

## Bowen WU

Website : [bowenforgit.github.io](http://bowenforgit.github.io)  
Github : [github.com/BowenforGit](https://github.com/BowenforGit)

[bowenwu9885@163.com](mailto:bowenwu9885@163.com)  
(+852) 5224-5750

EDUCATION	<b>The Chinese University of Hong Kong (CUHK)</b> , Hong Kong <i>Bachelor of Science (BSc), Computer Science</i> Sep 2016 – May 2020 (Expected) <div>cumulative-GPA: 3.77/4.00 major-GPA: 3.85/4.00</div>
	<b>ETH Zurich</b> , Switzerland <i>Exchange Student, Computer Science</i> Feb 2019 – Aug 2019 GPA: 5.15/6.00
RESEARCH EXPERIENCE	<b>Distributed Graph Database</b> <b>Sep 2019 - Now</b> <i>Advisor: Prof. James Cheng</i> <b>CUHK</b> <ul style="list-style-type: none"><li>• Design and implement high-performance distributed algorithms for advanced query operators over large-scale property graphs for OLAP workload</li><li>• Optimize graph query plan</li></ul> <b>Technology/Tools:</b> <i>Graph database, Gremlin, C++, MPI, RDMA, ZeroMQ</i>
	<b>Fairness in Machine Learning</b> <b>June - Nov 2019</b> <i>Advisor: Prof. Pulkit Grover</i> <b>Carnegie Mellon University</b> <ul style="list-style-type: none"><li>• Developed a novel information theoretic measurement for fairness</li><li>• Incorporated information-theoretic fairness in machine learning models</li><li>• Designed a real-world news feed system to fix the “echo chamber”</li></ul> <b>Technology/Tools:</b> <i>Information theory, Optimization, Causal reasoning</i>
	<b>Partial-shuffling SGD Algorithm</b> <b>Mar - May 2019</b> <i>Advisor: Prof. Ce Zhang, Kaan Kara (PhD)</i> <b>ETH Zurich</b> <ul style="list-style-type: none"><li>• Optimized the partial-shuffling SGD implementation using AVX instructions and memory prefetch techniques and halved the execution time</li><li>• Added a new feature of automatic optimal parameters inference</li></ul> <b>Technology/Tools:</b> <i>C++, AVX instructions</i> <b>Code:</b> <a href="https://github.com/BowenforGit/Partial-Shuffling-SGD">https://github.com/BowenforGit/Partial-Shuffling-SGD</a>
	<b>Large Scale Similarity Search</b> <b>May - Dec 2018</b> <i>Advisor: Prof. James Cheng</i> <b>CUHK</b> <ul style="list-style-type: none"><li>• Profiled state-of-the-art similarity search algorithms and identified respective defects</li><li>• Accommodated the HNSW algorithm to the maximum inner product search problem</li></ul> <b>Technology/Tools:</b> <i>Advanced data structures, Searching techniques</i>
	<b>PUBLICATION</b> <b>Bowen WU</b> , Chenyu Jiang, Sanghamitra Dutta, Pulkit Grover, “Burst the Bubble: Debiasing Recommendation Systems While Allowing for Chosen Category Exemptions”, <i>to be submitted to ICML</i> .  Hongzhi Chen, <b>Bowen WU</b> , Shiyuan Deng, “High Performance Distributed OLAP over Property Graphs with Grasper”, <i>submitted to Sigmod demo track</i> .
PROJECTS	<b>Stanford Pintos Operating System</b> Implemented a small but complete operating system with four main functions: Synchronization, User Program Execution, Memory Management and File System. <b>Technology/Tools:</b> <i>C, Assembly, GDB, Emulator</i>

## Deep Learning on Graph Structures

Compared two state-of-the-art structured graph embedding methods, i.e., Mean-Field Inference and Loopy Belief Propagation. Designed a neural network for classifying drug efficacy based on embedding vectors and achieved >90% accuracy.

**Technology/Tools:** *Statistical learning, Deep neural network, PyTorch*

## Deadline Fighter: Mini-program

Developed a WeChat mini-program, "Deadline Fighter" to facilitate online collaboration. Worked as the team leader and back-end engineer.

**Code:** <http://github.com/BowenforGit/weChat>

### TECHNICAL SKILLS

**Languages :** Python, C++17, C, Java, Matlab, Minizinc

**Databases :** PostgreSQL, MongoDB

**Tools :** OpenMP, MPI, RDMA, ZeroMQ, AVX, Tensorflow, PyTorch, CMake

### GRADUATE COURSES

- Matrix Analysis and Computation
- Statistical Learning Theory
- Principles of Distributed Computing
- Foundations of Optimization
- Combinatorial Search and Optimization with Constraints
- Advanced Data Structure (*in progress*)

### HONOR AWARDS

• **Arthur and Louise May Scholarship** **March 2019**  
*Granted by: Arthur and Louise May Memorial Fund (50K HKD)*

• **Charles K.Kao Summer Research Internship** **Dec 2018**  
*Granted by: Faculty of Engineering, CUHK (46K HKD)*

• **Dean's List** **Mar 2018 and Feb 2019**  
*Granted by: Faculty of Engineering, CUHK*

• **Computer Science Scholarship** **Apr 2018**  
*Granted by : Department of Computer Science, CUHK (50K HKD)*

• **Elite Stream Scholarship** **Sep 2017-19**  
*Granted by: Faculty of Engineering, CUHK (Cumulative 44K HKD)*

• **Soong Ching-ling Zhiyuan Scholarship** **Sep 2016**  
*Granted by: Soong Ching-ling Foundation (223K HKD)*

### CERTIFICATE

• **TOEFL Score: 108** **Jan 6, 2019**  
*Reading: 29, Listening: 27, Writing: 27, Speaking: 25*

• **GRE Score: 327+4** **Sep 20, 2019**  
*Verbal: 157 (76%); Quantitative: 170 (96%); Writing: 4 (57%)*

• **Saxophone Grade 9**  
*First Prize of Beijing, National Excellence Award*

### ADDITIONAL ACTIVITIES

• Vice-president of Morning Run Club, CUHK **Sep 2017 - Sep 2018**  
• Editor of Real Estate Investment Club, CUHK **Sep 2016 - Sep 2017**