

Yiqian Li

Email: 120090702@link.cuhk.edu.cn | Homepage: <https://lee-7102.github.io/>

EDUCATION BACKGROUND

The Chinese University of Hong Kong (CUHK), China

09/2020 – 07/2024

B.Sc. in Computer Science and Engineering | GPA: 3.6/4.0

The University of California, Irvine (UCI), United State

01/2023 – 06/2023

GPA: 4.0/4.0

PUBLICATIONS

[1] Aojun Jiang, Miao Hao, **Yiqian Li**, Jiaqi Wang, Chunfeng Yue, Zongjie Huang, Ying Yang, Meng Ma, Qifeng, Lyu, Yu Sun, Zhuoran Zhang, "Occlusion-Aware Multi-Object Tracking for Point-of-Care sperm Analysis Using Smartphone Imaging", **submitted to IEEE Transactions on Automation Science and Engineering**.

[2] Zhijing Li, Qiui Fu, Zhijun Huang, Jianbo Yu, **Yiqian Li**, Yuanhao Lai, Yuchi Ma, Pinjia He, "Revisiting Log Parsing: The Present, The Future, and The Uncertainties", **submitted to IEEE Transactions on Reliability**

[3] **Yiqian Li**, Miao Hao, Zhuoran Zhang, "Pseudo Labeling Semi-supervised Classification for Sperm Morphology Analysis Using Smartphone Imaging", **under review**

[4] **Yiqian Li**, Yifan Mei, Xiaoyu Shi, "A Diffusion Probabilistic Model for Medical image Denoising and Synthesis", **under review**

EXPERIENCES

Medical Image Synthesis and Denoising based on Diffusion Probabilistic Model [4]

Prof. Xiaoyu Shi / UCI

06/2023 - Present

- Establish and validate a 2D medical image synthesis framework based on a diffusion model, covering a forward Gaussian noise process and a reverse denoising process using the transformer-based diffusion model;
- Evaluate the quality, diversity, and authenticity of the synthesized medical images based on a set of fit-for-purpose metrics, covering X-ray, MRI and CT images.

Computer-Assisted Analysis of Sperm Morphology [3]

Prof. Zhuoran Zhang / CUHK

12/2022 - Present

- Applied U-net for sperm segmentation;
- Applied DBSCAN and Agglomerative Clustering for single sperms image sets and single standard normal sperm image to generate pseudo labels;
- Applied Resnet and Vision-transformer as semi-supervised classification models for single sperms image sets with pseudo labels.

Sperm Video Segmentation and Tracking [1]

Prof. Zhuoran Zhang / CUHK

08/2022 – 12/2022

- Optimized the up-sampling process in U-Net to accelerate segmentation of sperms in each video frame;
- Enhanced the occlusion-flag-enabled PFT model for improved recognition and tracking of sperms in videos by modifying the occlusion-judge mechanism; leveraged TensorRT for model acceleration.

Design of a Log Detection and Analysis System for Huawei Cloud Service [2]

Prof. Pinjia He / CUHK

09/2021 – 07/2022

- Implemented a semantic parser to parse logs; applied word2vec to calculate semantic similarity of logs to agglomerate logs from the same root cause;
- Extracted invariants among logs and monitor the dependency of invariants to inform log detection;
- Analyzed false detection by log parsing algorithms such as Drain, AEL, and IPLoM; Corrected some ground truth in log parsing datasets;
- Evaluated the accuracy and efficiency of CNN, auto decoder and LSTM algorithms for automated anomaly detection of logs.

PROJECT REPORT

Reinforcement Learning for Optimal Traffic Signal Control

Prof. Xiaohui Xie / UCI

03/2023 – 05/2023

- Designed, implemented, and validated in Python a set of reinforcement algorithms for optimal traffic signal control so as to minimize waiting time of vehicles;
- Simulated cross-road traffic condition using Simulation of Urban Mobility (SUMO), allowing vehicle flow visualization;
- Employed 1) Deep Q-network, Double Deep Q-network, Dueling Deep Q-network, and Proximal Policy Optimization (PPO) reinforcement learning algorithms, and 2) various exploration strategies including greedy, epsilon-greedy, and upper confidence bound (UCB) to drive control, followed by a comparative study on the effectiveness and efficiency.

COMPETITION

DJI RoboMaster Robotics Competition

Prof. Simon Pun / CUHK

10/2020 – 05/2021

- Joined a multi-disciplinary team to prepare for the DJI Robomaster competition, developing and operating six robots that launch projectiles at opponent in order to deduct Hit Points;
- Established a simulation environment in Gazebo simulator to facilitate the intelligent robot development and testing;
- Analyzed QMIX and VDN algorithms for intelligent vehicle decision, covering engineering (loading and transporting bullets), infantry (fight with other robots), supply (ammunition management) and aerial (air combat) robots;
- Enabled route planning via A* algorithm, Dijkstra's algorithm, and a greedy heuristic.

SKILLS

Programming Languages: C/C++ | Java | Python | MATLAB | ROS | SQL | ARM Assembly | AHDL | Verilog HDL

Libraries: PyTorch | Scikit-Learn | TensorFlow | OpenCV | Libtorch