

Yuxiang Xie

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GitHub: github.com/Peter-cuhk

Portfolio: peter-cuhk.github.io/portfolio/

SUMMARY

- Robotics & AI engineer training at CUHK-Shenzhen (GPA 3.82 / 4.0, Top 5%) focusing on surgical robot autonomy and embodied intelligence.
- Build end-to-end planning and perception systems, transforming lab research into reliable demos and community-facing products.

EDUCATION

The Chinese University of Hong Kong, Shenzhen — BEng Electrical and Computer Engineering

Sep 2024 – Present

GPA 3.82 / 4.0 · Dean's List · Undergraduate Research Awards recipient

- Research focus on robot planning and control in complex environments with learning-driven perception.

RESEARCH EXPERIENCE

Medical Robotics Lab, CUHK-Shenzhen — Research Assistant

Shenzhen, China | 2024 – Present

- Build autonomy and perception stacks for surgical manipulators under Prof. Fangxun Zhong and Prof. Yunhui Liu, uniting motion planning with learning-driven vision.
- Prototype suturing assistance workflows and LiDAR-guided fleet coordination showcased in lab demos with reproducible evaluation metrics.

Peking University — Embodied AI Visiting Student

Beijing, China | 2025

- Completed Peking University's Embodied AI summer program, tackling policy learning modules that emphasized planning, control, and perception.
- Participated in Peking University research seminars to exchange robotics ideas and set up follow-on collaborations.

PROJECTS

Surgical Robot Autonomy Pipeline

- Fused learning-based perception with ROS 2 motion planning inside CoppeliaSim; ran trajectory optimization with collision-free guarantees in cluttered scenarios.
- Developed metric harness for accuracy, latency, and recovery benchmarking adopted by the research group.

Object Detection Driven Robot Arm Tracking

- Deployed customized YOLOv8 model with TensorRT acceleration, powering low-latency closed-loop tracking in simulation.
- Tuned inference and control to hit responsive manipulation targets for high-speed arm motion.

Eye-to-Hand Pose Estimation & Stacking

- Delivered 6D pose estimation using an eye-to-hand camera configuration, automating precise stacking tasks.
- Co-optimized perception latency and control accuracy to boost task success reliability.

Monocular Endoscopic Depth Estimation

- Combined Depth Anything predictions with optical-flow refinement for millimeter-precision depth recovery in endoscopic scenes.
- Validated reconstruction accuracy against calibration phantoms to meet surgical research benchmarks.

LEADERSHIP & IMPACT

Independent Entrance Coaching Platform — Founder

China (Remote) | 2022 – Present

- Built profitable guidance business connecting elite mentors with students, achieving RMB 80K+ monthly revenue.
- Led a 20+ mentor network, automated client intake, and expanded reach through Rednotes and TikTok growth funnels.

World Internet Conference (Wuzhen Summit) — Media & Communications Volunteer

Wuzhen, China | 2023

- Produced photography, video edits, and PR assets that expanded multi-channel audience reach.
- Coordinated with media teams to streamline publication workflows under tight event timelines.

HONORS & ACTIVITIES

- Columbia University Honor Program Member.
- Top Ten Students, Tongxiang Senior High School.
- Language: Mandarin (native), English (IELTS 6.5).

- Extracurricular: Level 9 Hard-tip Calligrapher; National Second-Class Athlete (Swimming); Member, Tongxiang Photographers Association.

TECHNICAL SKILLS

Programming

- Python & Lua for robotics scripting
- MATLAB for control and simulation
- CoppeliaSim scripting & ROS 2 integration
- JavaScript / TypeScript for dashboards

Tools & Platforms

- PyTorch, OpenCV
- Git, Notion, Figma
- CoppeliaSim for robotics simulation and development

Domain Expertise

- Robot motion planning & control in complex spaces
- Learning-driven perception for surgical settings
- Depth estimation in surgical scenes
- Forward & inverse kinematics, PID tuning, model predictive control (MPC), trajectory smoothing