Zihan Hu

📞 +86 198 0126 0391   ✉ huzh19@mails.tsinghua.edu.cn   🏠 zihanhu.cn

EDUCATION

- **Tsinghua University**   Beijing, China
  Bachelor in Computer Science   *Sep. 2019 - Present*
  ○ Yao Class, Institute for Interdisciplinary Information Sciences (IIIS), led by Prof. Andrew Yao.
  ○ GPA: 3.97/4.00; Rank: 1/30.
  ○ TOEFL: 106 (Reading: 30, Listening: 30, Speaking: 25, Writing: 21).
- **Zhilin High School**   Wenzhou, China
  Member of Special Pilot Class   *Sep. 2016 - June 2019*
  ○ Two-time first prize winner of Chinese National High School Mathematics Contest.
  ○ Top 0.1% among 315,000 examinees in Chinese College Entrance Examination, Zhejiang Province.

RELEVANT COURSES

• Calculus (1)	A^+	• Algorithm Design	A	• General Physics (1), (2)	A, A^+
• Linear Algebra	A	• Theory of Computation	A^+	• The Physics of Information	A^+
• Abstract Algebra	A	• Logic, Computation and Games	A	• Introduction to Databases	A^+
• Discrete Mathematics (1)	A^+	• Fundamentals of Cryptography	A	• Fundamentals of Digital Electronics	A
• Mathematics for Computer Science	A^+	• Quantum Computer Science	A^-	• Computer Architecture	A
(By Prof. Andrew Yao)		• Quantum Communication & Crypto	A^+	• Operating System	A

RESEARCH EXPERIENCE

- **Post-Quantum Lattice-Based Cryptography**   Tsinghua University
  Mentor: Yilei Chen   *Feb. 2021 - Nov. 2021*
  ○ The existence of worst-case to average-case reduction makes lattice-based cryptography considered resistant to classical attacks, or even to quantum attacks. However, the hardness of the underlying lattice problems in quantum setting has not been well studied.
  ○ Following ideas of reductions between lattice problems, we attempted to solve standard lattice problems via quantum algorithms.
  ○ Collaborate with Yilei Chen, Qipeng Liu and Yaxin Tu.
  ○ Brainstorm, formula derivation, experiments and proofreading.

COURSE PROJECTS

- **Non-Black-Box Simulation**   *May 2021 - June 2021*
  ○ Course project of *Fundamentals of Cryptography*.
  ○ A review for the paper *How to Go Beyond the Black-Box Simulation Barrier* [Bar01].
  ○ Learned how to take advantage of knowing the malicious verifier's code.
  ○ Gained a better understanding of Zero-Knowledge Proof.
- **System Lab**   *Mar. 2021 - June 2021*
  ○ Course project of *Computer Architecture*.
  ○ Used assembly language to write a simple Gaussian-like filter with 3×3 kernel matrix and optimized its performance.
  ○ Implemented a 5-stage pipelined RISC-V processor with hazard detection and branch prediction.
  ○ Implemented caches with various replacement policies.
- **Propositional Dynamic Logic (PDL)**   *Oct. 2020 - Nov. 2020*
  ○ Course project of *Logic, Computation and Games*.
  ○ Learned the connection between PDL and Public Announcement Language (PAL).
  ○ Used PDL to derive some recursion axioms of PAL, one of which is equivalent to but simpler than the axiom shown in the class.

HONORS AND AWARDS

- **Comprehensive Excellence Scholarship** | Tsinghua University   *2021*
- **Academic Excellence Scholarship** | Tsinghua University   *2020*
- **Sports Excellence Scholarship** | Tsinghua University   *2020*
- **Chinese Mathematical Olympiad, Silver Medal** | Chinese Mathematical Society   *2018*
- **Chinese Girls' Mathematical Olympiad, Gold Medal** | Chinese Mathematical Society *2018*
  ○ Ranked 3rd among all the contestants.
  ○ Invited to participate in CMO.

STUDENT ACTIVITIES

- Class Leader | Yao Class 91, Tsinghua University   *Sep. 2020 - Sep. 2021*
- Participated in many volunteer projects such as animal protection and volunteer of Undergraduate Admissions Office.
- Keen on a variety of sports, especially middle-distance and long-distance running.
  ○ Placed 3rd in the Women's 800m and 4th in Women's 1500m in annual sport meet on campus.
  ○ Top 30 in Tsinghua University Mini Marathon (4.2 km) and Campus Marathon (10 km) among thousands of female participants.