Tianxin Wang

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Shanghai Jiao Tong University, Shanghai, China

EDUCATION

- **Imperial College London** *Sep 2023 - On*

  Ph.D. visiting student, advised by Prof. Geoffrey Ye Li London, U.K.

- **Shanghai Jiao Tong University (SJTU)** *Sep 2020 - Sep 2025 (Expected)*

  Ph.D. candidate, Information and Communication Engineering, advised by Prof. Xudong Wang Shanghai, China
  - GPA: 3.8/4.0

- **Hong Kong Polytechnic University** *Sep 2017 - Jan 2018*

  Exchange student, Electronic Information Engineering Hong Kong, China
  - GPA: 4.0/4.0

- **Southeast University (SEU)** *Sep 2016 - Jun 2020*

  B.S., Information Science and Engineering Nanjing, China
  - Grade: 91.2/100 (Ranking: Top 5%)

- **Jin Ling High School** *Sep 2013 - Jun 2016*

  Secondary Education Nanjing, China

PUBLICATIONS AND PATENTS C=Conference, J=Journal, P=Patent, S=In Submission

[J.1] **T. Wang**, X. Wang and Y. -B. Lin, "SideSeeker: Contention-Based Distributed Relay Finding for Sidelink Mesh Networks," *IEEE Wireless Communications Letters*, early access, 2024. **[JCR-Q1, IF = 4.6]**

[J.2] **T. Wang**, S. Chen, Y. Zhu, A. Tang and X. Wang, "LinkSlice: Fine-Grained Network Slice Enforcement Based on Deep Reinforcement Learning," *IEEE Journal on Selected Areas in Communications*, vol. 40, no. 8, pp. 2378-2394, Aug. 2022. **[JCR-Q1, IF = 13.8]**

[C.1] **T. Wang**, S. Wang, X. Wang, and G. Y. Li, "Collaborative Learning for Less Online Retraining of Neural Receivers," accepted by *MLSP 2024-2024 IEEE Workshop on Machine Learning for Signal Processing*, 2024.

[C.2] **T. Wang** and X. Wang, "Boosting Capacity for 6G Terahertz Mesh Networks Based on Bottleneck Structures," in Proceedings of *GLOBECOM 2023-2023 IEEE Global Communications Conference*, 2023, pp. 4589-4594.

[S.1] **T. Wang** and X. Wang, "DeepRP: Bottleneck Theory Guided Relay Placement for 6G Mesh Backhaul Augmentation," submitted to *IEEE Transactions on Mobile Computing* (major revision).

[S.2] **T. Wang**, X. Wang, and G. Y. Li, "GraphRx: Graph-Based Collaborative Learning among Multiple Cells for Uplink Neural Receivers," submitted to *IEEE INFOCOM 2025 - IEEE Conference on Computer Communications*.

[S.3] S. Wang, **T. Wang**, and X. Wang, "FedPDA: Collaborative Learning for Reducing Online-Adaptation Frequency of Neural Receivers," submitted to *IEEE INFOCOM 2025 - IEEE Conference on Computer Communications*.

[P.1] **T. Wang**, A. Tang, X. Wang, and Z. Li, "A Method for Distributed Network Topology Reconfiguration Under Centralized Coordination," Patent Application, PCT/CN2023/085658, Mar. 2023.

SELECTED RESEARCH PROJECTS Comm. = communication, Net. = network

- **AI for Comm.: Personalized Federated Learning for OFDM Neural Receivers** *Aug 2023 - Jul 2024*
  - Designed a graph-based personalized federated learning framework (*GraphRx*) to collaboratively retrain uplink neural receivers among multiple cells in online environments
  - Derived an approximate generalization bound to enable graph optimization in the PFL problem
  - Achieved a significant BER gain compared with baseline schemes

- **AI for Net.: Relay Placement for Wireless Mesh Backhaul Networks** *Jul 2022 - Jul 2023*
  - Established a clique-based bottleneck theory: deriving network throughput with fairness and quantifying the impact of each clique on the throughput
  - Designed a deep reinforcement learning (DRL) based relay placement method guided by bottleneck theory
  - Achieved notable throughput gains with the augmented backhaul network structures

- **AI for Net.: Network Slice Enforcement in Multi-Cell Network Slicing** *Sep 2020 - Dec 2021*
  - Designed a DRL-based slice enforcement framework (*LinkSlice*) for fine-grained resource allocation across cells
  - Guaranteed slice soft isolation, QoS requirements, and conformance to long-term slicing policies
  - Achieved a notable spectral efficiency gain compared with baseline schemes

RESEARCH AND WORK EXPERIENCE

- **Intelligent Transmission and Processing Laboratory, Imperial College London [🌐]** *Sep 2023 - On*
  Graduate Research Assistant London, U.K.
  ◦ Worked on **AI for Communications**: federated learning, test-time adaptation of neural receivers

- **Wireless Networking and Artificial Intelligence Lab, UM-SJTU Joint Institute [🌐]** *Sep 2020 - On*
  Graduate Research Assistant Shanghai, China
  ◦ Worked on **AI for Network**: network slicing, relay selection and placement, etc.

- **National Mobile Communications Research Laboratory, Southeast University** *Jan 2019 - Jun 2019*
  Undergraduate Research Assistant Nanjing, China
  ◦ Implemented several signal processing algorithms for a 5.8GHz multi-antenna radar system
  ◦ Conducted human movement detection based on the received signals

- **Siemens Technology China** *Jun 2019 - Aug 2019*
  Software Engineering in Department of Internet-of-Things (IoT) Suzhou, China
  ◦ Deployed network services for Siemens remote medical treatment platform
  ◦ Deployed virtual network computing modules at the server side

HONORS AND AWARDS

- Full scholarship of SJTU Zhiyuan Honors Doctorate Program[🌐] *2020 - 2025*
- First prize in Oral Presentation of 2023 SJTU Boxue Zhiyuan Doctoral Academic Forum [🌐] *2023*
- Shanghai Jiao Tong University Merit Student *2021, 2022*
- Southeast University Merit Student *2019, 2020*
- Grand prize (the highest award, top 1%) in National English Competition for College Students (NECCS) *2019*
- First prize in SEU Mathematical Contest in Modeling (MCM) *2018*
- Outstanding individual in college student union *2018*
- Han Sang Scholarship (Southeast University) *2017*
- Outstanding individual in college summer social practice *2017*

SERVICE AND VOLUNTEER EXPERIENCE

- Member in IEEE Young Professionals *2023 - On*
- Peer review assistant for IEEE Conference on Computer Communications (INFOCOM) *2021,2022,2023*
- SJTU Volunteer during Shanghai COVID-19 lockdown *2022*
- Teaching assistant of Advanced Mathematics *2020*
- Teaching assistant of Probability and Random Process *2017*

TECHNICAL SKILLS

- **Programming Languages:** Matlab, Python, C++
- **Python Libraries:** PyTorch, TensorFlow, Sionna
- **Natural Languages:** Mandarin (Native), English (Proficiency level), French (Elementary level)
- **Standardized Exam Grades:** IELTS 8.0 (L9/R8.5/W7.5/ S7.5, taken in 2023), GRE 328 + 4 (V161/Q167/W4.0, taken in 2019)

MISCELLANEOUS

Interests: Traveling, piano, go (which is also mastered by AlphaGo)
Strengths: Technical communication (especially oral presentation), interpersonal skills in team work
Who Am I: Dedicated, enthusiastic, persistent, self-motivated

REFERENCES

1. **Dr. Xudong Wang**
   John Wu and Jane Sun Chair Professor, UM-SJTU Joint Institute
   Shanghai Jiao Tong University
   Email: wxudong@sjtu.edu.cn
   Relationship: Ph.D. Supervisor