Yipeng ZHANG

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EDUCATION

University of Pennsylvania Sep 2023 - Jun 2025

MSc in Mechanical Engineering & Applied Mechanics

- Major courses: Machine Learning, Machine Perception, Introduction to Robotics, Linear System Theory, Mechatronic Design
- GPA: 3.90/4.00

Sorbonne University Aug 2021 - Jun 2023

BSc in Mechanical Engineering

- Major courses: Fundamentals of Continuum Mechanics, Applied Thermodynamics
- GPA: 3.70/4.00 (Top 3%)

Swiss Federal Institute of Technology Lausanne (EPFL) Feb 2023 - Jul 2023

Exchange Student (Erasmus Exchange Program)

Université de Lille Sep 2020 - Jun 2021

Studied Mechanical Engineering (Transferred to Sorbonne University as the First Place)

RESEARCH EXPERIENCE

Individual Master's Thesis, UPenn Sept 2024 - Present

Advisor: Prof. Cynthia Sung, Sung Lab at Grasp

Research topic: The Impact of Geometric Structures on Robots in Flow Field

- Constructed a Particle Image Velocimetry (PIV) system to measure the flow field generated by robots underwater, obtaining the distribution of flow velocities.
- Used these velocity measurements; Calculated the thrust produced by the robots.
- Optimized the geometry of robots; Aimed to find the optimal solution for thrust and speed.

Research Assistant, UPenn May 2024 - Present

Advisor: Prof. Cynthia Sung, Sung Lab at Grasp

Research topic: Salp-Inspired Underwater Swimmer

- Investigated the effects of coordinated movement among multiple underwater robots on speed and efficiency based on a Salp-inspired robot.
- Assisted in designing components, setting up experimental environments, calibrating experiment videos using computer vision, and measuring velocities with motion capture.

Milestone: submit to IEEE RoboSoft 2025

Research Assistant, UPenn July 2024 - Present

Advisor: Dr. Xiao Zhang

Research topic: Machine Learning in DFT

- Learned and understood the combination of Density Functional Theory (DFT) and deep learning, and how to use equivariant neural networks to obtain the Hamiltonian matrix by inputting relevant geometric features.
- Gained knowledge of using evidential learning methods to estimate uncertainty.
- Understood the two-stage framework MEERL-H model, In the original model, an auxiliary model has

been introduced to assist in optimizing and evaluating the uncertainty of the original model's predictions.
Milestone: submit to Nature Machine Intelligence

PROJECT EXPERIENCE

Project Member, UPenn Nov 2023 - Dec 2023

Project topic: The Design and Control of a Multifunctional Vehicle

- Used SolidWorks to design structures of the cart, manufacturing them in 3D printing.
- Adopted C language to build functions on Arduino, such as ESP signal transmission, wall following, self-positioning, grabbing trophies, and other features.
- Built a website with JavaScript, and designed buttons to control the cart for corresponding functions.

Project Leader, Sorbonne Dec 2021 - Jan 2022

Project topic: The Design and Actuation of Four Legs Robots

- Used SolidWorks to build a four-legged robot, with emphasis on its mobility and stability.
- Designed the movement mechanism and wrote programs in C language to control four motors, enabling the robot to move; did the simulation of the locomotion by SolidWorks.
- Utilized 3D printing to manufacture the parts, selected sturdy, light, and economical material, specifications of the screw, and the power of the motor.

WORKING EXPERIENCE

Mercedes Benz Jun 2022 - Sep 2022

Internship Position: Robot Planning Engineer & Consultant

- Understood the principles of forward kinematic and inverse kinematics, DH parameters, etc.
- Tested the mechanical arms in a simulation environment on Linux using Python; Complied libraries on the basis of existing functions to improve the performance of the robotic arm.
- Coordinated with various departments such as R&D, marketing, and testing departments.
- Attended weekly meetings; Communicated with managers to follow up on development progress.

SKILLS & CERTIFICATION

Language Skills: Mandarin (Native), English (Advanced); French (Advanced)
Technical Skills: Python, C, Java, MATLAB, Fortran, CAD, Inventor, Catia, SolidWorks, MySQL, MS Office
Certificate: Completion of Preparation for Scientific and Technological Training