GAO WEIHE

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EDUCATION

Tsinghua University — Beijing, China
MSc of Computer Science — *Sep. 2021 - July 2024*
- Research: HPC, confidential computing (TEE), blockchains
- Courses: Data Security, Blockchains, Distributed Systems, Advanced Networking

Lancaster University — United Kingdom
BSc of Computer Science (Honors Degree) — *Sep. 2017 - Jun. 2021*
- Academic Dean's List
- Honorable Mention, Interdisciplinary Contest In Modeling (ICM2019)

Beijing Jiaotong University — Beijing, China
BEng of Computer Science — *Sep. 2017 - Jun. 2021*
- Research: RISC-based distributed systems (and RTOS), large-scale IoT protocols
- Courses: Digital Systems, Operating Systems, Distributed Systems

CURRENT RESEARCH

Scaling blockchains with TSS-based computing architecture — Submitted to EuroSys'24
*(**Paper under review**) Blockchains, Scalability, Consensus* — *Sep. 2021 - Oct. 2023*
- 4x higher TPS achieved while remaining millions of available participants
- Scaling BFT blockchains with novel consensus based on threshold cryptography
- Optimizing BFT performance through parallel computing delegation; Zero-copy serde
- TEE-based indentities and privacy protection

Amotic Cross-chain Execution of Smart Contracts
Blockchains, Concurrency control, Cross-chain bridges — *Mar. 2023 - Present*
- Atomicity of cross-chain and cross-consensus execution
- Off-chain shadows and ZKP-based scalability

Concurrency Control Schemes of TEEs
Async-syscall, TEE, Concurrency Control — *July 2022 - Present*
- Exploring more efficient memory R/W patterns in TEEs
- Multiple network stacks (IB verbs, DPDK, raw UDP, eRPC)

PAPERS & PATENTS

- Bingyi Hu, **Weihe Gao**, et al. "Image-based Deflection Measurement and Error Analysis." International Conference on Electrical, Automation and Mechanical Engineering, 2020.
- Bingyi Hu, Ke Xing, **Weihe Gao**, et al. "Modelling and Implementation of Distributed Rain Water Storage and Utilization." Computer Modeling and Simulation Technology, 2020.
- Task Graph Cluster Computing (under review), Oct. 2023.
- Bridge Bearing State Monitoring Device, CN202220687509.8, Jul. 29, 2022.
- A Bridge Bearing State Monitoring Device and Method, CN202210312790.1, May 20, 2022
- Bridge Bearing Data Acquisition Device, CN202130879061.0, May 5, 2022.

- Bridge Bearing Inclination and Vibration Testing Instrument, CN202030653807.1, Aug. 27, 2021
- A Device for Personnel Detection in an Intelligent Home Privacy Space, CN 2020 2 0798927.5, Issued Nov. 13, 2020.
- Signal Acquisition and Output Circuit and Device, CN ZL 2019 2 1598628.0, Issued Sep. 24, 2019.
- Communication Conversion Circuit and Conversion Device, CN ZL 2019 2 1587430.2, Issued Sep. 23, 2019.
- An Image Analysis-Based Spot Position Detection Sensor, CN ZL 2019 2 0427925.2, Issued Apr. 1, 2019.
- Expandable Folding Seat for Sleeping Carriage Aisles, CN201620794058.2, Issued Dec. 21, 2016.

PREVIOUS PROJECTS

- Internet-Based Open Integrated Utility Tunnel Information Exchange and Decision Support System (2017 - 2020)
  - Implementation of city-scale underground facility surveillance system
  - SW & HW co-design, PCB design
  - RISC-based RTOS
- Geological Disaster Data Visualization and Dynamic Display of Disaster Formation Process Based on WebGL Technology (2019 - 2021)
- Integration and Demonstration of Key Technologies for Green Prefabricated Steel Structural Buildings (2019 - 2021)
- Research on Key Technologies and Application Systems of Internet Plus Micro-circulation Mode Sponge City (2017 - 2020)

INTERNSHIPS & RESPONSIBILITIES

C++ Development Intern   Beijing, China
Beijing Yeez Technology Co., Ltd.   *May 2023 - Present*
- TEE-based confidential computing platform (C / C++ / Rust)
- Fedilius: blockchain platform tailored for confidential computing (C / C++ / Solidity)
- Invited talks on TEE prototypes (SGX / TDX / SEV / TrustZone / Keystone)

Chairman, Founder   Beijing Jiaotong University
SEAL International Innovation Club   *Apr. 2019 - Mar. 2021*
- Aim: international scientific collaboration
- Scientific events organization, fund raising

Head of Public Engagement   Beijing Jiaotong University
Student Union   *Oct. 2017 - Dec. 2019*
- Responsibilities: public engagements (especially with international organizations)
- Reached out to local marchants for collaboration

MISCELLANEOUS

- **PL** - C/C++ (skilled), Rust (proficient), Project experience in Java / Python / JavaScript / Solidity / Go / C#
- **Language** - English (fluent; IELTS 7.5), Mandarin (native)