Yunliang Zhao

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https://yunliangzhao759.github.io/

EDUCATION

Carnegie Mellon University   **PA, U.S.**
Master of Science in Mechanical Engineering **(GPA: 4.0)**   Expected May 2026
    Relevant Courses: Modern Control Theory, Robot Dynamics & Analysis, Mechanics of Manipulation, Optimal Control & Reinforcement Learning, AI & Machine Learning
    Research: *MetaMobility Lab* — Control and design of exoskeletons

New York University: Tandon School of Engineering   **NY, U.S.**
Bachelor of Science in Mechanical Engineering, Minor in Management **(GPA: 3.5)**   Expected May 2023
    Relevant Courses: CAD, Thermodynamics, Dynamics, Machine Design, Fluid Mechanics, Automatic Control, Heat Transfer, Finite Element Modeling, Project Management
    Activities: Captain, *NYU UltraViolet RoboMaster Team* · Vice President, *NYU Robotics Club* · Member, *Tandon CSSA*

RESEARCH EXPERIENCES

MetaMobility Lab   **PA, U.S.**
Oct. 2024 - Present
- Designed PCBs and secure cable systems for V1 and V2 hip exoskeleton prototypes (no failures after 3+ months)
- Assisted in mechanical design of hip exoskeleton frames and joints
- Programmed **Teensy 4.1** for low-level control of a knee exoskeleton
- Currently designing a **controller for sit-to-stand assistance** in knee exoskeletons

WORK EXPERIENCE

Nanjing Encos Intelligent Technology Co., Ltd   **Nanjing, China**
Design and Structural Engineer Intern   Sep. 2023 – Aug. 2024
- Designed, manufactured, and assembled **custom motors** using SolidWorks
- Generated engineering drawings and directly communicated with manufacturers
- Gained experience designing **planetary reducer gearboxes**
- Calibrated motor parameters using **VESC firmware and hardware tools**

PROJECT EXPERIENCES

Optimal Control and Reinforcement Learning (Course Project)   Jan. 2025 - May 2025
- Designed and implemented an **MPC-based controller** for a whiteboard erasing robot (WIPER)
- Achieved ~80% trajectory tracking accuracy

Modern Control Theory (Course Project)   Sep. 2024 – Dec. 2024
- Developed and simulated LQR and MRAC controllers in Python
- Maintained quadrotor stability in simulation under 50% power loss of one motor

Robot Manipulation and Locomotion Design (Course Project)   Apr. 2023 - May 2023
- Implemented controllers enabling a robot to pick and place two blocks into a bowl
- Evaluated resolving rate, impedance, and PD controllers for performance trade-offs
- Built kinematic control functions using **forward and inverse kinematics**

Warehouse Robot Design (Capstone Project)   Sep. 2022 - May 2023
- Designed a warehouse robot capable of lifting 10 lbs to 20 ft height, integrated with an emergency stop system
- Created CAD drawings and conducted **FEA analysis** (deflection, modal, and stress)
- Programmed robot motion and remote control in Python
- Managed project workflow using **Microsoft Project**

NYU UltraViolet RoboMaster Team   **NY, U.S.**
Captain   Sep. 2020 – Aug. 2023
- Led a **90+ member team** competing in RoboMaster competitions
- Oversaw 3 sub-teams building multiple robots annually; advised on feasibility and efficiency
- Designed mechanical structure of the infantry robot using **SolidWorks, Onshape, and Ansys**
- Fabricated parts using **3D printing, CNC, laser cutting, and waterjet machining**
- Applied **agile and waterfall** management techniques to track progress

HONORS & AWARDS

Dean's List 2021-2023
RoboMaster University League: 5th Place (2022 & 2023), 3rd Place (2021)

SKILLS

Languages: English, Mandarin
CAD & Simulation: SolidWorks, Fusion360, Ansys
Programming: Python, MATLAB/Simulink, SQL
Control Systems: MPC, LQR, MRAC, PD, Impedance Control
Hardware & Manufacturing: PCB Design, Soldering, 3D Printing, CNC, Laser Cutter
Other Tools: Microsoft Project, Google Suite, MS Office