Zhenyu Dai

Portfolio: ZhenyuDai_PersonalPage

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Education

- **University of Manchester** — Manchester, United Kingdom
  Master of Science - Robotics; Upper Second-Class Honour (Expected) — September 2024 - September 2025
  Courses: Robotic Systems, Foundation of Machine Learning, Software for Robotics, Cognitive Robotics and Computer Vision, Robotics Manipulators, Autonomous Mobile Robots, Group Design Project

- **University of Manchester** — Manchester, United Kingdom
  Bachelor of Science - Mechanical Engineering; Upper Second-Class Honour — September 2021 - June 2024
  Courses: Robotics Focus: Control Engineering; Modelling and Simulation; Dynamics; Vibration; Circuits and Electrical Drives; Data Acquisition and Experimental Methods; Numerical Methods and Computing; Mechanical Engineering Systems; Design Projects; Manufacturing Engineering.

Skills Summary

- **Languages**: Python, MATLAB, LabVIEW
- **Frameworks**: ROS2 (Humble), MoveIt2, CoppeliaSim, ANSYS FEA/CFD
- **CAD/ME**: SolidWorks, FDM Printing
- **Platforms**: Linux, Web, Windows, Arduino, Raspberry Pi
- **Methods**: PID Control, Inverse Kinematics, URDF

Experience

- **Internship in ECOPTI Innovation** — Xiamen, Fujian
  Intern Mechanical Engineer (Full-time) — June 2024 - September 2024
  - **CAD Assembly Design**: Participated in CAD-designing assemblies for an automated food-transport system; collaborated across electrical/mechanical to resolve integration issues.
  - **Supplier Sourcing Optimization**: Sourced components and coordinated with suppliers, reducing lead time and cost through alternative part selection.

Projects

- **Robotic Manipulators Wielding Tools Made for Humans (UR3, ROS2/MoveIt2, CoppeliaSim, Python, SolidWorks)**: (June 2025 – September 2025) Designed and 3D-printed a UR3-mounted holder to actuate a laparoscopic grasper; bench-tested payload and grasp window and enforced them as admission gates; built a Python/ROS2/MoveIt2 control stack and CoppeliaSim environment; achieved consistently high pick success with solid placement reliability and faster cycle times at higher speeds.
- **Leo Rover Automatic Retriever Robot (Pincher-X150, RealSense D435, ROS/OpenCV, SolidWorks)**: (March 2025 – June 2025) Designed payload sleds; integrated the Pincher-X150 manipulator with RealSense D435 perception; linked object detection to arm actions and delivered a working demo.
- **UAV Cascade PID Control (Feedback Control, MATLAB/Python)**: (November 2023 – January 2024) Implemented a cascaded PID (position/velocity/acceleration) with a dedicated yaw loop; achieved stable position and heading control in simulation.
- **Magnetic-Driven Efficient Actuator (Soft Robotics, Electromagnetics, Simulation)**: (September 2023 – September 2024) Developed an electromagnetic soft-actuator concept and simple simulations; documented design trade-offs and proposed a framework for faster, more responsive actuators.
- **LabVIEW XY-Plotter Data Acquisition (Inductive Sensor, Motion Control)**: (April 2024 – May 2024) Developed LabVIEW code to scan a 100 mm × 100 mm area with an inductive proximity sensor; implemented motion logic and data logging.
- **A* Path-Planning GUI (Python)**: (May 2024 – June 2024) Built a small GUI to plan obstacle-avoiding paths with A*; user-defined start/goal/obstacles with real-time visualization.

Portfolio

- **Project Videos & Write-ups**: zhenyudai1224.github.io/ZhenyuDai_PersonalPage
- **UR3 Gripper Demo**: Short video + write-up (link above).
- **Leo Rover Retriever**: Manipulator + perception integration demonstration video (link above).