PAN Qingrui

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Education

The Hong Kong Polytechnic University   *Hong Kong*

Ph.D. in Computer Science   *Sept 2019 - Current*

- Chief Supervisor: Dr. Lei Yang, Co-supervisor: Prof. Bin Xiao
- Cumulative Grade Point Average: 3.88/4.3
- Thesis initial submission, expected to graduate by Nov 2023.

City University of Hong Kong   *Hong Kong*

B.E. in Information Engineering   *Sept 2013 - May 2017*

- Bachelor of Engineering in Information Engineering with **First Class Honours**
- Cumulative Grade Point Average: 3.66/4.3

Publications

Conference Proceedings

1. **(Best Paper Award)** **Qingrui Pan**, Zhenlin An, Xiaopeng Zhao, Lei Yang, "Revisiting Backscatter Frequency Drifts for Fingerprinting RFIDs: A Perspective of Frequency Resolution", In Proc. of IEEE SECON, 2023 (CCF B, accepted rate: 23.6%)

2. **Qingrui Pan**, Zhenlin An, Xueyuan Yang, Xiaopeng Zhao, Lei Yang, "RF-DNA: Large-Scale Physical-layer Identifications of RFIDs via Dual Natural Attributes", In Proc. of ACM MobiCom, 2022 (CCF A, accepted rate: 17.6%)

3. **Qingrui Pan**, Zhenlin An, Qiongzheng Lin, Lei Yang, "LSAB: Enhancing Spatio-Temporal Efficiency of AoA Tracking Systems", in Proc. of IEEE INFOCOM, 2022. (CCF A, accepted rate: 19.9%)

4. **(Best Paper Award Runner-Up)** Xiaopeng Zhao, Zhenlin An, **Qingrui Pan**, Lei Yang, "NeRF2: Neural Radio-Frequency Radiance Fields", In Proc. of ACM MobiCom, 2023 (CCF A)

5. Donghui Dai, Zhenlin An, **Qingrui Pan**, Lei Yang, "MagCode: NFC-Enabled Barcodes for NFC-Disabled SmartPhones", In Proc. of ACM MobiCom, 2023 (CCF A)

6. Sicong Liao, Zhenlin An, **Qingrui Pan**, Xiaopeng Zhao, Jingyu Tong, Lei Yang, "XiTuXi: Sealing the Gaps in Cross-Technology Communication by Neural Machine Transition", In Proc. of ACM SenSys, 20023 (CCF B, accepted rate: 19.0%)

7. Zhenlin An, Qiongzheng Lin, **Qingrui Pan**, Lei Yang, "Turbocharging Deep Backscatter Through Constructive Power Surges with a Single RF Source", In Proc. of IEEE INFOCOM, 2021 (CCF A, accepted rate: 19.9%)

Journal Articles

1. **Qingrui Pan**, Zhenlin An, Qiongzheng Lin, and Lei Yang, "LSAB: Enhancing Spatio-Temporal Efficiency of AoA Tracking Systems," ACM Transactions on Sensor Networks, 2022.

2. **Qingrui Pan**, Zhenlin An, Xiaopeng Zhao, Lei Yang, "The Power of Precision: High-Definition Backscatter Frequency Drift in RFID Identification" (Submitted)

3. **Qingrui Pan**, Zhenlin An, Xueyuan Yang, Xiaopeng Zhao, Lei Yang, "Fingerprinting RFIDs with RF-DNA" (Submitted)

Demo

1. Donghui Dai, Zhenlin An, **Qingrui Pan**, Lei Yang, "Demo: MagCode: Bringing NFC Feature to All Smartphones," In Proc. of ACM MobiCom, 2023

Research Projects

1. **Wireless Localization and Sensing**

   - RF Sparse Antenna Array for Angle of Arrival (AoA) Tracking (INFOCOM'22, TOSN'22)
   - Million-scale Dataset from Four Semi-indoor and Ten Full-indoor Environments
   - Neural Radio-Frequency Radiance Field (MobiCom'23)

2. **IoT Security and Privacy**

   - Physical-layer Identification of UHF RFID Tag Using Intrinsic Frequency Response Chain (MobiCom'22)
   - Physical-layer Identification of UHF RFID Tag Using Backscatter Link Frequency Shift (SECON'23)

3. **Backscatter Communication**

   - Long-range Backscatter Communication with Carrier Wave Optimization (INFOCOM'21)

4. **Cross-technology Communication System**
      - Cross-technology Communication between NFC and Camera via Magnetic Interference (MobiCom'23)
      - Cross-technology Communication by Neural Machine Transition (SenSys'23)

Work Experience

Huawei Technologies, Co. Ltd   *Shenzhen, China*
Assistant Researcher   *Oct - Dec 2020*
- Collaborated in a three-person team to develop a preliminary indoor RFID localization system. The system utilized a 4×4 antenna array to locate passive UHF RFID tags.
- Generated self-defined commands and transmitted them via USRP X310 to challenge the tags, extracting RSS and phase information from raw data.
- Created a Python interface to illustrate real-time localization results, achieving a localization error of less than 10cm.

Moxie Culture Communication, Co.   *Shenzhen, China*
Content Creator   *Nov 2016 - Mar 2019*
- Collaborated with a four-person team as the main writer, creating over 20 pieces of non-fiction science comics. The comics garnered a total of three hundred million views. Additionally, collaborated in the publishing of four books, with total sales exceeding 600,000 copies.

Technische Hocheschule Nürnberg   *Nürnberg, Germany*
Student Research Assistant   *May - July 2016*
- Recognized bird species by their songs and extracted features using Short-time Fourier transform (STFT).
- Created a graphical user interface using MATLAB, enabling manual key segment cutting.

Teaching Experience

COMP2021 Object-Oriented Programming   *PolyU, HK*
Teaching Assistant (Lecturer: Dr. PEI Yu)   *Fall 2019/2020*
- Designed six basic tutorials on Java programming for program beginners and created corresponding slides.
- Delivered four tutorial classes each week for six weeks, with a total of more than 100 students each semester.

COMP3421 Web Application Design and Development   *PolyU, HK*
Teaching Assistant (Lecturer: Dr. YANG Lei)   *Spring 2020/2021/2022*
- Designed and reviewed one homepage project, two assignments, and one quiz related to HTML and CSS for more than 120 students each semester.

ENG2003 Information Technology   *PolyU, HK*
Teaching Assistant (Lecturer: Dr. YANG Lei)   *Fall 2021, Spring 2023*
- Delivered two to four workshops related to Microsoft Access each semester, depending on the number of students in the course.
- Designed and reviewed assignments related to database concepts and SQL.

Professional Services

Reviewer
- IEEE Internet of Things Journal
- IEEE/ACM Transactions on Networking
- IEEE Transactions on Mobile Computing
- IEEE Conference on Standards for Communications and Networking

Talk
- COMP Research Student Seminar

Awards and Scholarships

2023	**MobiCom'23 Best Paper Award Runner-Up**, ACM MobiCom	*Madrid, Spain*
2023	**SECON'23 Best Paper Award**, IEEE SECON	*Madrid, Spain*
2022	**INFOCOM'22 Student Conference Grant**, IEEE INFOCOM	*Virtual*
2022	**MobiCom'22 Travel Grant**, ACM MobiCom	*Sydney, Australia*
2017	**Assistantship under the Teaching Postgraduate Studentship Scheme**, The Hong Kong Polytechnic University	*Hong Kong*
2016	**Overseas Internship Scheme**, City University of Hong Kong	*Hong Kong*
2013	**CityU Mainland Student Scholarship Scheme - Full Tuition Scholarship**, City University of Hong Kong	*Hong Kong*