XINJIE YAO

+85266166154 | xyaoab@ust.hk | xyaoab | abby-xinjie-yao

EDUCATION

The Hong Kong University of Science and Technology Hong Kong
BEng in Computer Engineering (Minor in Robotics) & BBA in General Business Management Sep 2015 – Jun 2020

- GPA = 4.06/4.3 (ranking: 4/128)
- Relevant Coursework (G = graduate level): Intro to Aerial Robotics(G), Computer Vision(G), Machine Learning(G), Information Processing for Robotic, System Model Analysis & Control, Robot Manipulation & Mobility
- Programming Languages: Python, C/C++, Matlab, Java, Shell
- Framework/Libraries: ROS, LINUX, Pytorch, Tensorflow/Keras, OpenCV, Openrave, Moveit

Cornell University Ithaca, USA
Exchange Student Jan 2018 – Jun 2018

- International Exchange Program in Computer Science
- GPA = 3.96/4.3

PUBLICATION

1. X. Yao, J. Zhang and J. Oh "Following Social Groups: Socially Compliant Autonomous Navigation in Dense Crowds", Published at *Proceedings of* the *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS*) *workshop Towards Cognitive Vehicles*, 2019

RESEARCH EXPERIENCE

The Hong Kong University of Science and Technology (HKUST-DJI Joint Innovation Laboratory) Hong Kong
Final Year Project advised by **Prof. Shaojie Shen** Aug 2019 – Present
Decentralized Visual-Inertial-UWB Fusion for Relative State Estimation of Aerial Swarm

- Proposed a relative state estimation framework for swarm UAVs with centimeter level precision for indoor localization
- Trained a drone detection network based on YOLOv3-tiny and tested up to 5 UAVs in the environment
- Setup a decentralized Docker image distribution network
- Preparing a research paper for publication in *Robotics: Science and Systems (RSS) 2020*

Carnegie Mellon University (Robotics Institute Summer Scholar) Pittsburgh, USA
Research Assistant to **Dr. Jean Oh** and **Dr. Ji Zhang** Jun 2019 – Aug 2019
Following Social Groups: Socially Compliant Autonomous Navigation in Dense Crowds [paper] [poster]

- Developed a perception and planning pipeline, deployed to a wheel-chair robot able to drive naturally in a densely populated area (10+ people in a 10mx20m area) [video] [code]
- Designed a trajectory prediction model based on a Generative Adversarial Network (GAN), achieved 8% improvement than the state-of-the-art model
- Published research work in IROS workshop Towards Cognitive Vehicles proceedings
- Presented at the workshop's poster session and the IROS'19 Late Breaking Results session

The Hong Kong University of Science and Technology (HKUST-DJI Joint Innovation Laboratory) Hong Kong
Undergraduate Research Assistant to **Prof. Shaojie Shen** Jan 2019 – Jun 2019
Robust Monocular Visual-inertial Localization and Mapping [video] [code]

- Contributed to continuing development of VINS-Mono into the most robust and versatile SLAM system for a large range of applications running on different computing platforms
- Conducted experiments and demonstrations based on the "Teach-Repeat-Replan" UAV motion planning system
- Assisted in the installation of the UAV platform and ground station

The Hong Kong University of Science and Technology (Robotics and Multi-Perception Lab) Hong Kong
Undergraduate Research Assistant to **Prof. Ming Liu** Jan 2017 – Dec 2018
Wi-Fi Signal Strength-based Robot Indoor Localization [video] [code]

- Developed a robot to localize users with Android devices using Wi-Fi signals and direct them to ideal position
- Achieved localization accuracy of 3m using RSSI modelled by Gaussian Process Regression and Bayes Filter
- Performed real-world tests on 20+ guest visitors

UBS AG & The Hong Kong University of Science and Technology Hong Kong
Independent Research Project advised by Mr. Tayo Olowu, Director of UBS AG Hong Kong Sep 2018 – Jan 2019
Startup Assessment using Machine Learning [code]

- Leveraged learning-based methods to predict if ventures will have further funding requests
- Performed time-series data cleansing and feature extraction for 200k US-based ventures
- Designed a Recurrent-Neural-Network (RNN)-based method in TensorFlow and achieved an 0.82 of precision
- Secured internal funding for the second phase of the project targeting China-based ventures

Cornell University (Department of Computer Science) Ithaca, USA
Research Assistant to **Prof. Bharath Hariharan** Jan 2018 – Jun 2018
Active Learning in Image Classification [code]

- Used fewer image labels in the training set while maintaining image classification performance
- Modified ResNet architecture based on Query by Committee to reduce the numbers of labels
- Improved testing accuracy by 1% with a training set of 3840 images

Selected Awards and Honors

- Hong Kong Jockey Club Undergraduate Scholarship (0.1% of mainland students) 2016
- MATE International Remotely Operated Vehicle 3rd Runner-up 2016
- China Foundation Center Data X Social Good Hackthon 1st Runner Up 2017
- UBS Operations and Technology Case Competition 2nd Runner Up 2017
- Student Academic Excellence Award 2016-2019

Professional Experience

DJI Technology Co. Shenzhen, China
Research Intern, Department of L4 Autonomous Driving Nov 2019 – Present

- Research on relative state estimation techniques with UWB and visual methods.

Beijing Aqrose Technology Co. Beijing, China
Robotics Algorithm Engineer Intern Jun 2018 – Aug 2018

- Designed grasping strategy using vacuum and M2 grippers for industrial robots based on 3D vision sensors.
- Conducted research on a data-driven grasping strategy with readings from point cloud.

Baidu Venture San Francisco, USA
Investment Analyst Intern Jun 2017 – Aug 2017

- Published summaries of trends and applications in visual-SLAM and IMU, that received over over 847 likes [report].
- Performed due diligence on potential investments and secured two deals in the robotics industry.

PwC Consulting Beijing, China
Technology Consultant Intern Jan 2019 – Feb 2019

- Structured a data warehouse scheme to transform a commercial bank's managerial accounting system.
- Implemented multi-layer extract, transform, load (ETL) processes to construct a data warehouse using PLSQL.

Additional Information

Additional Professional and Extracurricular Experiences

- DJI Workshop for CMU RISS, Volunteer of Liaison team (Jun 2019)
- K-12 STEM Outreach to Students Funded by Mao Yisheng Foundation, Presentation Volunteer (Jul 2019)
- HKUST Women in STEM Club, Organization Committee (2018)
- HKUST Robotics Team (ROV), Head of Hardware (2016)
- HKUST Connect Cambodia Solar Project, Team leader (Jun 2016)

Interests

- Downhill Skiing (CSIA Level-1)
- Marathon (Completion of Standard Chartered Hong Kong Half-Marathon)
- Piano (China Conservatory of Music National Grade-7)

Language Skills

- English (TOEFL Speaking: 29)
- Mandarin (native)
- Cantonese (basic)
- German (elementary)