

# Mo Yang

Undergraduate Student, University of Michigan, Ann Arbor, USA

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## RESEARCH INTERESTS

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Optimal Control, Swarm Robotics, Geometric Control, Stochastic Optimization, Bio-mechanics

## EDUCATION

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**University of Michigan**, Ann Arbor, USA

Bachelor of Science in Engineering in Data Science, Minor in Mathematics

Aug. 2023 — May. 2025

Cumulative GPA: 3.88/4.00

**Shanghai Jiao Tong University**, Shanghai, China

Bachelor of Science in Electrical and Computer Engineering

Sep. 2021 — Aug. 2025

Cumulative GPA: 3.60/4.00

## PUBLICATIONS

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- [1] Jiayi Zhao, **Mo Yang**, Jing Shuang (Lisa) Li. (2024). “Human Balancing on a Log: A Switched Multi-Layer Controller”. Submitted to *American Control Conference*. Preprint available.
- [2] **Mo Yang**, Dezhi Zhou. (2024). “Ignition Delay Prediction for Fuels with Different Molecule Structures Via a Transfer Learning Approach”. Submitted to *Energy and AI*.

## RESEARCH EXPERIENCE

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### “AtomBot” Swarm Robotics Project

Advisor: Y Z

Jan. 2024 — Present

University of Michigan, Ann Arbor, USA.

- Design and manufacture Atombots.
- Realize the embedded control system for single atombot and a central controller on a server for multi-robot system.
- Build a motion capture system to capture the position of multiple robot.
- Build the analytical and NeuralSDE simulation models for system identification.

### Neural Signal Control for Bio-mechanical Balancing

Advisor: Jingshuang Li

Sep. 2023 — Present

University of Michigan, Ann Arbor, USA.

- Build a human-balancing model of standing on a log with both torque and muscle control.
- Developed a 3-case controller to understand human behaviour.
- Raised a discrete-output-state LQR/LQG model correspond to simple calculation in spiking neuronal network.

### Combustion Studies with Transfer Learning

Advisor: Dezhi Zhou

Sep. 2022 — Oct. 2023

Shanghai Jiao Tong University, Shanghai, China.

- Build artificial neural network and graph neural network model to predict the ignition delay of a certain kind of fuel.
- Explored a transfer learning method aimed at predicting ignition delay for various fuels with different molecular structure.

## SELECTED COURSES

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### Graduate Level Courses

- MATH 658 Nonlinear Dynamics, Geometric Mechanics, and Control (A+)
- IOE 618 Stochastic Optimization
- EECS 598/498 Control Theory for Biological Sensori-motor System (A)
- ECE 598 Convex Optimization Methods in Control
- MATH 526 Discrete Stochastic Processes (A+)

### Undergraduate Level Courses

- MATH 471 Introduction to Numerical Methods (A+)
- MATH 445 Introduction to Information Theory (A+)
- EECS 442 Computer Vision
- STATS 413 Applied Regression (A)
- MATH 451 Advanced Calculus (A)
- PSYCH 3620 Research Methods in Psychology (A)
- PHYSICS 160/260/360 Honors Physics I/II/III (A)

## SEMINAR PRESENTATION

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### Flipping Tennis Racket: Intermediate-axes Stability of Rigid Body and Control

Advisor: Joe (Zhengyuan) Huang

Aug. 2024

University of Michigan, Ann Arbor, USA

- This is the presentation of Directed Reading Program (from May. 2024 to Aug. 2024) by the mathematics department, University of Michigan. The advisor, Joe, is a PhD student advised by Professor Anthony Bloch.
- Read the book *Differential Equations, Dynamical Systems, and an Introduction to Chaos*.

## TEACHING EXPERIENCE

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**Grader for MATH 471 (Introduction to Numerical Methods)**      Umich, Ann Arbor, USA. Jul. 2024 — Aug. 2024

- Worked with Professor Andrei Prokhorov as a grader of an advanced undergraduate mathematics course. The course covers numerical methods for linear algebra, differential equations and dynamical systems.

**Teaching Assistant for ECE 2300 (Electromagnetics I)**      SJTU, Shanghai, China. May. 2024 — Aug. 2024

- Worked with Professor Nana Liu as a course assistant of a 100+ student compulsory course for ECE major. The course covers vector's analysis, static fields, time-varying fields, and plane wave. Hold recitation classes and office hours weekly.

**Teaching Assistant for MATH 2860 (Honor Mathematics IV)**      SJTU, Shanghai, China. Sep. 2023 — Dec. 2023

- Worked with Professor Horst Hohberger as a course assistant of a 150+ student course covering Differential Equations and Linear Algebra. Hold recitation classes and office hours weekly.

**Teaching Assistant for MATH 2850 (Honor Mathematics III)**      SJTU, Shanghai, China. May. 2023 — Aug. 2023

- Worked with Professor Horst Hohberger as a course assistant of a 150+ student course covering Linear algebra and Multivariable calculus. Hold recitation classes and office hours weekly.

## HONORS & AWARDS

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<b>Roger King Scholarship</b>	Ann Arbor, USA. Aug. 2024
<b>Summer Undergraduate Research in Engineering (SURE) Stipend</b>	Ann Arbor, USA. Mar. 2024
<b>Dean's Honor List, WN 2023, FA 2023</b>	Ann Arbor, USA. Dec. 2023, Jun. 2024
<b>UM-SJTU Joint Institute Student Development Scholarship</b>	Shanghai, China. Apr. 2023
<b>Silver Medal in The University Physics Competition</b>	Shanghai, China. Dec. 2022
<b>SJTU Undergraduate Excellent Scholarship</b>	Shanghai, China. Oct. 2022
<b>Second Prize in the Chinese National Physics Contest for Middle School Students</b>	Shanghai, China. Oct. 2019

## SKILLS

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- **Programming:** Python, MATLAB, C/C++, R, Mathematica, Verilog, Elm,  $\text{\LaTeX}$ .
- **Robotics:** PCB Design (EasyEDA), 3D Printing (Autodesk Fusion 360), Combustion Computation (Cantera).