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Jingchang Sun

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Education

Tsinghua University Sept 2016 - June 2021
M.S. in Computer Science, Institute for Interdisciplinary Information Sciences (IIIS) Beijing, China
Advisors: Prof. Pingzhong Tang, Thomas Moscibroda
Research Areas: Blockchain, Multi-Agent Systems, Network Science

Sichuan University Sept 2012 - June 2016
B.S. in Computer Science, College of Computer Science Chengdu, China

Projects

Neutron ZKVM | Microsoft Sept 2024 - Present

- Developed a universal circuit for the RISC-V ISA, emphasizing the optimization of ALU check to achieve a more compact and efficient sub-circuit. Applied formal verification methods and other approaches to ensure circuit correctness
- Tailored the constraint system and circuit architecture to align with NeutronNova's folding scheme and Nebula's memory consistency checking technology. Significantly accelerated proof generation and enabled efficient streaming proving

Nova ZK-RollUp and CBDC | Microsoft Apr 2023 - Aug 2024

- Spearheaded the full-stack engineering of Microsoft's ZK-RollUp and Central Bank Digital Currency (CBDC) solutions, integrating the Nova proof system
- Partnered with the Banco Central do Brasil (BCB) and the Hong Kong Monetary Authority (HKMA) to design and prototype privacy-preserving, regulation-compliant CBDC systems powered by Microsoft Nova. Initiated pilot phases and sandbox testing to evaluate system effectiveness
- Built constraint system middleware to facilitate the development of Nova-based applications. Enabled efficient ZK circuit programming in Rust and DSLs such as Noir, ZoKrates, and Circom
- Formulated a trustless cross-chain bridge protocol for interoperability and asset security. Developed smart contracts and clients to implement essential features, such as a censorship resistant escape hatch

Cryptocurrency Game Theoretic Research | Tsinghua University Sept 2018 - May 2019

- Established a game theoretic model for cryptocurrency mining resource allocation, analyzing both pure Nash equilibrium and Stackelberg equilibrium, to showcase the optimal mining strategies
- Derived the closed-form of equilibria in the main theorem and discussed their structures under various settings
- Published a research paper on games of miners, which was accepted by AAMAS'20

Experience

Microsoft | Software Engineer July 2021 - Present
Contributed to Microsoft's Web3 projects, focusing on zkVM, CBDC, wallets, and Ethereum scaling solutions

Digital Currency Institute, the People's Bank of China | Intern Jan 2021 - Mar 2021
Conducted in-depth research on FastPay and zkSNARK, evaluating their practical applications in retail payments

Microsoft | Intern May 2020 - Sept 2020
Enhanced the robustness and adaptability of Bing Ads billing services by implementing circuit breakers and dynamic configuration management

Microsoft Research | Research Intern Oct 2017 - Feb 2018
Constructed network models from Ethereum data to analyze patterns, identify key nodes, and predict user behavior

Nebulas | Intern June 2017 - Sept 2017
Developed a manipulation-resistant network ranking algorithm to incentivize the mass adoption of public blockchains