Bowen WU

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EDUCATION

The Chinese University of Hong Kong (CUHK), Hong Kong
Bachelor of Science (BSc), Computer Science   cumulative-GPA: 3.77/4.00
Sep 2016 – May 2020 (Expected)   major-GPA: 3.85/4.00

ETH Zurich, Switzerland
Exchange Student, Computer Science
Feb 2019 – Aug 2019   GPA: 5.15/6.00

RESEARCH EXPERIENCE

Distributed Graph Database   **Sep 2019 - Now**
Advisor: Prof. James Cheng   ***CUHK***
- Design and implement high-performance distributed algorithms for advanced query operators over large-scale property graphs for OLAP workload
- Optimize graph query plan

Technology/Tools: *Graph database, Gremlin, C++, MPI, RDMA, ZeroMQ*

Fairness in Machine Learning   **June - Nov 2019**
Advisor: Prof. Pulkit Grover   ***Carnegie Mellon University***
- Developed a novel information theoretic measurement for fairness
- Incorporated information-theoretic fairness in machine learning models
- Designed a real-world news feed system to fix the "echo chamber"

Technology/Tools: *Information theory, Optimization, Causal reasoning*

Partial-shuffling SGD Algorithm   **Mar - May 2019**
Advisor: Prof. Ce Zhang, Kaan Kara (PhD)   ***ETH Zurich***
- Optimized the partial-shuffling SGD implementation using AVX instructions and memory prefetch techniques and halved the execution time
- Added a new feature of automatic optimal parameters inference

Technology/Tools: *C++, AVX instructions*
Code: *https://github.com/BowenforGit/Partial-Shuffling-SGD*

Large Scale Similarity Search   **May - Dec 2018**
Advisor: Prof. James Cheng   ***CUHK***
- Profiled state-of-the-art similarity search algorithms and identified respective defects
- Accommodated the HNSW algorithm to the maximum inner product search problem

Technology/Tools: *Advanced data structures, Searching techniques*

PUBLICATION

Bowen WU, Chenyu Jiang, Sanghamitra Dutta, Pulkit Grover, "An Information-Theoretic Measure for Enabling Category Exemptions with an Application to Filter Bubbles", *in review.*

Hongzhi Chen, **Bowen WU**, Shiyuan Deng, "High Performance Distributed OLAP over Property Graphs with Grasper", *in review.*

PROJECTS

Stanford Pintos Operating System
Implemented a small but complete operating system with four main functions: Synchronization, User Program Execution, Memory Management and File System.

Technology/Tools: *C, Assembly, GDB, Emulator*

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**