

# Xiaowei Chi

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## EDUCATION

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### Queen Mary University of London

*Bachelor of Science in Internet of Things Engineering*

London, United Kingdom

*Sep. 2017 – July 2021*

### Beijing University of Posts and Telecommunications

*Bachelor of Science in Internet of Things Engineering*

Beijing, China

*Sep. 2017 – July 2021*

Major GPA: 3.88/4.0

## EXPERIENCE

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### Undergraduate Research Project leader

Sep. 2019 – Sep. 2020

*Beijing University of Posts and Telecommunications*

[\*project page\*](#)

- Organized the paper as the first author and completed the Our Approach and Introduction part of the paper.
- Led the team to build a protocol of grasping system by a Two-finger robotic arm, organized team discussion and arranged project schedule, problem analysis, fund and final achievement exhibition.
- Proposed a fine-tune training method to obtain data under a complex environment, preprocessed original data by OpenCV and conducted mathematical analysis to the verified problem of high error recognition probability.
- Proposed the LCT-Net method by Python(Pytorch) to improve above 14.5% than baseline methods in average accuracy under the conditions of dim lights, dirty background, and blurred images.

### Deep Learning Quantization Part-time Research Assistant

July 2019 – Present

*Tsinghua University*

[\*project page\*](#)

- Wrote the manuscript of this work, which is expected to be published on January as the first author.
- Applied the signal processing in deep learning to reduce 90% memory cost of training theoretically by proposing a framework for training a ResNet without batch normalization under 8-bit INT data stream and single data input.
- Derived quantization functions and used the Jacobian matrix to achieve gradient norm by replacing batch normalization with proper initialization.
- Implemented this framework in Pytorch and compared the result by increasing the accuracy of our approach to 66.67%, 7.69%, 4.7%, 2.7%, higher than ResNet in small batch size(1, 2, 4, 8) respectively.

### Control Theory Part-time Research Assistant

Feb. 2020 – Oct. 2020

*Beijing University of Posts and Telecommunications*

[\*project page\*](#)

- Determined the back electromotive force constant and resistance, by performing curve fitting on MATLAB for the voltage, current, and linear speed parameters among them through Kirchhoff Law and Laplace's equation.
- Implemented impedance control by utilizing the Simulink slide rail to control the motor movement and adjusting the three parameters of inertia, damping, and stiffness to change the impedance effect.
- Built a simulation model of the linear motor on Simulink to provide simulated data for further research.
- Advised on the future development of the motor, including adding over current protection and adjusting signal filter to the manufacture of robot hand based on the linear motor.

## SKILLS

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- **Profession in:** MATLAB, Simulink, PyTorch, TensorFlow, OpenCV, Linux, C++, Java, Python
- **Experience with:** ROS, OpenAI, AUTOCAD, Unity 3D, C#

## REWARDS

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- Best project (1%) in College Students Innovation and Entrepreneurship Competition, 2020
- Best project (5%) in Young Wild Goose Plan Competition, 2019
- Second-Class Prize (10%) in Paleontology Speech Contest of Beijing, 2019
- BUPT Scholarship, 2019

## PUBLICATIONS

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- Yuting Xie, **Xiaowei Chi**, Haiyuan Li, Fuwen Wang. Coal and Gangue Recognition Method Based on Local Texture Classification Network. IEEE Robotics and Automation Letters (RA-L and ICRA). (under review)