan

- Hold office hours and answer questions in-person / remote
- Take trial exams and offer suggestions on exam question set-ups
- Assist Graduate Student Instructor (GSI) with homework solutions

## SKILLS

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- **General Programming:** C/C++, Python
- **General Computation & Simulation Tools:** MATLAB & Simulink Toolbox, MSC Adams
- **Data Science & Machine Learning Toolbox:** Scikit-Learn, PyTorch
- **Computer Vision:** OpenCV
- **Mechanical Design:** SolidWorks, AutoCAD
- **Embedded System Design:** Keil MDK
- **Writing & Formatting:** LaTeX

## PUBLICATIONS

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- [1] Yuanshao Yang, Mingkai Xia, Naike Wu, Junhan Zhang, and K. Alex Shorter. "Motion Analysis and Design of Bionic Swimming Robot". *Proc. of 2024 IEEE International Conference on Cyborg and Bionic Systems (CBS 2024)*. Accepted for Presentation. Nagoya, Japan: IEEE, 2024.