

QI YAN

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EDUCATION

Swiss Federal Institute of Technology, Lausanne (EPFL) Sep. 2019 - Present
MSc in Mechanical Engineering, focusing on perception, planning and control for robotics
Core courses: *Artificial Neural Network* *Deep Learning for Autonomous Vehicles*
 Computer Vision *Image Analysis and Pattern Recognition*
 Model Predictive Control *System Identification*

Shanghai Jiao Tong University (SJTU), China Sep. 2015 - June 2019
B.E. in Nuclear Engineering, School of Mechanical Engineering (Honors), GPA: **3.76/4.0**

PUBLICATIONS

Q. Yan, R. Li, and X. Meng. “Tribo-Dynamic Simulation and Motion Control of a Rotating Manipulator Based on the Load and Temperature Dependent Friction”, *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology*, September 2020.

Q. Yan, L. Jiang and S. S. Kia, “Measurement Scheduling for Cooperative Localization in Resource-Constrained Conditions,” in *IEEE Robotics and Automation Letters*, vol. 5, no. 2, April 2020. (also selected by ICRA’20 Committee for conference presentation)

EXPERIENCES

Transferable Crowd Robot Navigation Strategy

Master student, EPFL, Switzerland July. 2020 - Present
Advisor: *Prof. Alexandre Alahi*, Lab of Visual Intelligence for Transportation, EPFL
· Implemented model-free rainbow DQN and soft actor-critic algorithms in PyTorch for robot navigation in a crowd, whose performance is comparable to state-of-the-art model-based approach. Next step to exploit representation learning to make policy transferable.

Visual Absolute Localization in *a priori* Known Environment

Master student, EPFL, Switzerland Feb. 2020 - Present
Advisor: *Dr. Iordan Doytchinov*, Laboratory of Geodetic Engineering, EPFL
· Developed an improved structure-based visual localization method in PyTorch. Achieved ~10 m & 5 deg accuracy in a large synthetic dataset, close to state-of-the-art results. Next step to explore transfer learning technique to make it easier to deploy in different scenes.

Droplet Size Estimation Using Deep Learning Method

Undergraduate thesis, Shanghai Jiao Tong University, China Mar. 2019 - June 2019
Advisor: *Prof. Xiang Chai*, School of Mechanical Engineering, Shanghai Jiao Tong University
· Employed a learning algorithm for semantic segmentation on droplet images. Attained the size estimation with ~10% uncertainty, comparable to manual segmentation results.

Cost-effective Cooperative Localization Algorithm Design

Research student, UC Irvine, USA

Jul. 2018 - Sep. 2019

Advisor: *Prof. Solmaz S. Kia*, Dept. of Mechanical and Aerospace Engineering, UC Irvine

- Proposed a sub-optimal algorithm for the NP-hard multi-robot measurement selection problem. Compared with the state-of-the-art method with similar performance, it holds no assumption on observability and works much faster. Paper accepted by RA-L.

Friction Dynamics Analysis and Control of Manipulator

Research student, Shanghai Jiao Tong University, China

Dec. 2017 - Dec. 2018

Advisor: *Prof. Xianghui Meng*, School of Mechanical Engineering, Shanghai Jiao Tong University

- Carried out tribo-dynamic modeling of a manipulator joint considering motor load and temperature. Developed a terminal sliding mode controller, which doesn't need prior disturbance information for stability. Paper accepted by *Journal of Engineering Tribology*.

SKILLS

Perception: digital image processing, visual camera re-localization, object detection and tracking, cooperative localization, extended Kalman filter

Planning: reinforcement learning, deep Q-learning, actor-critic policy optimization, model predictive control

Actuation: robotic kinematic and dynamic analysis, system identification

Software: proficient: Python, PyTorch, MATLAB; intermediate: C++, Java, Solidworks

Languages: Chinese: native; English: C1

OTHERS

Reviewer: IEEE Sensors Letters, 2020