Junde Li

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Education

Pennsylvania State University **Jan. 2019 – Present**
PhD student in Computer Science and Engineering
Advisor: Swaroop Ghosh

City University of Hong Kong **Oct. 2016**
MSc in Engineering Management, GPA: 4.02/4.3, ranked 1/88

Qingdao University **Jun. 2015**
BSc in Logistics Management, GPA: 82.69/100

Research Interests

Autonomous Systems, Quantum Machine Learning. I am interested in computer vision, autonomous vehicles, robotics, and quantum machine learning for algorithm acceleration.

Publications

C5. **J. Li**, M. Alam, S. Ghosh. (2021). Large-scale MaxCut Optimization on Noisy Superconducting Qubits via Divide-and-Conquer. International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS). (Under Review)

C4. M. Alam, A. Ash-Saki, **J. Li**, A. Chattopadhyay, S. Ghosh. (2020). Noise Resilient Compilation Policies for Quantum Approximate Optimization Algorithm. International Conference on Computer-Aided Design (ICCAD). (Invited paper)

C3. **J. Li**, S. Ghosh. (2020). Quantum-soft QUBO Suppression for Accurate Object Detection. European Conference on Computer Vision (ECCV).

C2. **J. Li**, N. Gattu, S. Ghosh. (2020). FAuto: An Efficient GMM-HMM FPGA Implementation for Behavior Estimation in Autonomous Systems. International Joint Conference on Neural Networks (IJCNN).

C1. **J. Li,** M. Alam, A. Ash-Saki, S. Ghosh. (2020). Hierarchical Improvement of Quantum Approximate Optimization Algorithm for Object Detection. International Symposium on Quality Electronic Design (ISQED). (Invited paper)

J1. **J. Li**, Q. Ma, A. Chan, & S. Man. (2019). Health Monitoring through Wearable Technologies for Older Adults: Smart Wearables Acceptance Model. Applied Ergonomics. (2019) 162-169.

Work Experiences

Pennsylvania State University 05/2019 - Present
Research Assistant *State College, PA*
Advisor: Swaroop Ghosh
1. ***Optimization****:* Formulated bounding box suppression of object detection as QUBO problem and utilized hybrid quantum-classical quantum approximation optimization algorithm for redundant detection suppression.
2. ***Computer Vision****:* We developed a new hybrid algorithm, Quantum-soft-QS, by harnessing quantum

supremacy, for improving object detection accuracy compared to traditional non-maximum suppression.
3. ***Autonomous Vehicles****:* Holistically introduced the application of Hidden Markov Model with Gaussian emissions for driving behavior estimation of autonomous vehicles and designed a customized FPGA system on chip for speedup and better power efficiency.

Pennsylvania State University 01/2019 – 05/2020
(Head) Teaching Assistant, CMPSC 360 Discrete Mathematics *State College, PA*
Hold weekly recitation classes and office hours.

Matrix Auto Technology Ltd 10/2018 – 12/2018
A.I. Software Engineer (Autonomous Driving) *Hong Kong*
Advisor: Jean Lam
MAT is a startup company providing self-driving car solutions and services.
1. Participated in developing vehicle localization using particle filter, based on initial location from sensors.
2. Designed self-driving car workflow prototype based on paper review on environmental perception, localization, path planning, prediction, and control.

ASM Pacific Technology Ltd 07/2018 – 10/2018
Process Engineer (R&D) *Hong Kong*
Advisor: Damon Deng, Pak Kin Leung
ASMPT is a leading integrated solution provider in semiconductor and electronics industries.
1. Pre-processed images taken from silicone pads for recognizing wafer ID by Photo OCR pipelines.
2. Coordinated with control, mechanical, software and vision teams for making machine improvements.
3. Conducted research and development in computer vision and application for visual inspection.

City University of Hong Kong 07/2016 – 12/2018
P/T Research Assistant *Hong Kong*
Advisor: Alan Chan
Department of System Engineering and Engineering Management
1. Took part in several research projects associated with Human Factors, Data Analytics, and Machine Learning in fields of risk-taking behaviors of construction workers, and health technology.
2. Designed the research processes, proposed suitable research methods, and applied research grant as co-I.

Professional Services

Reviewer for IEEE Transactions on Mobile Computing
Sub-reviewer for Design Automation Conference
Sub-reviewer for International Conference on Hardware/Software Co-design and System Synthesis
Sub-reviewer for International Conference on Computer Design
Sub-reviewer for ACM/International Symposium on Low Power Electronics and Design

Honors and Awards

Self-driving Car Engineer Nanodegree, Udacity	2020
Distinction, City University of Hong Kong	2016
Outstanding Student Thesis Award, Qingdao University	2015
Excellent Student Award, Qingdao University	2013
Merit Scholarships, Qingdao University	2011 - 2013

Technical Skills

Programming Languages: Python, C/C++, MATLAB, Java, R
Deep Learning Toolboxes: Pytorch, Tensorflow, Caffe, OpenCV
Hardware: Verilog, High-level Synthesis