Jianyu Niu

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RESEARCH INTERESTS

Distributed System, Blockchain, Wireless Communication, Media Access Control, Internet-of-Things (IoT)

EDUCATION

Ph.D. in School of Engineering — Jan 2018 – Aug 2021 (expected)
The University of British Columbia, Kelowna, BC, Canada
- Advisor: Chen Feng

M.A.Sc. in Communication and Information Engineering — Sep 2014 – Mar 2017
Northwestern Polytechnical University, Shannxi, Xián, China
- Advisor: Ruonan Zhang

B.Eng. in Communication Engineering — Sep 2010 – Jun 2014
Northwestern Polytechnical University, Shannxi, Xián, China

EMPLOYMENT

Huawei Technologies Co. Ltd, Xi'an, China — Apr 2017 – Oct 2017
- Wireless resource management for low-power wide-area network (LPWAN) and Narrowband Internet of Things (NB-IoT)

SELECTED AWARDS & SCHOLARSHIPS

- UGF Scholarship, The University of British Columbia — 2018 – 2020
- IEEE Communications Letters Exemplary Reviewers — 2019
- National Scholarship, Ministry of Education — 2015
- Second Prize of 10th National Graduate Electronic Design Contest — 2015
- Excellent Graduation Thesis Award for Undergraduates, Northwestern Polytechnical University — 2014
- National Encouragement scholarship, Ministry of Education — 2011-2013 (twice)
- Shaanxi Fashite Gear Co., Ltd Scholarship, — 2013

PUBLICATIONS

BOOK CHAPTER

[B1] Mohan Tanniru, **Jianyu Niu**, Chen Feng, Claudio Gottschalg Duque, Chang Lu, and Harish Krishnan, "Incentives to Engage Blockchain and Ecosystem Actors," in Building Decentralized Trust, Victoria Lemieux, and Chen Feng, Editors, ISBN 978-3-030-54414-0, Springer, 2021.

JOURNAL

[J2] Xingjie Fan, **Jianyu Niu**, Julian Cheng, and Jing Ma, "Few-Mode Fiber Based Free-Space Optical Communication With Nonzero Boresight Pointing Errors," in Photonics Technology Letters. 2021.

[J1] **Jianyu Niu**, Ziyu Wang, Fangyu Gai, and Chen Feng, "Incentive Analysis of Bitcoin-NG, Revisited," in Elsevier journal Performance Evaluation (PEVA). 2020. **CCF-B Transaction.**

CONFERENCES

[C6] Fangyu Gai, Ali Farahbakhsh, **Jianyu Niu**, Chen Feng, Ivan Beschastnikh, and Hao Duan, "Dissecting the Performance of Chained-BFT" in *the 41th IEEE International Conference on Distributed Computing Systems (ICDCS)*, virtual, July 2021. **CCF-B**.

[C5] **Jianyu Niu**, Fangyu Gai, Mohammad Mussadiq Jalalzai, and Chen Feng "On the Performance of Pipelined HotStuff," in the 40th IEEE International Conference on Computer Communications (INFOCOM). 2021. **CCF-A**.

[C4] **Jianyu Niu**, Ziyu Wang, Fangyu Gai, and Chen Feng, "Incentive Analysis of Bitcoin-NG, Revisited," in the 38th IFIP $WG_{7.3}$ Performance. 2020. **CCF-B**.

[C3] **Jianyu Niu**, and Chen Feng, "Selfish Mining in Ethereum," in *the 39th IEEE International Conference on Distributed Computing Systems (ICDCS)*, 2019. **CCF-B**.

[C2] **Jianyu Niu**, Ruonan Zhang, Lin Cai, and Jianping Yuan, "A fully-distributed directional-to-directional MAC protocol for mobile ad hoc networks," in *2015 International Conference on Computing, Networking and Communications (ICNC)*, 2015.

[C1] **Jianyu Niu**, Ruonan Zhang, Guangde Wang, Shuguang Li, and Shuai Wan, ”Design and experimental evaluation of long-distance and high-mobility ZigBee transceivers for WSNs,” in *2013 IEEE/CIC International Conference on Communications in China - Workshops (CIC/ICCC)*, 2013.

PREPRINTS

[P6] **Jianyu Niu**, Fangyu Gai, and Chen Feng, “Crystal: Enhance Blockchain Mining Transparency with Quorum Certificate” Submitted to Usenix Security ’21.

[P5] Shlomi Dolev, Bingyong Guo, **Jianyu Niu**, and Ziyu Wang, “SodsBC: A Practical Post-quantum by Design Asynchronous Blockchain Framework”, IEEE Transactions on Dependable and Secure Computing (TDSC).

[P4] **Jianyu Niu**, Chen Feng, “Leaderless Byzantine Fault Tolerant Consensus” Submitted to PODC 2021.

[P3] Fangyu Gai, **Jianyu Niu**, Mohammad Mussadiq Jalalzai, and Chen Feng, “A Secure Consensus Protocol for Sidechains,” Submitted to IEEE/ACM IWQoS 2021.

[P2] Mohammad Jalalzai, **Jianyu Niu**, Chen Feng, and Fangyu Gai, “Fast-Hotstuff: A Fast and Resilient Hotstuff Protocol” in Arxiv.

[P1] Mohammad Jalalzai, Chen Feng, Costas Busch, Golden, Richard III, **Jianyu Niu**, “The Hermes BFT for Blockchains” Submitted to IEEE Transactions on Dependable and Secure Computing (TDSC).

PATENTS

[P2] “Satellite Formation Network Channel Access Control Method Based on Directional Antenna,” Co-inventors: Jianping Yuan, Ruonan Zhang, **Jianyu Niu**, Jianjun Luo, and Jiao Wang, *CN106454872A*, Jan 2020.

[P1] “Multi-rate Anti-interference Adaptive Radio Communication Platform and Deciding Method,” Co-inventors: Jianping Yuan, Ruonan Zhang, Jianwen Hou, Xiaokui Yue; **Jianyu Niu**, *CN104967969B*, Feb 2019.

TEACHING

TEACHING ASSISTANT

- APSC254, Instrumentation and Data Analysis. 2018.

TALKS

- Blockchain Technology: Current and Future Trends. Xidian University. April, 2021.
- Incentive Analysis of Bitcoin-NG, Revisited. Performance2020 online. Nov, 2020.
- Incentive analysis in Blockchain. Blockchain@UBC Research Talk. Oct, 2020.
- Selfish Mining in Ethereum. ICDCS2019 at Texas. July, 2019.

RESEARCH PROJECTS

- **Blockchain conference paper collection** — University of British Columbia
  Personal project — Jan 2019 – Present
  – Collect and organize the latest blockchain conference papers.
- **Blockchain technology in the natural gas supply chain** — University of British Columbia
  Mitacs project, Canada — Oct 2019 – Apr 2020
  – Explore the the application of blockchain technology in the renewable natural gas supply chain.
  – Identify the challenges and benefits in the application.
- **Rethinking BFT protocols in the age of blockchains** — University of British Columbia
  NSERC project, Canada — Jun 2019 – Nov 2019
  – Survey the existing Byzantine Fault Tolerant (BFT) protocols including Tendermint, Algorand, Honey Badger, Hotstuff, Casper FFG.
  – Design a new large scale BFT protocol.
- **Multi-camera array data acquisition platform** — Northwestern Polytechnical University
  Research project — 2014 – 2017
  – Design a multi-camera array hardware platform, which supports 4 * 4 cameras to simultaneously take pictures, store and export image data.
  – Electronic devices selection, circuit design and debugging.
- **863 Program Sub-Project** — Northwestern Polytechnical University
  863 Program, China — 2014 – 2017
  – Design a transmission platform that supports multiple wireless communication technologies.
  – Design and test Zigbee, Wifi, S-band and UHF band wireless communication device.
  – PCB design, circuit test and FPGA control logic developing.