

# Jiaying Fang

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## EDUCATION

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- **Stanford University** California, USA  
*Master of Science - Electrical Engineering* Sep 2023 - June 2025 (Expected)
- **The Hong Kong Polytechnic University** Kowloon, Hong Kong  
*Bachelor of Engineering - Electronic and Information Engineering; GPA: 4.05/4.30* Aug 2019 - June 2023  
*Minor in Applied Mathematics*  
*Courses: Deep Learning and Deep Neural Networks, Image and Audio Processing, Dynamic Electronic Systems, Computer System Fundamentals, Logic Design, Data and Computer Communications*
- **McGill University** Montreal, Canada  
*Exchange Program; GPA: 4.0/4.0* Jan 2022 - June 2022  
*Courses: Introduction to Computer Vision, Computational Photography, Numerical Methods in Engineering*

## RESEARCH EXPERIENCE

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- **DECAR Lab, McGill University** Montreal, Canada  
*Research Assistant* May 2022 - Aug 2022
  - **Research:** Researched estimation and control in the robotics field.
  - **Controller Design:** Designed and implemented a robust LQR controller which can be used in real-world applications.
  - **Experiments:** Conducted experiments about the LQR controller on an unmanned ground vehicle.
- **Autonomous Systems Lab, HKPolyU** Kowloon, Hong Kong  
*Research Assistant* May 2021 - Present
  - **Research about Visual Odometry:** Researched visual odometry and simultaneous localization and mapping in the robotics field. Especially focusing on the tightly-coupled integration of visual odometry and multi-object tracking.
  - **Implementation of a Visual Odometry:** Implemented a system with integration of deep learning-based visual odometry and multi-object tracking. Deep optical flow estimation and a 3D object detection network were used.
  - **Research about 3D Tracking with point cloud:** Currently working on the research about the 3D multi-object tracker, which will be implemented later.

## PROJECTS

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- **3D Multi-Object Tracking using Point Cloud** Kowloon, Hong Kong  
*Point Cloud, 3D Perception* April 2023 - June 2023
  - A 3D multi-object tracker using vehicle **Re-Identification** embedding and motion prediction with **CenterPoint detection** results.
  - **Multi-head cross-attention and self-attention** layers will be used for data association.
- **Deep Speaker Embedding Across Languages** Kowloon, Hong Kong  
*Speaker Verification, Domain Adaptation* Sep 2022 - April 2023
  - This project is my final year project. It has won the **Honours Project - Technical Excellence Award**.
  - Deep speaker embedding for speaker verification with a **domain loss** to alleviate the **languages mismatch problem**.
  - The performance of the ECAPA-TDNN (pre-trained using the English dataset) on the unlabelled Chinese dataset has **improved by 10%** with the MMD-based domain loss.
- **LQR Controller for Unmanned Ground Vehicle** Montreal, Canada  
*Robotics Perception, ROS* May 2022 - Aug 2022
  - Designed a finite-horizon **LQR control of UGV**. Various experiments have been conducted to ensure the robustness of the LQR controller.
  - The state of UGV is represented as an element of direct Euclidean isometries, **SE(2)**.
  - **ROS** is used during implementation.
- **A Novel Monocular Visual Odometry System with 3D Multi-Object Tracking** Kowloon, Hong Kong  
*Visual Odometry, Multi-Object Tracking* May 2021 - Oct 2021
  - Deep learning-based integration of **monocular visual odometry** and **Multi-Object Detection**.
  - **Deep optical-flow** estimation and **3D object detection** models were used.

## SKILLS

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- **Languages:** Python, Java, C++, C, MATLAB, R
- **Frameworks:** PyTorch, ROS, Keras, Neo4j
- **Tools and Platforms:** Git, Docker, LaTeX, Linux (Ubuntu)

## SELECTED HONORS AND AWARDS

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- **Outstanding Student Award of Faculty of Engineering** Nov, 2022  
*The Hong Kong Polytechnic University*
- **Scholarship on Outstanding Performance** Dec, 2021  
*The HKSAR Government*