

Guoxuan Chi

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🎓 Education and Employment

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

📖 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 (MobiCom). 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.
- 📌 [ACM MobiSys] Xu J*, **Chi G*** (co-first), 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-first), Zhang G, Yang Z. Wi-Prox: Proximity Estimation of Non-directly Connected Devices via Sim2Real Transfer Learning[C]. IEEE Global Communications Conference (GLOBECOM), 2023: 5629-5634.
- 📌 [IEEE IOTJ] Gao Y, **Chi G** (corresponding), 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.
- 📌 [IEEE MSN] Cheng S, Gao Y, Yang Z, **Chi G** (corresponding), Han X. WiViD: Leveraging Wi-Fi and Vision for Depth Estimation via Multimodal Diffusion[J]. IEEE International Conference on Mobility, Sensing and Networking (MSN), 2024: 73-80.
- 📌 [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.

- [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.
- [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.
- [IEEE ICRA] Zhang Z, Li X, Zou S, Chi G, Li S, Qiu X, Wang G, Zheng G, Wang L, Zhao H. Chameleon: Fast-slow Neuro-symbolic Lane Topology Extraction. IEEE International Conference on Robotics and Automation (ICRA), 2025.
- [IEEE/RSJ IROS] Zhang Z, Qiu X, Zhang B, Zheng G, Gu X, **Chi G**, Gao H, Wang L, Liu Z, Li X, Gilitschenki I. Delving into Mapping Uncertainty for Mapless Trajectory Prediction. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025.
- [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, 2025
-  IEEE ICPADS, 2025
-  ACM MobiCom Artifact Committee, 2024

Reviewer:

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

Teaching Assistant:

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