

# Yuanshao Yang

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Last updated: August 1, 2024

## EDUCATION

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**Aug. 2023 - Present**

**University of Michigan - Ann Arbor**

College of Engineering

Mechanical Engineering BSE / Robotics

GPA: 4.00/4.00

**Sep. 2021 - July 2023**

**Sichuan University, Chengdu**

Sichuan University - Pittsburgh Institute

Bachelor of Engineering in Mechanical Engineering

GPA: 3.84/4.00

## RESEARCH INTERESTS

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- Robot Locomotion

## HONORS & AWARDS

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Dec 2023 / May 2024, University of Michigan

University Honors

Dec 2023 / June 2024, University of Michigan - College of Engineering

Dean's List

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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**Research Intern of Project [Open-Source Leg](#)**

Mar. 2024 - Present

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

[Neurobionics Lab](#), Robotics, University of Michigan

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

- Literature reviews on the structure of bionic legs and 3-Phase Brushless DC Motors
- Design new connectors between the new controller board and the original actuator
- Redesign the Python Library for compatibility with multiple actuators
- Test actuator functions based on new designs of the control systems
- Report to Prof. Rouse and Senthur with new findings & ideas

**Development & Motion Analysis of Robot Swimmer**

Dec. 2023 - Present

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

Mechanical Engineering, University of Michigan

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

- Develop an E. coli-based robot swimmer model with a sphere head and quad flagella
- Design & optimize the CAD model for robots' smooth 2-D motion in uniform, viscous flow
- Validate the mechanical design by CFD analysis
- Use correlation analysis towards design parameters to optimize mechanical design
- Develop a path-planning algorithm for obstacle avoidance

- Design the feedback control model to perform reference tracking

## An Automated Vehicle with Tracking System

Mar. 2023 - Aug. 2023

**Instructor: Prof. Qi Lu**

Sichuan University - Pittsburgh Institute

[GitHub Repository Posted](#)

- Development of a self-tracking vehicle with tennis-ball-recognition
- Focusing on image recognition algorithm and object tracking method in the Tracking System
- Training and testing the image recognition model (YOLO v3) on the camera module for better effects of tennis ball recognition
- Implementation of a PID controller for the servos in the stabilizer to achieve object tracking
- Implementing and testing the functionality of the tracking system on STM32 Microcontroller Platform

## Research Intern of Prof. Xiaobo Zhou

Mar. 2022 - June 2023

West China Hospital Biomedical Big Data Center, Sichuan University

[GitHub Repository Posted](#)

- Work on diagnostic data of cardiac patients through feature selection
- Develop regression models (e.g., Random Forest) via Scikit-Learn and PyTorch in Python and use training data sets of clinical diagnostic data
- Test model performance on internal test datasets
- Perform interpretability analysis of built models using variable sensitivity analysis
- Enhance classification processes' precision of the model by analyzing visualized Decision Trees
- Respond to Prof. Zhou with experimental findings for diagnosing heart disease

## EXTRA-CURRICULUM ACTIVITIES

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### M.S.D.M (Math, Science, Data, and Modelling) Club

June 2022 - Present

Co-Founder

Sichuan University

- Establish an academic club aiming to integrate and share math-related resources
- Organize online seminars twice a month, attracted 10 people
- Invite professors to give pre-competition guidance to students planning to compete in MCM/ICM
- Manage member recruiting, seminar content planning

## SKILLS

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- Programming
  - C/C++, Python (including PyTorch, Scikit Learn, etc)
- Tools
  - Keil MDK, MATLAB & Simulink Toolbox, LaTeX, SolidWorks, AutoCAD, MSC Adams

# RESEARCH PORTFOLIO

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## PUBLICATIONS

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### In Review

Last Name, First Name and First Name Other Last Name (Sept. 2019). “Paper: This is the name of the paper”. In: *Some Journal* 99.18, pp. 2200–2300. URL: <https://some-link.com>.

### In Press

Last Name, First Name and First Name Other Last Name (Sept. 2019). “Paper: This is the name of the paper”. In: *Some Journal* 99.18, pp. 2200–2300. URL: <https://some-link.com>.