Qianjun Xia

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Education

Columbia University, MS in Mechanical Engineering, Research Track — Sept 2024 – May 2026 (Exp.)

- GPA: 4.12/4.0
- Concentration: Robotics and Control

Shanghai Jiao Tong University, BS in Mechanical Engineering and Mathematics — Sept 2020 – Jun 2024

- GPA: 82.76/100
- Double Major: Mathematics and Applied Mathematics

Internship

Shanghai ABB Engineering Co., Ltd, Computer Vision Intern — Jun 2023 – Sept 2023

- Assisted algorithm engineers with vision algorithm development and experiment.
- Completed a demo of a binocular vision system with Halcon used for completing the work of auto tire assembly; achieved a positioning accuracy of 1mm.

Research Experience

RoboVoxel: Inferring Soft-Body Physics from Videos (Under Review) *[Project Page]* — Mar 2025 – Present

Organization: Columbia University, Supervisor: Jiong Lin, Hod Lipson

- Modified simulation environments to model the motion of elastic objects and robotics under gravity and actuator forces.
- Generated large-scale datasets from simulation, incorporating varied object geometries, actuation patterns.
- Applied a Video transformer to predict object physical parameters from multi-frame visual data.

Magnetic Wire-Guiding Robot (In submission) *[Project Page]* — Sep 2023 – Jun 2025

Organization: Shanghai Jiao Tong University, Supervisor: Dong Wang

- Modeled the deformation of an elastic rod under magnetic fields based on Cosserat Rod Theory.
- Designed a magnetic wire-guiding device to help doctors in interventional surgeries. A robotic arm was used to control the magnet and drive the rotation of the guide wire's head to guide the direction.
- Used SolidWorks to design and model the device; coded the robot arm and motor control pipeline in Python using an Xbox controller.

Course Project

M.E.H: A Bipedal Robot *[Project Page]* — Mar 2025 – May 2025

Organization: Columbia University, Supervisor: Hod Lipson

- Designed a parallel-linked legged robot and performed inverse kinematics analysis.
- Controlled the robot with Raspberry Pi and achieved maximum walking speed of approximately 32 cm/s.

Rise of the AI Knight *[Project Page]* — Sep 2025 – Present

Organization: Columbia University, Supervisor: Shipra Agrawal

- Implemented a reinforcement learning agent for Hollow Knight and Hollow Knight: Silksong, adapting world-model–based RL methods to a complex, real-time action-platformer environment.

Extracurricular Activity

Shanghai Jiao Tong University Racing Car Team, Car body Group — Sep 2021 – Dec 2022

- Took charge of the manufacture of the monocoque shell and the rest of the body-related components, such as seat belts and seat fixtures.
- Drew machining drawings; participated in car body making and assembly; conducted car maintenance and repairing.

Technologies

CS: Python, C++, MATLAB, Taichi, R

ME: Solidworks, Fusion360, UG, Catia, Adams, Ansys