Guoxuan Chi

School of Software, Tsinghua University
+86-18811521756 chiguoxuan123
chiguoxuan@gmail.com / chiguoxuan@mail.tsinghua.edu.cn
https://tns.thss.tsinghua.edu.cn/~guoxuan/

Education and Employment

Present Feb. 2024	**Tsinghua University**, School of Software **Postdoctoral Researcher** Advisor: Prof. Zheng Yang
Jan. 2024 Aug. 2019	**Tsinghua University**, School of Software **Ph.D.** in Software Engineering, under supervision of **Prof. Zheng Yang** Thesis: *Signal Processing and Generation Techniques for Wireless Sensing*
Jul. 2019 Sep. 2015	**Beijing University of Posts and Telecommunications** **B.S.** in Communication Engineering Thesis: *High-robustness Navigation Technology based on Mobile Vision*

Publications

- [**ACM MobiCom**] **Chi G**, Yang Z, Wu C, Xu J, Gao Y, Liu Y, Han X. RF-Diffusion: Radio Signal Generation via Time-Frequency Diffusion[C]. Proceedings of the 30th Annual International Conference on Mobile Computing and Networking. 2024: 77-92.
- [**ACM MobiSys**] **Chi G**, Yang Z, Xu J, Wu C, Zhang J, Liang J, Liu Y. Wi-drone: wi-fi-based 6-DoF tracking for indoor drone flight control[C]. Proceedings of the 20th Annual International Conference on Mobile Systems, Applications and Services (MobiSys). 2022: 56-68.
- [**IEEE JSAC**] **Chi G**, Zhang G, Ding X, Ma Q, Yang Z, Du Z, Xiao H, Liu Z. XFall: Domain Adaptive Wi-Fi-Based Fall Detection With Cross-Modal Supervision[J]. IEEE Journal on Selected Areas in Communications (JSAC), 2024, 42(09): 2457-2471.
- [**IEEE TMC**] **Chi G**, Xu J, Zhang J, Zhang Q, Ma Q, Yang Z. Locate, Tell, and Guide: Enabling Public Cameras to Navigate the Public[J]. IEEE Transactions on Mobile Computing (TMC), 2023, 22(02): 1010-1024.
- [**IEEE VTC**] **Chi G**, Wang Y, Liu X, Qiu Y. Latency-optimal task offloading for mobile-edge computing system in 5G heterogeneous networks[C]. IEEE 87th Vehicular Technology Conference, 2018: 1-5.
- [**ACM MobiSys**] Xu J*, **Chi G***(co-primary authors), Yang Z, Li D, Zhang Q, Ma Q, Miao X. Followupar: Enabling follow-up effects in mobile ar applications[C]. Proceedings of the 19th Annual International Conference on Mobile Systems, Applications, and Services (MobiSys). 2021: 1-13.
- [**IEEE GLOBECOM**] Gao Y*, **Chi G***(co-primary authors), Zhang G, Yang Z. Wi-Prox: Proximity Estimation of Non-directly Connected Devices via Sim2Real Transfer Learning[C]. Accepted by IEEE Global Communications Conference (GLOBECOM), 2023: 5629-5634.
- [**ACM IMWUT**] Zhao L, Lyu R, Lei H, Lin Q, Zhou A, Ma H, Wang J, Meng X, Shao C, Tang Y, **Chi G**, Yang Z. AirECG: Contactless Electrocardiogram for Cardiac Disease Monitoring via mmWave Sensing and Cross-domain Diffusion Model[J]. Accepted by Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), 2024.

- [**IEEE IOTJ**] Gao Y, **Chi G**, Yang Z, Cheng S, Wei Z. RF-Prox: Radio-Based Proximity Estimation of Non-Directly Connected Devices[J]. IEEE Internet of Things Journal (IOTJ), 2024.
- [**ACM TOSN**] Zhang G, **Chi G**, Yang Z, Ding X, Yang Z. Push the Limit of Millimeter-wave Radar Localization[J]. ACM Transactions on Sensor Networks (TOSN), 2023, 19(3): 1-21.
- [**ACM TOSN**] Dong L, Xu J, **Chi G**, Li D, Zhang X, Li J, Ma Q, Yang Z. Enabling surveillance cameras to navigate[J]. ACM Transactions on Sensor Networks (TOSN), 2021, 17(4): 1-20.
- [**Chinese Journal of Computers**] Zhang G, Yang Z, Zhang Y, **Chi G**, Ma Q, Miao X. Research on Long-Range Multi-Target Algorithm with Millimeter-Wave Device[J]. Chinese Journal of Computers, 2023, 46(7):1366-1382.
- [**arXiv**] Yang Z, Zhang Y, **Chi G**, Zhang G. Hands-on Wireless Sensing with Wi-Fi: A Tutorial[J]. arXiv preprint arXiv:2206.09532.

</> Project Experience

- **Wireless Sensing Technology for 6-DoF Pose Tracking** *(NSFC Young Scientist Fund, PI)*:
  - First to propose six-degree-of-freedom pose tracking system based on wireless signals;
  - Designed and implemented a factor-graph fusion framework for wireless signals;
  - Achieved 20 cm positioning accuracy and 3.8° rotational accuracy, surpassing existing wireless tracking systems in both dimensionality and accuracy;

- **RF-oriented Diffusion Model for Wireless Sensing** *(NSFC General Project)*:
  - First to propose the generative diffusion theory for wireless signals;
  - Designed and implemented a complex-domain neural operator for wireless signals;
  - Bridged the gap in generative models for complex-domain raw RF signals in the wireless field;

- **CSI Modeling based on Commercial Wireless Devices** *(NSFC Key Project)*:
  - First to propose a theoretical model for CSI measurement using commercial network cards;
  - Considering various common errors in commercial hardware, including carrier frequency offset, sampling frequency offset, time offset, and nonlinear errors;
  - Advancing the implementation of wireless sensing systems using commercial devices;

- **Wi-Fi Based Fall Detection System**: *(HUAWEI Collaborative Project)*
  - Led the design and implementation of a domain-generalizable Wi-Fi fall detection framework;
  - Designed and proposed an environment-independent robust wireless feature, and a cross-modal joint training framework;
  - Achieved over 97% overall accuracy and about 96% cross-domain detection accuracy, surpassing existing wireless fall detection systems;

- **Wi-Fi-based Intrusion Detection System** *(ZTE Collaborative Project)*:
  - Led the design and implementation of a lightweight intrusion detection framework;
  - Significantly reduced computational resource consumption, memory usage, and detection latency;
  - Achieved over 99% intrusion detection rate, capable of performing detections within 20 ms on low-power devices, surpassing existing related systems;

Awards and Honors

2024 **Doctoral Dissertation Award**, ACM SIGCOMM China

2024 **Best Artifact Award**, ACM MobiCom'24 Committee

2021 - 2023 **First-class Scholarship**, Tsinghua University

2019 **Special Scholarship (Top 3 Students)**, Beijing Univ. of Posts and Telecom.

2016 - 2018 **National Scholarship**, The Ministry of Education, China

Professional Services

Program Committee Member:

- IEEE GLOBECOM, Symposium on Mobile and Wireless Networks, 2025
- ACM MobiCom Artifact Committee, 2024

Reviewer:

- IEEE JSAC, TMC, TII
- ACM IMWUT/UbiComp, TOSN, TIOT

Teaching Assistant:

- The Frontiers of Computer Networking
  2020 Spring, 2021 Spring, Tsinghua University
- Data Structure
  2021 Fall, Tsinghua University