Qiyang Yan

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EDUCATION

IMPERIAL COLLEGE LONDON ***2023.10-2024.6***

- **Major**: Electrical and Electronic Engineering (MEng 4YFT) – Master
- **Grade**: 76.96 % (First Class Honours)
- **Relevant Courses**: Computer Vision and Pattern Recognition (85.87, top 5%), Optimisation (78.75), Topics in Large Dimensional Data Processing (88.08, top 5%)

IMPERIAL COLLEGE LONDON ***2020.10-2023.6***

- **Major**: Electrical and Electronic Engineering (MEng 4YFT) – Bachelor
- **Grade**: 61.57 % (Upper Second Class Honours)
- **Relevant Courses**: Robotic Manipulation (78.2), Mathematics (77.48)

TECHNICAL SKILLS

Language: English (IELTS 7.5), Mandarin (Native)
Programming: Python, C/C++
Deep Learning Framework: PyTorch, TensorFlow
Robotics: ROS, MuJoCo, Issac Gym&Sim&Lab
Hardware Skills: LTspice, Eagle, Quartus, Verilog
Other Software Skills: Solidworks

PUBLICATIONS

* selected work, first or co-first author

2025 (Preprint) **ROBODOJO: A Comprehensive Simulation Platform for Scalable Robot Learning**

***** 2025 (Preprint) **ClutterDexGrasp: A Sim-to-Real System for General Dexterous Grasping in Cluttered Scenes**
Zeyuan Chen, **Qiyang Yan***, Yuanpei Chen, Tianhao Wu, Jiyao Zhang, Zihan Ding, Jinzhou Li, Yaodong Yang, Hao Dong*

2025 (Preprint) **TwinAligner: Visual and Physical Real2Sim2Real All-in-one for Robotic Manipulation**
*Hongwei Fan, Hang Dai, Jiyao Zhang, Jinzhou Li, **Qiyang Yan**, Yujie Zhao, Xuanyu Lai, Hao Tang, Hao Dong*

***** 2025 **Variable-Friction In-Hand Manipulation for Arbitrary Objects via Diffusion-Based Imitation Learning** [Paper] [Web]
Qiyang Yan*, *Zihan Ding, Xin Zhou and Adam J. Spiers*
The IEEE International Conference on Robotics and Automation (ICRA), 2025

WORKING EXPERIENCE

Research Intern — Robot Learning and Benchmark
Peking University & AgiBot Lab | Supervised by Dr Hao Dong ***2025.1-now***

- **ClutterDexGrasp: A Sim-to-Real System for General Dexterous Target Grasping in Cluttered Scenes**: Developed a training pipeline to obtain a general RL teacher policy to grasp arbitrary objects in arbitrary density cluttered scene with a dexterous hand in Isaac Gym. The policy is then distilled to point-cloud policy and zero-shot transferred to real world. This is the first policy that demonstrates dynamic and robust grasping with safe and rich interaction with cluttered scene. (Submitted to CoRL 2025)
- **ROBODOJO: A Comprehensive Simulation Platform for Scalable Robot Learning**: Responsibled for development of benchmarks and metrics to provide a comprehensive evaluation of VLA and imitation learning policies. (Planned for NeurIPS 2025)
- **TwinAligner: Visual and Physical Real2Sim2Real All-in-one for Robotic Manipulation**: Introduced a unified Real2Sim2Real framework: TwinRecon replicates visually and geometrically accurate scenes via 3D Gaussian Splatting and 6D pose estimation; TwinRigid jointly optimizes robot-object dynamics with limited human-in-the-loop data collection. (Submitted to CoRL 2025)

Research Intern — Robot Learning for In-hand Manipulation
Imperial College London | Supervised by Dr Adam J. Spiers ***2024.5-2024.9***

- **Overview**: Proposed a data-efficient learning framework allows gripper to learn to precisely in-hand manipulate arbitrary objects to any target pose on real hardware within 2 hours, with success rate of 71.3% with average pose errors being 2.676mm and 1.902°. (Accepted by ICRA 2025)
- **Demonstration Collection**: Trained a smoothness-optimized general RL policy, allowing automated demonstration collection for arbitrary objects via hindsight goal relabelling.

- **Sim-Real Co-Training**: Proposed mixing real and simulation demonstrations for diffusion-based behaviour-cloning, effectively mitigated the problem of real-world data scarcity.

Research Intern — Tactile Sensor-Agnostic Pattern Recognition Framework

Imperial College London | Supervised by Dr Adam J. Spiers ***2023.9-2023.12***

- **Overview**: Responsibled for dataset preparation for the development of generalisable learning-based approaches to bridge the gap between various types of tactile sensors.
- **Data Collection**: Configured and integrated DIGIT, Gelsight, and PapillArray tactile sensors on a UR5e robotic arm via ROS, and designed a standardized data collection procedure for YCB object interactions.
- **Data Analysis**: Conducted feature distribution analysis from large-dimensional data for multiple tactile sensors by applying dimensionality reduction such as PCA and LDA and clustering techniques.

Undergraduate Research Intern — NASA Herisense

Imperial College London | Supervised by Prof. Tom Pike ***2022.7-2022.9***

- **Overview**: Developed a systematic verification process for a novel aviation accelerometer with a PCB.
- **Output Simulation**: Modelled the sensor's output signal for various attitudes, considering the capacitors' edging effect and varying cross-section area, and simulated in MATLAB.
- **Circuit and PCB Design**: Designed a PCB with a high Signal-to-Noise Ratio pre-amplifier circuit, realised the amplification of millivolt output signal for verification and analysis.

RESEARCH PROJECT

Variable-Friction In-Hand Manipulation for Polygons via Reinforcement Learning with Sim2Real Transfer [Report]

MEng Final Year Project | Supervised by Dr Adam J. Spiers ***2023.10-2024.4***

- **Overview**: Developed the first learning-based framework for the variable-friction gripper to learn to manipulate irregular polygons on the real robot, achieving 95% success rate with average pose errors around 6 mm and 6°.
- **RL Training**: Built a digital twin in MuJoCo. Shaped the action space and reward function. Trained policies with self-implemented TD3 and PPO, realising robust and precise in-air in-hand manipulation.
- **Zero-Shot Sim-to-Real**: Utilized system identification and domain randomization, and successfully deployed the model trained from MuJoCo to the real robot with a slight drop in success rate, around 2%.

A Pick-Manipulate-Insert System with Variable-Friction Gripper for Cube [Report] [Web]

3^{rd} ***Year Final Project | Supervised by Dr Adam J. Spiers*** ***2023.5-2023.6***

- **Overview**: Developed a vision-based closed-loop pick-manipulate-insert system with a variable-friction gripper and UR5e robotic arm using ROS, achieving a 92% success rate for this task for the cube.
- **Trajectory Planning**: Developed a model-based IHM planner that enables the gripper to in-hand manipulate the cube precisely and an UR5e arm trajectory planner; Achieved positional accuracy around 3mm.

ACADEMIC SERVICE

Conference Reviewer: IROS 2025, CoRL 2025

INTERESTS

Sports Climbing (7b Onsight) and Bouldering (V10/7c+), Diving (AOW), Skateboarding, Skiing, Guitar, Drums