

# Haoxiang Yu

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## 🎓 Education

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**Yao Class 11, Institute for Interdisciplinary Information Sciences (IIIS), Tsinghua University, Computer Science** Undergraduate 2021.9 ~ now

GPA: 3.88 (top 20%), 19 A and 15 A+ in *all* courses.

A/A+ in ALL PROFESSIONAL COURSES (computer science, mathematics, physics, etc.) except one A-.

Prominent courses: Mathematics for Computer Science (A+), Introduction to Computer Systems (A), Computer Architecture (A), Algorithm Design (A+), etc.

With minor degree *Mathematics and Applied Mathematics*, which ALL COURSES IN are 4.0.

## 🐱 Projects

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**OierDb** 🌐 [OierDb](#) 2021.8 ~ now

A online database for Chinese OI participants.

- Data process and maintenance
- Web services (cooperation)

**Research on Cybercrime group** 🌐 [underground-scraper](#) 2024.3 ~ now

Research on illicit behaviors and security analysis on underground markets (Cybercrime group, CyLab at CMU)

- The largest publicly documented Telegram dataset for Bots
- A fast, stable, secure scraper and analyzer cross multiple platform including Telegram

**Blockchain-decentralized Cryptocurrency System** 2023.12 ~ 2024.1

A Bitcoin-like blockchain-decentralized cryptocurrency system with many fancy features

- Concise block structure with correct consensus control (cooperation)
- Security, Network repair, SPV and localization (cooperation)

**Graphics Image Rendering based on Path Tracing** 2023.12 ~ 2024.1

- BVH acceleration and anti-aliasing, debugging
- Texture designing and optimization (cooperation)

**Implementation of HyperX NoC** 2023.8

- Implementation of HyperX network topology
- Implementation of adaptive deadlock-free routing algorithm

**5-stage pipeline RISC-V processor on Ripes** 2022.11

- RISC-V Processor logic (cooperation)
- Many cache eviction policies with high performance

## Simple 2D Ising Model

2022.8

- Implementation of Stochastic Algorithms for 2D Ising Model

## Simple mobile healthy-manager-like system

2022.8

- Implementation of a mobile Beijing-healthy-manager-like system
- Whole backend and microservices of the system (use Scala)
- Mobile frontend (cooperation)

## A simple state-machine manager [state-machine](#)

2022.8

- Whole frontend of state-machine
- Design of the architecture (cooperation), complicated APIs (cooperation)

## </> Experience

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### Core technical staff in 2nd IIS Student Festival system

2024.10

- More stable lottery system via decentralized blockchain nodes
- Portable Danmaku systems through native and OBS

### Core technical staff in IIS Student Festival system [chagpt-iis](#)

2023.12

- Fair and Verifiable lottery based on credible blockchain system
- Splendid Interactive and Danmaku system (client and backend)

### Student Association of Science & Technology [sast2023-linux-git](#)

2023.7

- Summer Training Camp 2023 "teacher" and "quiz setter" (cooperation)

### Research on cryptographical Nash equilibria

2023.5

- Research on cryptographic algorithms and complexity of Nash equilibria
- Including theoretical hardness and cryptographic hardness protocols

### CCF NOI Winter Camp 2023

2023.1

- Winter Camp 2023 & China Team Selection problem setter (cooperation)

### Bytedance Summer Camp 2022

2022.8

- Design and implementation the state-machine manager in 3-people group

## Honor and Awards

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Scholarship of Institute for Interdisciplinary Information Science, Social Working Excellence Award	2024.10
Scholarship of Institute for Interdisciplinary Information Science, Science and Technology Innovation Excellence Award	2023.11
The 14th Chinese Mathematics Competitions, First Prize (rank 6th)	2023.5
The 2022 ICPC Asia-East Continental Final Contest, Shanghai, China, Gold Medal (rank 8th)	2023.3
Scholarship of Institute for Interdisciplinary Information Science, Science and Technology Innovation Excellence Award	2022.10
The 2021 ICPC Asia-East Continental Final Contest, Xi'an, China, Gold Medal (rank 6th)	2022.7
The 2021 ICPC Asia Jinan Regional Contest, Gold Medal (rank 1st)	2021.12
Freshman Scholarship, First Prize	2021.10
The 33rd International Olympiad in Informatics, Gold Medal (rank 4th)	2021.6
The 3rd Alibaba Global Mathematics Competition, Excellent Medal (top 70 in world)	2021.6
IOI2021 China Team Selection Contest (rank 1st)	2021.1
The 37th National Olympiad in Informatics, Gold Medal (rank 1st)	2020.8
IOI2020 China Team Selection Contest (rank 6th)	2020.7
The 35th Chinese Mathematical Olympiad, National Training Team	2019.11
The 36th National Olympiad in Informatics, Gold Medal (rank 15th)	2019.7

## Open source Contributions

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Maintaining several projects in GitHub, plus made contribution of more than 30 projects including [Python](#) and [Rust](#), with a total of 53 pull requests and 21 issues. Following are some notable project I owned or contributed to:

**Quadratic integer factoring utility**  [q](#) Rust (Owner) 2024.5

**Implementation of ideal unique factorization of quadratic integer domains**

Use fast factorization library and brilliant control


Optimized algebraic number theoretic method

**Stupid Online Judge**  [SOJdevelopers](#) C++ / JavaScript (Main contributor) 2018 ~ 2022

**An featured and optimized online judge system based on Universal Online Judge**

**Koishi Bot**  [koishijs](#)  [satorijs](#) TypeScript (Contributor) 2024.4 ~ 2024.9

**Cross-platform chatbot framework**

**Community database of topology**  [pi-base](#) TypeScript (Main contributor) 2024.10 ~ now

**A community database including topological theorems, traits and counterexamples**

## Others

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Programming languages

*C/C++, Rust, LaTeX (Typst), Python, Mathematica, Java, SQL (PostgreSQL), HTML/CSS/JavaScript (TypeScript), etc.*

Student Work

- Member of Student Association of Science & Technology of CST *2023.7 ~ now*
- Member of Drop-in Tutoring, Learning and Development Guidance Center, Tsinghua University *2023.3 ~ now*

Hobbies

- Simple music theory, piano (former), electric piano and in-computer music
- Rubik's cube solving and researching (a little)