# Dong He

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## EDUCATION

**University of Washington**, **Ph.D. in Computer Science** — Seattle, USA
- Advisor: Prof. Magdalena Balazinska — Sep 2019 – present

**Fudan University**, **B.Sc. in Computer Science (Honors)** — Shanghai, China
- Cumulative GPA: 3.6 / 4.0, School Rank: 6 / 118 — Sep 2015 – Jul 2019

**University of Birmingham**, **Exchange Undergraduate Student** — Birmingham, UK
- First Class Honors' Grades — Sep 2017 – Dec 2017

## RESEARCH EXPERIENCE

**Optimizing the Prediction of Real-Time Taxi Demand with External Information** — Fudan University

Advisor: Prof. Yang Chen — Sep 2018 – present

- Research Assistant at the Mobile Systems and Networking Group
- Proposed a deep learning-based approach which incorporates user check-in data from a Location-Based Social Network to optimize the prediction of the taxi demand in different regions at different time.
- Integrated the taxi trip data with around 1 million user check-ins collected from the Swarm App, and applied a state-of-the-art Phased Long Short-term Memory network for modeling.
- Evaluated our approach on a real-world taxi dataset that contains more than 35 million taxi trip records. The results show that our approach outperforms other prediction methods by a significant improvement with regard to the MAPE and RMSE metrics. Compared to the traditional LSTM method that does not integrate external information, our method achieves 21.27% lower MAPE and 6.96% lower RMSE.

**FPGA-Based Edge Computing for the Acceleration of Mobile Applications** — Peking University

Advisor: Prof. Chenren Xu — Jul 2017 – Aug 2017

- Research Assistant at the Center for Energy-efficient Computing and Applications
- Leveraged the advantages of both edge offloading and FPGA-based computational acceleration, to make the first attempt to propose the FPGA-based edge computing model, which can effectively reduce the response time and energy consumption of interactive mobile applications.
- Designed and implemented a proof-of-concept FPGA-based edge computing system, and conducted experiments in a case study using 3 computer vision-based interactive applications desigend by us.
- The experimental results demonstrate that our system can reduce the response time and execution time by up to 3x/15x respectively over CPU-based edge/cloud offloading and achieve up to 29.5%/16.2% improvement on energy efficiency respectively on mobile device/edge nodes.

## PUBLICATIONS

**Incorporating External Information in the Prediction of Real-Time Taxi Demand with Deep Learning**
- **Dong He**, Yang Chen, Yu Xiao, Pan Hui
- In Submission.

**Accelerating Mobile Applications at the Network Edge with Software-Programmable FPGAs** [PDF]
- Shuang Jiang, **Dong He**, Chenxi Yang, Chenren Xu, Guojie Luo, Yang Chen, Yunlu Liu, Jiangwei Jiang
- Proc. of IEEE International Conference on Computer Communications (INFOCOM'18), Honolulu, HI, USA, Apr. 2018. (Acceptance ratio: $309/1606 = 19.24\%$)

**Incorporating Location Based Social Networks in the Prediction of Real-Time Taxi Demand with Deep Learning** [PDF]
- **Dong He**, Yang Chen
- Poster Session of the 14th International Conference on emerging Networking EXperiments and Technologies (CoNEXT'18), Heraklion, Greece, Dec. 2018.

## WORK EXPERIENCE

**Goldman Sachs**, **Technology Summer Analyst** — Hong Kong, China
- Worked for the Asia Product Accounting and Risk Analysis Team. — Jul 2018 – Sep 2018

- The Global Winner for Goldman Sachs 2018 Intern Engineering Challenge.
- Designed and implemented a course recommendation system using the idea of collaborative filtering.
- Re-designed and re-implemented the whole Java logic of the True-Up job which reconciles the estimated PnL (profit and loss) with the actual PnL. My enhancement enables the True-Up job to resume from where it failed, and saves considerable memory usage, which significantly reduces the chances of job failures.

**Tencent**, **Technology Intern** Shenzhen, China

- Worked at YouTu Lab led by Prof. Jiaya Jia and Prof. Yu-Wing Tai. Jan 2018 – Feb 2018
- Analyzed the liveness and dependencies of the nodes in the neural networks, and reduced the memory consumption of such models in real-world products by adopting memory sharing strategies.
- Developed tools for the collection and annotation of large-scale image data, and collected massive image data for the training of an image classification model in real-world products.

**SELECTED AWARDS**

- Paul G. Allen Fellowship, Paul G. Allen School of Computer Science & Engineering 2019
- Outstanding Undergraduate Graduates, Shanghai Region 2019
- Honors Student Award, Top Talent Undergraduate Training Program, Fudan University 2019
- Wangdao Scholar, Undergraduate Research Opportunities Program, Fudan University 2018
- Elite, Liu Yong-Ling (First Class) Scholarship, Fudan University 2017
- First Prize, Honor Program Scholarship, Fudan University 2017
- First Prize, the National Mathematical Contest in Modeling, Shanghai Division 2016
- Second Prize, the National Mathematical Contest in Modeling, National Finals 2016
- Silver Medal, the ACM International Collegiate Programming Contest, Asia Regional 2015
- Silver Medal, National Olympiad in Informatics, National Finals 2014
- First Prize, National Olympiad in Informatics, Guangdong Division 2009 – 2014

**PROFESSIONAL SKILLS**

- **Programming Languages:** C/C++, Java, Python, C#, MATLAB, ...
- **Deep Learning Libraries:** PyTorch, Caffe, Tensorflow, Keras, ...
- **Others:** SQL, LaTeX, Git, SVN, Gnuplot, ...

**LANGUAGE PROFICIENCY**

- Mandarin: Native language
- Cantonese: Native language
- English: Full Professional Proficiency
  - TOEFL iBT: 117 (Reading: 29, Listening: 30, Speaking: 30, Writing: 28)