



Haoran QIU

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EDUCATION

The University of Hong Kong (HKU) **Hong Kong**
B.Eng. in *Computer Science* | Minor in *Mathematics* **Sept.2015-May.2019 (Expected)**

- CGPA: **3.81/4.30 (Rank: 8/111)** Major GPA: **4.0/4.3**
- Core courses: *Data structures & Algorithms, Computer Organization, Operating Systems, System Architecture and Distributed Computing, Database Systems, Object-oriented Programming, Linear algebra, Probability & Statistics, Discrete Mathematics, Artificial Intelligence*
- **Teaching Assistant:** COMP 2396 *Java and Object-oriented Programming* (Fall 2017)

University of Wisconsin - Madison **WI, USA**
Visiting Student, College of Engineering **Jan.2018-May.2018**

- CGPA: **4.00/4.00** Major GPA: **4.00/4.00**
- Courses: *Advanced algorithms, Computer Networks, Intro to Optimization, Analysis I*

PUBLICATION

- [1] Shixiong Zhao, Rui Gu, **Haoran Qiu**, Tsz On Li, Yuexuan Wang, Heming Cui, and Junfeng Yang, [*OWL: Understanding and Detecting Concurrency Attacks*](#), Proceedings of the 48th IEEE International Conference on Dependable Systems and Networks 2018 (**DSN'18**), Luxembourg
- [2] Cheng Wang, Xusheng Chen, Weiwei Jia, Boxuan Li, **Haoran Qiu**, Shixiong Zhao, and Heming Cui, [*PLOVER: Fast, Multi-core Scalable Virtual Machine Fault-tolerance*](#), Proceedings of the 15th USENIX Symposium on Networked Systems Design and Implementation 2018 (**NSDI'18**), USA

RESEARCH EXPERIENCE

Interests: *Distributed Systems, Networks, Operating Systems*

[*WiNGS Lab*](#), **University of Wisconsin - Madison** **WI, USA**
Undergraduate Research Assistant, Supervised by Prof. [Suman Banerjee](#) **Jan.2018 – Apr.2018**

Vivid: Indoor Navigation System with SLAM and Edge Computing [Ongoing].

- Developed back-end by using elastic search to make image storage and search scalable and faster.
- Performed evaluation of bandwidth comparison between cloud and edge computing.

AutoMice: Self-driving Car Test Bed: Augmenting Self-Driving with Remote Control. It is a new alternative solution to the self-driving function failure [[Paper](#)].

- Developed and evaluated different object detection modules and algorithms, like mean square error method, cascade classifier and YOLO, used to evaluate the system.
- Based on the property of points in a polygon (a ray starts from the point inside a polygon should have odd number of intersections), designed algorithms for collision avoidance and detection.
- Collaborated with teammates to present the self-driving car demo in the workshop ACM HotMobile 2018, Tempe, Arizona.

Systems Research Group, the University of Hong Kong **Hong Kong**
Undergraduate Research Assistant, supervised by Prof. [Heming Cui](#) **Aug.2017 – Present**

PLOVER: the first Virtualized State Machine Replication (VSMR) system to achieve fast and multi-core scalable VM fault-tolerance.

- Designed an algorithm to determine the optimal time to synchronize between two VMs: synchronize when CPU usage or I/O usage is above a bar set based on the idle stage. Compared to without considering resource usage, the latency is improved by around 25% in various systems.
- Evaluated our system on various applications like MySQL, PostgreSQL, Redis, and Tomcat.

OWL: Understanding and Detecting Concurrency Attacks: OWL is the first practical tool that models general concurrency attacks' implicit consequences and automatically detects them.

- Designed and simplified the overall model by extracting key steps from different parts of the system.
- Evaluated OWL on MySQL, Apache and Linux Kernel.

Successfully published the 2 papers as co-author in top conferences **NSDI'18** and **DSN'18** respectively.

WORK EXPERIENCE

Credit Suisse Group

Software Engineer Intern, Risk IT Department

Hong Kong

Jun.2018 – Aug.2018

- Chinchilla: A big data system for risk information storage and processing:
 - Developed pipeline for data compression and zero stripping, which improved storage 4-5 times;
 - New feature to the project: Developed multi-risk report designer using React-Redux;

Hututa Technology Ltd.

R&D Software Engineer Intern

Hong Kong

July.2017 – Aug.2017

- Data Thinker: A distributed data processing system for extending data processing ability of programs:
 - Extended the API for a biology gene mapping program called Stampy, which is 10 times faster;
 - Developed a network monitor system and added dynamic DNS update function;

PROJECT EXPERIENCE

JPoker 24-Game: Distributed Systems Course Project [[Code](#)]

Mar.2017

- Server-client communication is implemented using RMI & JMS, where broadcast-subscribe model is used for efficiency. Game logic is assured by asynchronous message delivery.

Final Year Project [Ongoing]

Sept.2018-Present

- Fast Blockchains on Intel SGX Facilitated Peer-to-Peer Network, supervised by Dr. [Heming Cui](#)
Paper in preparation: Haoran Qiu, Tao Ji, Shixiong Zhao, Heming Cui. Proceedings of the 2018 USENIX Annual Technical Conference (ATC '18)

HONOR & AWARDS

- **Visiting International Student Academic Excellence Award**, UW-Madison **July.2018**
- **Lee Shau Kee Scholarship**, Department of International Affairs, HKU (Top 3%) **Feb.2018**
- **Honorable Mention in Mathematical Contest In Modeling**, COMAP **Feb.2017**
- **Dean's Honors List**, Faculty of Engineering, HKU (Top 5%) **Feb.2016**
- **HKU Foundation Scholarship For Outstanding Student**, HKU **Sept.2015-May.2019**

SKILLS & LANGUAGES

- **Programming Languages:** C/C++, Java, Python, JavaScript(AngularJS, React, Vue.js), HTML, CSS, PHP, SQL, Swift, Haskell, Matlab, Julia
- **Tools:** GNU/Linux, OpenCV, Git, Jupyter, WireShark, LaTeX, Markdown, Arduino, Gnuplot, Django