

Qin Luo

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Address: 800 Dongchuan Rd., Shanghai, China

EDUCATION

The Chinese University of Hong Kong

Aug. 2022 - Oct. 2026

Ph.D. in Computer Science and Engineering

Hong Kong, China

- Supervisor: **Martin DF Wong** and **Evangeline FY Young**

- Research Direction: Machine Learning and Optimization in VLSI

Shanghai Jiao Tong University

Sept. 2019 - Mar. 2022

M.S. in Control Engineering

Shanghai, China

- Supervisor: **Xiaolin Huang**

- GPA: **3.51/4.0**

- Research Direction: Kernel Methods, Neural Network Compression, Machine Learning, Optimization

- Relevant Courses: Digital Image Processing, Computer Vision, Convex Optimization

Shanghai Jiao Tong University

Sept. 2015 - Jun. 2019

B.E in Instrument Science and Engineering

Shanghai, China

- GPA: **3.74/4.0**

- Relevant Courses: Digital Circuit, Signal Processing, Machine Learning, Linear Algebra, C++ Programming, Statistics

PUBLICATION

JOURNAL

[J1] Chu T, **Luo Q**, Yang J, Huang X. Mixed-precision Quantized Neural Networks with Progressively Decreasing Bitwidth[J]. Pattern Recognition, 2021, 111: 107647.

CONFERENCE

[C1] **Luo Q**, Fang K, Yang J, Huang X. Towards Unbiased Random Features with Lower Variance For Stationary Indefinite Kernels[C]//IJCNN 2021.

RESEARCH EXPERIENCE

- **Generalized random feature approximation for kernel and its application** Mar 2020-Present
Advisor: Xiaolin Huang
 - Extended random Fourier features to non positive definite or non stationary kernels
 - Utilized orthogonality sampling to reduce the variance for unbiased estimation.
 - Construction under memory constrained scenario and its application in deep learning training.
- **Mixed precision neural network quantization** Nov 2018-Feb 2020
Advisor: Xiaolin Huang
 - Put forward the idea of mixed precision neural network, visualized the separation ability of the feature maps from different classes and utilized the phenomenon to determine the bits.
 - Conducted classification and object detection experiments to evaluate our proposed mixed precision neural quantization method with evenly quantization methods.
 - Extra: research on regularization and knowledge distillation for quantized neural network.

WORK EXPERIENCE

- **Optimization for action recognition model** Megvii Dec 2020-Feb 2021
Mentor: Yichen Wei, Yuke Zhu
 - **Development of badcase analysis toolkit**
Realized and compared several CAM algorithms in MegDL Framework to help analyze the badcases of action recognition model.
 - **Research on non local method and its alternatives**
Introduced non-local method to boost the performance of action recognition model and reduced the computation expense for large-scale feature maps.
- **Computer vision tasks in endoscopic system** Medtronic, Inc. Dec 2019-Mar 2021
 - **Image enhancement (image denoising & image super-resolution)**
Baseline model training (DnCNN\RDN\GRDN\SRGAN\MMD-GAN)
 - **Monocular stereopsis reconstruction**
Baseline model training (Monodepth) and inference acceleration (Using Shufflenet and TensorRT)
Improving the reconstruction fluency for 3d video (disparity exponentially average), written in pattern
- **Multi-channel measurement and calibration Software System** Jan 2018-Jun 2018
Advisor: Ping Cai
 - Front end development and testing of measurement and calibration software system allowing several functions, such as obtaining physical quantities like temperature and pressure from PCIe.
- **Human-robot interactive finger-guessing game** Nov 2017-Feb 2018
Advisor: Liang Gong
 - Worked as project leader, and arranged the timeline of the project.
 - Designed the gesture recognition algorithm using boundary extraction and invariant characteristics calculation.
 - Node communication in ROS operation system among robotic arms, Kinect and judgement GUI.

SOFTWARE SKILLS

- **Programming Languages:** C++, Matlab, Python, Labview
- **Deep Learning Framework:** PyTorch
- **Software & OS:** L^AT_EX, Ubuntu, Altium Designer

HONORS & AWARDS

HONORS:

- Outstanding graduate of Shanghai Jiao Tong University 2019&2022
- Excellent student scholarship in Shanghai Jiao Tong University 2016-2019
- Endress+Hausser Scholarship 2017

COMPETITIONS:

- Third prize in National Post-graduate Mathematical Contest in Modeling 2020
- Third prize in National Undergraduate Mathematical Competition 2016

VOLUNTEER:

- Reviewer for Expert Systems With Applications (2021)
- Reviewer for IEEE Transactions on Neural Networks and Learning Systems (TNNLS, 2021)
- Volunteer for Shanghai Jiao Tong University 120 Anniversary and Shanghai International Marathon