Yuanshao Yang

 Github | ✉ yuanshao@umich.edu | 📱 +1 (734) 882-8073

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EDUCATION

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

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, University of Michigan
Publication: In Preparation [1]

- 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 [2]

- 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

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

[1] Zachary Bons, Yuanshao Yang, and Elliott J. Rouse. "A Compact, Two-Part Series Spring Architecture". In Preparation. IEEE, 2024.

[2] Yuanshao Yang, Mingkai Xia, Naike Wu, and Junhan Zhang. "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.