

HAO CHUNG (鍾豪)

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WORK EXPERIENCE

Research Assistant

Academia Sinica

09/2019 - Present

Taipei, Taiwan

- Advisor: Prof. Kai-Min Chung
- Designed a protocol for quantum multiparty computation whose round complexity is constant
- Researched on the economic model of blockchains with Prof. Elaine Shi

Blockchain Researcher

DEXON Foundation

09/2018 - 05/2019

Taipei, Taiwan

DEXON Foundation is a blockchain startup aiming to develop a blockchain system based on Proof-of-Stake and Byzantine agreement

- Main contributor for designing the consensus protocol and constructing a mathematical security proof for DEXON blockchain
- Proposed a new metric for evaluating the fairness of blockchain systems [1]

Teaching Assistant

Summer School for Cryptography in Academia Sinica

07/2017 - 08/2017

Taipei, Taiwan

- This school is a six-week intensive course on cryptography for 15 undergraduates, organized by Dr. Chia-Liang Sun
- Led the discussion class and checked students' homework

EDUCATION

National Taiwan University

M.S. in Electrical Engineering

09/2016 - 08/2018

Taipei, Taiwan

- Advisors: Prof. Kai-Min Chung and Prof. Chen-Mou Cheng (co-advised)
- Master's thesis: *Analysis and Comparison of Security Proofs of Quantum Key Distribution*
- Surveyed the current progress of different quantum key distribution systems in the world, supervised by Prof. Bo-Yin Yang and Prof. Jiun-Ming Chen (funded by National Chung-Shan Institute of Science and Technology)

National Taiwan University

B.S. in Physics

09/2012 - 08/2016

Taipei, Taiwan

- Minor in Philosophy
- Designed and conducted an experiment for measuring the reflective signal of seawater, supervised by Prof. Pisin Chen and Prof. Jiwoo Nam [2]
- Participated in data analysis of a dark matter experiment, supervised by Prof. Tsz-King Wong

PUBLICATIONS AND REFERENCES

- [1] Tzu-Wei Chao, **Hao Chung**, and Po-Chun Kuo. Fair byzantine agreements for blockchains. 2019. <https://arxiv.org/abs/1907.03437>.
- [2] **Hao Chung**, Bing-Song Gu, and Zong-You Lou. Reflection signal measurement with LPDA / horn antenna. *manuscript*, 2015.

SKILLS AND ACADEMIC ACTIVITIES

Paper Reviewing

- Reviewed 7 papers (2 for Asiacrypt17, 3 for Qcrypt18, 1 for TCC19, 1 for Eurocrypt20)

Oral Presentation

- Delivered 10+ lectures on cryptography and quantum computing both for industry and academia (c.f. Talks section below)
- Created a 3 minutes animation with Microsoft PowerPoint

Popular Science Writing

I was the external writer for the following media

- *Inside Tech News*: an article on quantum key distribution
- *Science Online*: 7 articles on college physics
- my articles have 68,000+ views in total

Academic Program Organizing

- Academic group leader of NTU physics camp in 2015 (5-day mini-school for 100 high school students)
- Led 20+ members and arranged 3 talks and 10 experiment sessions

Programming: Python (especially for scientific computing), C/C++, LaTeX

Languages: Mandarin (native), English (advanced)

TALKS

(All the slides can be found at <https://chunghao.github.io/#talks>)

Introduction to Quantum Computing

ChungHwa Telecom (Oct 21, 2019)

Blockchains with Proof-of-Stake

Summer School for Cryptography in Academia Sinica (July 29, 2019)

Computational Complexity

Summer School for Cryptography in Academia Sinica (July 17, 2017), (July 18, 2019)

Cryptographic Primitives in DEXON

DEXON foundation public course with Po-Chun Kuo (Jan 2, 2019)

Zero Knowledge Salon

DEXON foundation internal training with Po-Chun Kuo (Oct 31, 2018)

Quantum Cryptanalysis - Shor Algorithm and Grover Algorithm

Summer School for Cryptography in Academia Sinica (Aug 2, 2018)

National Chung-Shan Institute of Science and Technology (Sep 6, 2017), (Sep 13, 2017)

Security of Quantum Key Distribution from Cryptographic Perspectives

NTUEE group seminar (March 22, 2018)

Introduction to Provable Security

QKD seminar in NTU (Oct 31, 2017)

EXTRACURRICULAR EXPERIENCE

Volunteer Tutor

10/2016 - 06/2017

- One-to-one tutoring for children in underprivileged families on a weekly basis

Traveller

07/2014 - 08/2014

- Walked around Taiwan in 40 days (944km)