

# Muqiao Yang

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## EDUCATION

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**Carnegie Mellon University**

**Aug 2018-present**

M.S. in Electrical and Computer Engineering

**GPA:** 4.00/4.00

*Courses:* ML with large datasets, Multimodal ML, Optimization, Probabilistic Graphical Model

**The Hong Kong Polytechnic University**

B.E. in Electronic and Information Engineering

**Sept 2014-May 2018**

Minor in Computer Science

**GPA:** 3.76/4.00 with 1st Class Honor

## RESEARCH EXPERIENCES

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**Multimodal Reinforcement Learning** | Research Assistant

**May 2019-present**

*Advisor:* Dr. Ruslan Salakhutdinov, Machine Learning Department, CMU

- Developing multimodal reinforcement agent with RGB and depth in ViZDoom environment.

**Complex Time Series Analysis** | Research Assistant

**Oct 2018-May 2019**

*Advisor:* Dr. Ruslan Salakhutdinov, Machine Learning Department, CMU

- Developed complex valued transformer to apply on complex signal to perform sequence prediction and generation.

**Adversarial Learning on Diabetic Retinopathy Segmentation** | Research Assistant **Sept 2018-Apr 2019**

*Advisor:* Dr. Asim Smailagic, College of Engineering, CMU

- Improved lesion segmentation for diabetic retinopathy by adversarial learning on HedNet.

**Large-scale Graph Analytics and Processing** | Research Intern

**May 2018-Jul 2018**

*Advisor:* Dr. Shimin Chen, State Key Lab of Computer Architecture, Institute of Computing Technology, Chinese Academy of Sciences

- Developed PAST, a framework for efficient Partitioning and query processing of Spatial-Temporal graphs with Apache Cassandra and Apache Spark.

**Hadoop and Spark for Data Analysis and Machine Learning** | Undergraduate

**Sept 2017-Apr 2018**

*Advisor:* Dr. Man-Wai Mak, The Hong Kong Polytechnic University

- Developed a recommendation system with Gaussian mixture model and non-negative matrix factorization with large-scale Yahoo! datasets on AWS based on MapReduce and Apache Spark.

## **PUBLICATIONS**

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- **Muqiao Yang\***, Martin Q. Ma\*, Dennis Li, Yao-Hung Hubert Tsai, Ruslan Salakhutdinov. Complex Transformer: A Framework for Modeling Complex-valued Sequence. (In submission)
- Qiqi Xiao, Jiaxu Zou, **Muqiao Yang**, Alex D. Gaudio, Kris Kitani, Asim Smailagic, Pedro Costa, Min Xu. Improving Lesion Segmentation for Diabetic Retinopathy using Adversarial Learning, *International Conference on Image Analysis and Recognition, 2019* [\[PDF\]](#)
- Mengsu Ding, **Muqiao Yang**, Shimin Chen. Storing and Querying Large-Scale Spatio-Temporal Graphs with High-Throughput Edge Insertions. *arxiv preprint arXiv:1904.09610, 2019* [\[PDF\]](#)

## **PROFESSIONAL EXPERIENCES**

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**Qualcomm Wireless Communication Technologies (China) Limited** **May 2017-Aug 2017**

- Worked on recognition for a combination of video and natural language signal.

## **PROJECT EXPERIENCES**

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**Robotic Challenge** **Aug 2017**

- Designed a remote-control car with Raspberry Pi using Python to complete tasks including grasping table tennis into specified circle and sensing infrared ray.

**PolyU Hackathon** **Feb 2017**

- Designed a mini-game with Ruby to provide players a simulation experience of life of the disabled.

**Model Implementation of Intelligent Car Park System** **Sept 2016-Apr 2017**

- Developed a system to compute the optimal parking location, remote control to achieve the data transmission between control center, and elevator operations.

## **EXTRACURRICULAR ACTIVITIES**

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**Promotion Officer of PolyU Zonta Club** **Sept 2015-May 2016**

- Organized and promoted activities of voluntary service for elders and children in Hong Kong.

**Technology beyond Borders** **May 2015-Jun 2015**

- Designed and installed LED boards and storage batteries for local residents in Cambodia village.

## **AWARDS & HONORS**

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- Dean's Honor List **2017, 2016, 2015**
- Second Prize & CC-Link Special Award in the 11th "Mitsubishi Electric Cup" National Electric and Automation Contest for College Students **2017**
- 2<sup>nd</sup> Runner up, Robotic Challenge **2016**

## **SKILLS**

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- Software & Toolbox PyTorch, Torch, TensorFlow, CUDA, cuDNN, Keras
- Programming Languages C, C++, Java, html5, php, JavaScript, Python, MATLAB