Di Mu

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EDUCATION

Ph.D. in Computer Science, State University of New York at Binghamton (SUNY-Binghamton), 2021
Dissertation Title: Enabling Reliable and Efficient Data Transfer for Internet of Things Applications
M.S. in Electrical Engineering, New Jersey Institute of Technology (NJIT), 2012
B.S. in Communication Engineering, Hangzhou Dianzi University (HDU), 2010

RESEARCH EXPERIENCE & AWARDS

Doctoral Research, SUNY-Binghamton, Advisor: Dr. Mo Sha, 2016 – 2021

- Reduced the high management complexity of industrial wireless networks by leveraging the Cross-Technology Communication (CTC) from LoRa to ZigBee. (TOSN'21, ICNP'19)
- Developed a campus shuttle monitoring system that collected real-time data from running vehicles over 14 months based on a novel LoRa radio control solution. (ICNP'20)
- Enabled dynamic radio bundling and data partitioning among multiple heterogeneous radios to support real-time data deliveries energy-efficiently. (Ad Hoc Networks'20, DCOSS'19)
- Developed a multi-radio communication system that dynamically selects radio and transmission power to save the power consumption and maintain the network reliability. (TOSN'19, IWQoS'17)

Master's Research, NJIT, Advisors: Dr. Yeheskel Bar-Ness and Dr. Ali Akansu, 2011

- Investigated Single-Carrier Frequency Domain Equalization (SC-FDE) based on Wavelet Packet Decomposition to mitigate the multipath effects in optical wireless communications.

Undergraduate Research, HDU, Advisor: Dr. Jianwu Zhang, 2010

- Designed and built an embedded system that controls an Analog-to-Digital Converter (ADC) to record audio and adopts Pulse-Width Modulation (PWM) to playback audio.

Services

- Assisted in reviewing papers in ICPADS'21, ISORC'21, ICESS'20, IIoT'19, MSN'19, and ICPADS'17.

Awards

- Best Paper Award Nominee, IEEE DCOSS Conference, 2019
- Graduate School Conference Travel Award, SUNY-Binghamton, 2019
- GSEU Professional Development Program Award, SUNY-Binghamton, 2019

WORK EXPERIENCE

Teaching Assistant, SUNY-Binghamton, 2016 – 2021

- Assisted in the courses: Internet of Things, Wireless Sensor Networks, Computer Networks, Programming Systems and Tools (C Language), and Introduction To Computer Security.
- Presented lectures in the topics of Multi-Radio and Backscatter Communications.
- Mentored a visiting graduate student for his summer internship project.

Internships

- Full Stack Web Developer, TaxicabGo.com, 2015
- Radio Frequency Test Engineer, Beijing Jiuhuaxin Information Technology, 2010

SKILLS

- Programming embedded and real-time systems using C/C++, VHDL, Contiki OS, and Linux.
- Analyzing, processing, and modeling data using MATLAB and Python.

- Developing web applications using PHP, Java, MySQL, HTML, and Javascript.
- Designing printed circuit boards (PCBs) using Protel.
- Testing electronic hardware using oscilloscopes, multimeters, and soldering tools.

PUBLICATIONS

[J] Junyang Shi, *Di Mu*, and Mo Sha, Enabling Cross-Technology Communication from LoRa to ZigBee via Payload Encoding in Sub-1 GHz Bands, ACM Transactions on Sensor Networks (TOSN), 2021.
[C] *Di Mu*, Yitian Chen, Junyang Shi, and Mo Sha, Runtime Control of LoRa Spreading Factor for Campus Shuttle Monitoring, IEEE International Conference on Network Protocols (ICNP), October 2020.
[J] *Di Mu*, Mo Sha, Kyoung-Don Kang, and Hyungdae Yi, Radio Selection and Data Partitioning for Energy-Efficient Wireless Data Transfer in Real-Time IoT Applications, Ad Hoc Networks, October 2020.
[C] Junyang Shi, *Di Mu*, and Mo Sha, LoRaBee: Cross-Technology Communication from LoRa to ZigBee via Payload Encoding, IEEE International Conference on Network Protocols (ICNP), October 2019.
[J] *Di Mu*, Yunpeng Ge, Mo Sha, Steve Paul, Niranjan Ravichandra, and Souma Chowdhury, Robust Optimal Selection of Radio Type and Transmission Power for Internet of Things, ACM Transactions on Sensor Networks (TOSN), July 2019.
[C] *Di Mu*, Mo Sha, Kyoung-Don Kang, and Hyungdae Yi, Energy-Efficient Radio Selection and Data Partitioning for Real-Time Data Transfer, IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), Best Paper Award Nominee, May 2019.
[C] *Di Mu*, Yunpeng Ge, Mo Sha, Steve Paul, Niranjan Ravichandra, and Souma Chowdhury, Adaptive Radio and Transmission Power Selection for Internet of Things, ACM/IEEE International Symposium on Quality of Service (IWQoS), June 2017.