Qiyao Xue

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EDUCATION

The Hong Kong Polytechnic University (PolyU), Hong Kong. Sep 2019 – Jun 2023

BEng in Electrical Engineering (GPA: 3.74/4.3, ranking: top 2%, 11 awards received, 2 dean lists)

Minor in Applied Mathematics (GPA: 3.86/4.3)

University of Maryland, USA Jan 2022 - Jun 2022

Exchange Program in Electrical and Computer Engineering, 2 students selected in PolyU

University of Cambridge, UK Jul 2021 - Aug 2021

Engineering Summer Program, 4 students selected in department

INTERNSHIP EXPERIENCE

Research Assistant, Professor Qi Dou's Lab, The Chinese University of Hong Kong, HK Jul 2023-present

Project: Federated Learning in Medical image Analysis

- Developed a competition model backbone based on **nnUnet**, **TransUnet** and **SwinUnet** for multi-organ segmentation, and **ViT** for multi-disease detection, achieving 0.94 mean accuracy in segmentation and 0.91 mean accuracy in classification

Front End Developer, User Experience Design Division, Hazedawn Ltd., HK May 2022-Jul 2022

- Designed a dynamic and browser compatible page system using **HTML5**, **CSS3** and **JavaScript**
- Built multiple page applications and responsive web design, developed the UI by **HTML5** grid layouts and **CSS3** media queries, added responsive features through JavaScript functions

Electrical Engineer, Automated Operation Div., State Grid Corp. of China, Harbin Aug 2020-Nov 2020

- Developed a computer program (**PLC**) for user management, voltage monitoring and equipment status tracking etc.
- Provided corrective action by driving to the root cause to ensure high quality test results, along with continuously improving test system assets and processes to enable efficient test execution

RESEARCH PROJECTS

Senior (Final Year) Project, Department of Electrical Engineering, PolyU Sep 2022-May 2023

Project: Electrical Energy Forecasting Based on Federated Learning in Edge Computing System

- Proposed and implemented a transfer learning approach of model personalization in federated model training process for energy forecasting in smart meters system as well as a collaboratively worked **CNN-BiLSTM** deep neural network developed by **PyTorch** framework
- Analyzed the effectiveness of the proposed model structure with the personalized federated training approach by comparing various baseline models under different model training approach in terms of training loss and energy forecasting accuracy, around 30% decrease in RMSE compared with baseline models was achieved
- Deployed the whole personalized federated learning system with the **CNN-BiLSTM** model on the Raspberry Pi system for energy forecasting, developed a web application based on **Flask** framework

Undergraduate Research Innovation Scheme, PolyU Jul 2021-May 2023

Project: Hollow-core fiber gas sensor based on Raman photothermal spectroscopy

- Conducted theoretical modeling (**MATLAB**, **COMSOL**) of phase modulation due to stimulated Raman dispersion and evaluated the potential performance of the stimulated Raman dispersion based the hollow-core fiber sensors
- Used a single pump laser with a fixed nominal wavelength and a wavelength-tunable probe laser scanning across the Raman transitions of multiple gases to perform multi-component gas detection

Summer Camp on Robot Learning, PolyU Jun 2022-Sep 2022

Project: Emotion recognition for Huma-Robot-Interaction with visual and audio data

- Developed a server-client system to transmit audio video data flow as an AI model deployment platform for the intelligent HRI experiments using **Python-Flask** framework
- Designed and programmed the robot interaction movement on the Raspberry Pi with Python
- Developed and deployed video model based on **AlexNet** and audio model based on **LSTM** algorithm using **PyTorch**

NUS SOC 2022 Summer Workshop, National University of Singapore (NUS) Jun 2022-Aug 2022

Project: Forecasting directional movement of stock price based on financial news

- Implemented a hybrid deep learning model combining **Word2Vec** and **LSTM** algorithms using **PyTorch**
- Developed fintech web applications using modern web application frameworks **ReactJS, Python-Flask** and basic DB operations with **SQLite**

Team leader, Green Energy in Future City Competition, HK Electric Sep 2021-Jun 2022

Project: Piezoelectric vibration energy harvester used on railway and bridge

- Led a four people competition team with 6387.05 USD project funding
- Performed simulations on **SSHI** (Synchronized Switch Harvester on Inductor) and **SSPB** (Single-Supply Pre-biasing) power electronic interface used in vibration energy harvesters using **MATLAB & Simulink**
- Constructed power electronic circuit and corresponding microcontroller codes to control the energy harvesting process

HONORS & AWARDS

- Outstanding Student Award (Top 1), Electrical Engineering Department, PolyU 2023
- President Emeritus Professor Poon Chung-kwong Scholarship (Top 2, 6387 USD), PolyU 2022
- Wong Ti-shing Student Exchange Scholarship (Top 4, 6387 USD), PolyU 2022
- Undergraduate Research Innovation Scheme Scholarship (6387 USD), PolyU 2022
- Undergraduate Summer Research Abroad Scheme (Top3, 1277 USD), PolyU 2022
- HKSAR Government Scholarship Fund-Reaching Out Award, HK Education Bureau 2022
- VTech Group of Companies Scholarship (Top 4, 1022 USD), PolyU 2022
- Merit Award of Green Energy in Future City, HK Electric Company 2022
- Professor Leung Tin-pui Memorial Scholarship (Top 2, 6387 USD), PolyU 2021
- Dean's Honors List, College of Engineering, PolyU 2021
- Second Runner-up of Freshman Seminar Project Competition 2021

EXTRA CURRICULUM ACTIVITIES

- Member, Robot Club, PolyU, HK Aug 2019-Aug 2023
- Member, Engineer Entrepreneur Club, PolyU, HK Aug 2020-Aug 2021
- Social Service Project in Si Chuan, Shi Fang, China Jun 2021-Aug 2021
- Planner, Explore Hong Kong Club Trip, PolyU, HK Jun 2020-Sep 2020
- Teach Your Mate Activity, Electrical Engineering Department, PolyU, HK Feb 2020

SKILLS

- Python (PyTorch, NumPy, MONAI, Flask), C, C++, JavaScript, HTML, CSS, MATLAB, SQL, LaTeX