

FANGYU GAI

fangyugai.me

EDUCATION

University of British Columbia

Ph.D. in Electrical Engineering
Student member of Blockchain@UBC
Advisor: Chen Feng

Sep. 2018 - Present
Kelowna, Canada

Dissertation (tentative): Dissecting the Performance of BFT in the Era of Blockchain

National University of Defense Technology

M.A.Sc. in Computer Science
Advisor: Xinwen Jiang

Sep. 2015 - Dec. 2017
Changsha, China

Dissertation: Research on Trust Management for Internet of Things

Beijing Institute of Technology

B.Eng. in Software Engineering
Advisor: Zhiqiang Li

Sep. 2011 - June 2015
Beijing, China

Dissertation: Enhance Adaboost Algorithm by Integrating LDA Topic Model
Ranking: 2nd out of 39 in the direction of Information Security

RESEARCH INTERESTS

Blockchain, Databases, Distributed Systems, Internet of Things

EXPERIENCE

Alibaba DAMO Academy

Research Intern

Apr. 2021 - Present
Hangzhou, China

- Explore the application of encrypted databases in blockchain.
- Devour the leader bottleneck of BFT consensus by introducing a compliance layer.
- Utilize databases technologies into blockchain to build a high-performance blockchain database.

Hangzhou Qulian Technology

Research Intern

Sep. 2020 - Apr. 2021
Hangzhou, China

- Dissect the performance of state-of-the-art BFT protocols for permissioned blockchains.
- Re-design and implement some of the core components of the consensus services in Hyperchain.
- Leverage trusted hardware (e.g., SGX) to improve the performance of BFT consensus.

Dapper Labs

Research Intern & Developer

June 2019 - Mar. 2020
Vancouver, Canada

- Explore the wide design space of blockchain consensus protocols, e.g., HotStuff, Algorand.
- Build demos of the HotStuff BFT protocol and evaluate its performance.
- Participate in building the consensus node of the Flow blockchain.

University of British Columbia

Teaching & Research Assistant

Winter 2018 & Winter 2020
Vancouver, Canada

- ENGR 453: Internet of Things.
- ENGR 464: Distributed Ledger Technologies with Engineering Applications.

TECHNICAL STRENGTHS

Computer Languages

Golang, C++, Objective-C, Python, Javascript

Protocols & Blockchain Platform

Bitcoin, Ethereum, HotStuff, Algorand, Tendermint, etcd

Tools

Vim, git, Markdown, L^AT_EX

LANGUAGES

Mandarin (Native), English (Professional), Japanese (Basic)

SELECTED PUBLICATION

Conference Papers

- C6 **Fangyu Gai**, Jianyu Niu, Seyed Ali Tabatabaee, Chen Feng, and Mohammad Mussadiq Jalalzai, “Cumulus: A Secure BFT-based Sidechain for Off-chain Scaling” in *Proc. IEEE IWQoS, 2021*. **CCF-B**.
- C4 **Fangyu Gai**, Ali Farahbakhsh, Jianyu Niu, Chen Feng, Ivan Beschastnikh, and Hao Duan, “Dissecting the Performance of Chained-BFT” in *Proc. IEEE ICDCS, 2021*. **CCF-B**.
- C3 Jiangyu Niu, **Fangyu Gai**, Mohammad Mussadiq Jalalzai, and Chen Feng, “On the Performance of Pipeline HotStuff” in *Proc. IEEE INFOCOM, 2021*. **CCF-A**.
- C2 Jianyu Niu, Ziyu Wang, **Fangyu Gai**, and Chen Feng, “Incentive Analysis of Bitcoin-NG, Revisited” in *Proc. IFIP WG7.3 Performance, 2020*. **CCF-B**.
- C1 **Fangyu Gai**, Baosheng Wang, Wenping Deng, and Wei Peng, “Proof of Reputation: A Reputation-Based Consensus Protocol for Peer-to-Peer Network” in *Proc. DASFAA, 2018*. **CCF-B**.

Journal Papers

- J1 Jianyu Niu, Ziyu Wang, **Fangyu Gai**, and Chen Feng, “Incentive Analysis of Bitcoin-NG, Revisited” in *PEVA, 2020*. **CCF-B**.

Preprints

- P2 Jianyu Niu, **Fangyu Gai**, and Chen Feng, “Crystal: Enhance Blockchain Mining Transparency with Quorum Certificat” submitted to *USENIX, 2021*. **CCF-A**.
- P1 Mohammad Jalalzai, Jianyu Niu, Chen Feng, and **Fangyu Gai**, “Fast-Hotstuff: A Fast and Resilient Hotstuff Protocol”.