Yuanshao Yang

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Education

Aug 2023 - Present **University of Michigan - Ann Arbor**
College of Engineering
Mechanical Engineering BSE / Concentration in Robotics GPA: 4.00/4.00

Sept 2021 - July 2025 **Sichuan University, Chengdu**
Sichuan University - Pittsburgh Institute
Bachelor of Engineering - Mechanical Engineering GPA: 3.84/4.00

Honors & Awards

Aug 2024, University of Michigan **College of Engineering Scholarship** ($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

Series Spring Design & Evaluation for Open-Source Leg
July 2024 - Present

Instructor: Prof. Elliott Rouse, Zachary Bons
Neurobionics Lab, Robotics, University of Michigan

- Generate a mechanical design of series spring with easier mounting strategies and better axial alignments
- Evaluate the backlash effect on assembly interfaces (e.g. between cam shaft and spring flextures)
- Evaluate the effect on broadening the design space from series spring design

Software Library Generalization for Open-Source Leg
Mar 2024 - Present

Instructor: Prof. Elliott Rouse, Senthur Ayyappan
Neurobionics Lab, Robotics, University of Michigan
GitHub Repository Posted

- Literature review 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. Alex K. Shorter
Mechanical Engineering, University of Michigan
GitHub Repository Posted

- Design & optimize the E-coli based robot CAD model for smooth 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

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

- **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

In Review

Yang, Yuanshao et al. (2024). "Motion Analysis and Design of Bionic Swimming Robot".