FANGYU GAI

fangyugai.me

EDUCATION

University of British Columbia   *Sep. 2018 - Present*
Ph.D. in Electrical Engineering   *Kelowna, Canada*
Doctoral Student member of Blockchain@UBC
Advisor: Chen Feng
Dissertation (tentative): Dissecting the Performance of BFT in the Era of Blockchain

National University of Defense Technology   *Sep. 2015 - Dec. 2017*
M.A.Sc. in Computer Science   *Changsha, China*
Advisor: Xinwen Jiang
Dissertation: Research on Trust Management for Internet of Things

Beijing Institute of Technology   *Sep. 2011 - June 2015*
B.Eng. in Software Engineering   *Beijing, China*
Advisor: Zhiqiang Li
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   *Apr. 2021 - Present*
Research Intern   *Hangzhou, China*
· Explore the application of encrypted databases in blockchain.
· Devour the leader bottleneck of BFT consensus via shared Mempool.
· Enhance the centralized ledger database (LedgerDB) with ubiquitous verification abilities.

Hangzhou Qulian Technology   *Sep. 2020 - Apr. 2021*
Research Intern   *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   *June 2019 - Mar. 2020*
Research Intern & Developer   *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   *Winter 2018 & Winter 2020*
Teaching & Research Assistant   *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, LaTeX

LANGUAGES

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

SELECTED PUBLICATION

Conference Papers

C8 Xinying Yang, Sheng Wang, Feifei Li, Yuan Zhang, Wenyuan Yan, **Fangyu Gai**, Benquan Yu, Likai Feng, Qun Gao, and Yize Li, "Ubiquitous Verification in Centralized Ledger Database" in *Proc. IEEE ICDE, 2022*. **CCF-A**.

C7 Hanzheng Lyu, Jianyu Niu, **Fangyu Gai**, and Chen Feng, "Publish or Perish: Defending Withholding Attack in Dfinity Consensus" in *Proc. IEEE MSN, 2021* (**best paper award**). **CCF-C**.

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 $WG_{7.3}$ 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**.