HOU, Ruomu

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02-08, Computing 3, 11 Research Link, 119391, Singapore

EDUCATION

• **National University of Singapore** *Jan 2019 - Jan 2025*
Post-graduate Singapore
  ◦ Ph.D in Computer Science

• **National University of Singapore** *Aug 2014 - Dec 2018*
University (Double Degree Program) Singapore
  ◦ Bachelor Degree - Computer Science (First Class Honors)
    ∗ Turing Program (A research-focused program)
    ∗ GPA: 4.91/5.00
  ◦ Bachelor Degree - Mathematics (First Class Honors)
    ∗ GPA: 4.89/5.00

• **Hwa Chong Institution** *Jan 2010 - Dec 2013*
Secondary School & Junior College Singapore
  ◦ Diploma with Distinction (Top 1% of the national cohort)

RESEARCH INTERESTS

Interest: **Distributed System Security, Blockchains, Distributed Algorithms**

My research interests lie in the broad field of distributed computing. Many of my contributions focus on blockchains, where permissionless participation and the large scale of the system introduce many new challenges and opportunities. For example, I was the first to propose a practical blockchain that can tolerate more than 50% adversarial nodes, a concept once thought impossible by many. On distributed algorithms apart from blockchain, I have designed novel algorithms that operate under emerging computational models, such as dynamic networks.

HONORS AND AWARDS

• **Research Achievement Award** *Jan 2023*
National University of Singapore
  ◦ Awarded to PhD students with outstanding research performance over the academic year

• **IEEE Distinguished Paper Award on Dependable Computing** *Oct 2023*
IEEE Pacific Rim International Symposium on Dependable Computing (PRDC'23)
  ◦ Yucheng Sun, **Ruomu Hou**, and Haifeng Yu, *"Using Multi-dimensional Quorums for Optimal Resilience in Multi-resource Blockchains."*

• **NUS Research Scholarship** *2020*
National University of Singapore
  ◦ Tenable for 4 years of PhD study, subsidizing tuition fees with monthly stipend

• **Valedictorian** *2019*
School of Computing, National University of Singapore

• **Lijen Industrial Development Medals** *2019*
National University of Singapore
  ◦ Awarded to the honours year students with the best academic exercises/projects

• **Dean's List Awards** *2014 - 2018*
National University of Singapore
  ◦ 2015/2016 Semester 1, 2015/2016 Semester 2, 2016/2017 Semester 1, 2017/2018 Semester 1, 2017/2018 Semester 2

• **NUS S&T Scholarship** *2014*
National University of Singapore
  ◦ Covers full university tuition fees, housing, and monthly stipend

• **SM1 Scholarship** *2010*
Singapore Ministry of Education
  ◦ Covers full pre-university tuition fees, housing, and monthly stipend

SELECTED PUBLICATIONS C=CONFERENCE, J=JOURNAL

[J.1] [Comput. Networks] **Ruomu Hou**, Haifeng Yu, Yucheng Sun (2024). **SELFIED: Sybil Defense in Permissionless Blockchains via In-Protocol Bandwidth Consumption**. *Computer Networks*, accepted for publication.

[C.1] [PRDC'23] Yucheng Sun, **Ruomu Hou**, Haifeng Yu (2023). **Using Multi-dimensional Quorums for Optimal Resilience in Multi-resource Blockchains**. In *28th IEEE Pacific Rim International Symposium on Dependable Computing, PRDC 2023*. (**Received IEEE Distinguished Paper Award on Dependable Computing.**)

[C.2] [Oakland'23] **Ruomu Hou**, Haifeng Yu (2023). **Optimistic Fast Confirmation While Tolerating Malicious Majority in Blockchains**. In *44th IEEE Symposium on Security and Privacy, SP 2023*.

[J.2] [JPDC] Irvan Jahja, Haifeng Yu, **Ruomu Hou** (2022). **On the power of randomization in distributed algorithms in dynamic networks with adaptive adversaries**. *Journal of Parallel and Distributed Computing*, Vol. 159, 2022.

[C.3] [Oakland'22] **Ruomu Hou**, Haifeng Yu, Prateek Saxena (2022). **Using Throughput-Centric Byzantine Broadcast to Tolerate Malicious Majority in Blockchains**. In *43rd IEEE Symposium on Security and Privacy, SP 2022*.

[C.4] [SPAA'22] **Ruomu Hou**, Irvan Jahja, Yucheng Sun, Jiyan Wu, Haifeng Yu (2022). **Achieving Sublinear Complexity under Constant T in T-interval Dynamic Networks**. In *SPAA '22: 34th ACM Symposium on Parallelism in Algorithms and Architectures*.

[J.3] [ToN] **Ruomu Hou**, Irvan Jahja, Loi Luu, Prateek Saxena, Haifeng Yu (2020). **Randomized View Reconciliation in Permissionless Distributed Systems**. *IEEE/ACM Transactions on Networking*, Vol. 28, 2020.

[C.5] [Euro-Par'20] Irvan Jahja, Haifeng Yu, **Ruomu Hou** (2020). **On the Power of Randomization in Distributed Algorithms in Dynamic Networks with Adaptive Adversaries**. In *Euro-Par 2020: Parallel Processing - 26th International Conference on Parallel and Distributed Computing*.

[C.6] [Oakland'20] Haifeng Yu, Ivica Nikolic, **Ruomu Hou**, Prateek Saxena (2020). **OHIE: Blockchain Scaling Made Simple**. In *2020 IEEE Symposium on Security and Privacy, SP 2020*.

[C.7] [INFOCOM'18] **Ruomu Hou**, Irvan Jahja, Loi Luu, Prateek Saxena, Haifeng Yu (2018). **Randomized View Reconciliation in Permissionless Distributed Systems**. In *2018 IEEE Conference on Computer Communications, INFOCOM 2018*.

TEACHING EXPERIENCE

- **CS4231 Parallel and Distributed Algorithms** *Jan - May 2022*
  Teaching Assistant National University of Singapore
  ◦ Conducted weekly consultation sessions, and helped in preparing other course materials.

- **CS1101S Programming Methodology** *Aug - Dec 2021*
  Teaching Assistant National University of Singapore
  ◦ Developed a graphical programming environment and a web UI for the course.

- **CS3230 Design and Analysis of Algorithms** *Aug - Dec 2018*
  Teaching Assistant National University of Singapore
  ◦ Conducted weekly tutorials, prepared and marked assignments.

- **CS3230 Design and Analysis of Algorithms** *Jan - May 2017*
  Teaching Assistant National University of Singapore
  ◦ Conducted weekly tutorials, prepared and marked assignments.

- **CS3230 Design and Analysis of Algorithms** *Aug - Dec 2016*
  Teaching Assistant National University of Singapore
  ◦ Conducted weekly tutorials, prepared and marked assignments.

ADDITIONAL INFORMATION

Language: Fluent in English, native in Mandarin.

Interests: Carpentry, 3D printing, swimming.

Community Engagement and Leadership: Volunteered at community centers since the onset of COVID-19, organized various student well-being initiatives during PhD program.