

Xinyu Zhang | Curriculum Vitae

9500 Gilman Dr. MC#0407 San Diego, CA 92093

☎ (858) 534 6426 • ✉ xyzhang@ucsd.edu • 🌐 <http://xyzhang.ucsd.edu>

Research Interest

Wireless Systems and Networking: Designing and implementing next-generation wireless network architectures (millimeter-wave networking, physical-layer informed protocols, etc.)

Mobile and Ubiquitous Computing: Designing and implementing ubiquitous sensing systems for Internet-of-Things applications (smart homes/buildings, wireless health, and human-mobile interaction)

Education

University of Michigan

Ph.D., Computer Science and Engineering

Thesis: MAC/PHY Co-Design of CSMA Wireless Networks Based on Software Radios

Advisor: Kang G. Shin

Ann Arbor, US

2008–2012

University of Toronto

M.S., Computer Engineering

Thesis: Drift: A Highly Condensed Emulation Framework for Mobile Nodes in Server Clusters

Advisor: Baochun Li

Toronto, Canada

2005–2007

Harbin Institute of Technology

B.E., Electronic and Communications Engineering

Harbin, China

2001–2005

Employment

University of California San Diego

Associate Professor

San Diego, CA

July 2017–Now

University of Wisconsin-Madison

Assistant Professor

Madison, WI

Aug. 2012–July 2017

NEC Labs America

Research Intern

Princeton, NJ

May 2011 – Dec. 2011

Microsoft Research Asia

Research Intern

Beijing, China

May 2010 – Aug. 2010

University of Toronto

Research Technician

Toronto, Canada

June 2007 – Aug. 2008

Honors and Awards

July. 2023 AI/Tech + Aging Pilot Award, National Institute on Aging (NIA)

Apr. 2023 ACM SIGMOBILE Rockstar Award

Sep. 2020 ACM MobiCom Best Paper Award

2015–2020 4 papers highlighted in ACM GetMobile as top picks in the SIGMOBILE area

Feb. 2020 Sony Research Award

Feb. 2020 Google Faculty Research Award

Sep. 2018 Communications of the ACM Research Highlight

May 2018 ACM SIGMOBILE Research Highlight

Apr. 2018 Sony Research Award

- Feb. 2018 Google Faculty Research Award
- Feb. 2017 Google Faculty Research Award
- Jan. 2017 Dugald C. Jackson Faculty Scholar, UW-Madison
- Oct. 2016 Nominated for the University of Wisconsin Innovation Award (6 out of 400+ research teams)
- Jan. 2015 Madison Teaching and Learning Excellence (MTLE) faculty fellowship
- Jan. 2015 IEEE INFOCOM'15 distinguished TPC member award
- Mar. 2014 NSF CAREER Award
- 2013, 2014 Hilldale Fellowship, University of Wisconsin-Madison
- Sep. 2011 ACM MobiCom Best Paper Award
- Sep. 2005 Graduate Fellowship, University of Toronto

Publications

Underlined are my direct advisees. ‘*’ marks co-primary authors. Updated list available at <http://xyzhang.ucsd.edu/publications.html>

Conference Publications:

- [C1] “RF Genesis: Zero-Shot Generalization of mmWave Sensing through Simulation-Based Data Synthesis and Generative Diffusion Models”
Xingyu Chen, **Xinyu Zhang**
Proceedings of the ACM Conference on Embedded Networked Sensor Systems (SenSys), 2023
- [C2] “Metasight: High-Resolution NLoS Radar with Efficient Metasurface Encoding”
Timothy Woodford, Kun Qian, **Xinyu Zhang**
Proceedings of the ACM Conference on Embedded Networked Sensor Systems (SenSys), 2023
- [C3] “NeuroRadar: A Neuromorphic Radar Sensor for Low-Power IoT Systems”
Kai Zheng, Kun Qian, Timothy Woodford, **Xinyu Zhang**
Proceedings of the ACM Conference on Embedded Networked Sensor Systems (SenSys), 2023
- [C4] “UniScatter: a Metamaterial Backscatter Tag for Wideband Joint Communication and Radar Sensing”
Kun Qian, Lulu Yao, Kai Zheng, **Xinyu Zhang**, Tina Ng
ACM International Conference on Mobile Computing and Networking (MobiCom), 2023
- [C5] “GPSMirror: Expanding Accurate GPS Positioning to Shadowed and Indoor Regions with Backscatter”
Huixin Dong, Yirong Xie, Xianan Zhang, Wei Wang, **Xinyu Zhang**, Jianhua He
ACM International Conference on Mobile Computing and Networking (MobiCom), 2023
- [C6] “SlimWiFi: Ultra-Low-Power IoT Radio Architecture Enabled by Asymmetric Communication”
Renjie Zhao, Kejia Wang, **Xinyu Zhang**, Vincent Leung
USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2023
- [C7] “RF-Chord: Towards Deployable RFID Localization System for Logistic Networks”
Bo Liang, Purui Wang, Renjie Zhao, Heyu Guo, Pengyu Zhang, Junchen Guo, Shunmin Zhu, Hongqiang Liu, **Xinyu Zhang**, Chenren Xu
USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2023
- [C8] “StealthyIMU: Stealing Permission-protected Private Information From Smartphone Voice Assistant Using Zero-Permission Sensors”
Ke Sun, Chunyu Xia, Songlin Xu, **Xinyu Zhang**
Network and Distributed System Security Symposium (NDSS), 2023
- [C9] “SaTCP: Link-Layer Informed TCP Adaptation for Highly Dynamic LEO Satellite Networks”
Xuyang Cao, **Xinyu Zhang**
IEEE Conference on Computer Communications (INFOCOM), 2023
- [C10] “MilliMirror: 3D Printed Reflecting Surface for Millimeter-Wave Coverage Expansion”
Kun Qian, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2022

[C11] "Protego: Securing Wireless Communication Via Programmable Metasurface"

Xinyi Li, Chao Feng, Fengyi Song, Chenghan Jiang, Yangfan Zhang, Ke Li, **Xinyu Zhang**, Xiaojiang Chen
ACM International Conference on Mobile Computing and Networking (MobiCom), 2022

[C12] "Mosaic: Leveraging Diverse Reflector Geometries for Omnidirectional Around-Corner Automotive Radar"

Timothy Woodford, **Xinyu Zhang**, Eugene Chai, Karthikeyan Sundaresan

ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), 2022

[C13] "NeuroMessenger: Towards Error Tolerant Distributed Machine Learning Over Edge Networks"

Song Wang, **Xinyu Zhang**

IEEE Conference on Computer Communications (INFOCOM), 2022

[C14] "RoS: Passive Smart Surface for Roadside-to-Vehicle Communication"

John Nolan*, Kun Qian*, **Xinyu Zhang**

Proceedings of the ACM Special Interest Group on Data Communication (SIGCOMM), 2021

[C15] "The Invisible Shadow: How Security Cameras Leak Private Activities"

Jian Gong, **Xinyu Zhang**, Ju Ren, Yaoxue Zhang

ACM Conference on Computer and Communications Security (CCS), 2021

[C16] "Robust Multimodal Vehicle Detection in Foggy Weather using Complementary Lidar and Radar Signals"

Kun Qian, Shilin Zhu, **Xinyu Zhang**, Li Erran Li

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2021

[C17] "SpaceBeam: LiDAR-Driven One-Shot mmWave Beam Management"

Timothy Woodford, **Xinyu Zhang**, Eugene Chai, Karthikeyan Sundaresan, Amir Khojastepour

ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), 2021

[C18] "UltraSE: Single-Channel Speech Enhancement Using Ultrasound"

Ke Sun, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2021

[C19] "Loki: Improving Long Tail Performance of Learning-Based Real-Time Video Adaptation by Fusing Rule-Based Models"

Huanhuan Zhang, Anfu Zhou, Yuhan Hu, Chaoyue Li, Guangping Wang, **Xinyu Zhang**, Huadong Ma, Leilei Wu, Aiyun Chen, Changhui Wu

ACM International Conference on Mobile Computing and Networking (MobiCom), 2021

[C20] "RFlens: Metasurface-Enabled Beamforming for IoT Communication and Sensing"

Chao Feng, Xinyi Li, Yangfan Zhang, Xiaojing Wang, Liqiong Chang, Fuwei Wang, **Xinyu Zhang**, Xiaojiang Chen

ACM International Conference on Mobile Computing and Networking (MobiCom), 2021

[C21] "ExGSense: Toward Facial Gesture Sensing and Reconstruction with a Sparse Near-Eye Sensor Array"

Chen Chen, Ke Sun, **Xinyu Zhang**

ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN), 2021

[C22] "Robust RF Vital Sign Sensing Under Free Body Movement"

Jian Gong, **Xinyu Zhang**, Kaixin Lin, Ju Ren, Yaoxue Zhang, Wenxun Qiu

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT/UbiComp), 2021

[C23] "Robust Inertial Motion Tracking Through Deep Sensor Fusion Across Smart Earbuds And Smartphone"

Jian Gong, **Xinyu Zhang**, Ju Ren, Yaoxue Zhang

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT/UbiComp), 2021

[C24] "3D Point Cloud Generation with Millimeter-Wave Radar"

Renjie Zhao, Zhaoyuan He, **Xinyu Zhang**

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT/UbiComp), 2021

[C25] "'Alexa, Stop Spying on Me!': Speech Privacy Protection Against Voice Assistants"

Ke Sun, Chen Chen, **Xinyu Zhang**

Proceedings of the ACM Conference on Embedded Networked Sensor Systems (SenSys), 2020
(43 out of 213 submissions. Acceptance ratio: 20%)

[C26] “NFC+: Breaking NFC Networking Limits through Resonance Engineering”

Renjie Zhao, Purui Wang, Xianshang Lin, Yunfei Ma, Pengyu Zhang, Hongqiang Harry Liu, **Xinyu Zhang**, Chenren Xu, Ming Zhang

Proceedings of the ACM Special Interest Group on Data Communication (SIGCOMM), 2020
(54 out of 250 submissions. Acceptance ratio: 22%)

[C27] “Understanding Operational 5G: A First Measurement Study on Its Coverage, Performance and Energy Consumption”

Dongzhu Xu, Anfu Zhou, **Xinyu Zhang**, Guixian Wang, Xi Liu, Congkai An, Yiming Shi, Liang Liu, Huadong Ma

Proceedings of the ACM Special Interest Group on Data Communication (SIGCOMM), 2020
(54 out of 250 submissions. Acceptance ratio: 22%)

[C28] “Demystifying Millimeter-Wave V2X: Towards Robust and Efficient Directional Connectivity Under High Mobility”
Song Wang, Jingqi Huang, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2020
(62 out of 384 submissions. Acceptance ratio: 16%)

[C29] “OnRL: Improving Mobile Video Telephony via Online Reinforcement Learning”

Huanhuan Zhang, Anfu Zhou, Jiamin Liu, Ruoxuan Ma, Yuhan Hu, Cong Li, **Xinyu Zhang**, Huadong Ma, Xiaojiang Chen

ACM International Conference on Mobile Computing and Networking (MobiCom), 2020
(62 out of 384 submissions. Acceptance ratio: 16%)

[C30] “X-Array: Approximating Omnidirectional Millimeter-Wave Coverage Using an Array of Phased Arrays”

Song Wang, Jingqi Huang, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2020
(62 out of 384 submissions. Acceptance ratio: 16%)

[C31] “M-Cube: A Millimeter-Wave Massive MIMO Software Radio”

Renjie Zhao, Timothy Woodford, Teng Wei, Kun Qian, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2020

(**Best Paper Award**. 2 papers out of 384 submissions, , **Highlighted** by ACM GetMobile Journal.)

[C32] “Learning to Coordinate Video Codec with Transport Protocol for Mobile Video Telephony”

Anfu Zhou, Huanhuan Zhang, Guangyuan Su, Leilei Wu, Ruoxuan Ma, Zhen Meng, **Xinyu Zhang**, Xiufeng Xie, Huadong Ma, Xiaojiang Chen

ACM International Conference on Mobile Computing and Networking (MobiCom), 2019
(55 out of 290 submissions. Acceptance ratio: 19%)

[C33] “Taprint: Secure Text Input for Commodity Smart Wearables”

Wenqiang Chen, Lin Chen, Yandao Huang, **Xinyu Zhang**, Lu Wang, Rukhsana Ruby, Kaishun Wu

ACM International Conference on Mobile Computing and Networking (MobiCom), 2019
(55 out of 290 submissions. Acceptance ratio: 19%)

[C34] “Learning to Recognize Unmodified Lights with Invisible Features”

Huanhuan Zhang, Anfu Zhou, Dongzhu Xu, Shaoqing Xu, **Xinyu Zhang**, Huadong Ma

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT/UbiComp), 2019

[C35] “Robot Navigation in Radio Beam Space: Leveraging Robot Intelligence for Seamless mmWave Network Coverage”

Anfu Zhou, Shaoqing Xu, Song Wang, Jingqi Huang, Shaoyuan Yang, Teng Wei, Xinyu Zhang, Huadong Ma

ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2019
(37 out of 156 submissions. Acceptance ratio: 24%)

[C36] “Towards Scalable and Ubiquitous Millimeter-Wave Wireless Networks”

Sanjib Sur, Ioannis Pefkianakis, **Xinyu Zhang**, Kyu-Han Kim

ACM International Conference on Mobile Computing and Networking (MobiCom), 2018

(42 out of 186 submissions. Acceptance ratio: 22%)

[C37] “Conductive Inkjet Printed Passive 2D TrackPad for VR Interaction”

Chuhan Gao, **Xinyu Zhang**, Suman Banerjee

ACM International Conference on Mobile Computing and Networking (MobiCom), 2018

(42 out of 186 submissions. Acceptance ratio: 22%)

[C38] “LiveTag: Sensing Human-Object Interaction Through Passive Chipless WiFi Tags”

Chuhan Gao, Yilong Li, **Xinyu Zhang**

USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2018

(40 out of 252 submissions. Acceptance ratio: 16%) (One of the **top** papers in the Mobile Computing area in 2018, **highlighted** by ACM GetMobile Journal).

[C39] “Following the Shadow: Agile 3-D Beam-Steering for 60 GHz Wireless Networks”

Anfu Zhou, Leilei Wu, Shaoqing Xu, Huadong Ma, Teng Wei, **Xinyu Zhang**

IEEE Conference on Computer Communications (INFOCOM), 2018

(309 out of 1606 submissions. Acceptance ratio: 19%)

[C40] “POI360: Panoramic Mobile Video Telephony over LTE Cellular Networks”

Xiufeng Xie, **Xinyu Zhang**

ACM International Conference on emerging Networking EXperiments and Technologies (CoNEXT), 2017

(40 out of 222 submissions. Acceptance ratio: 18%)

[C41] “Automating Visual Privacy Protection Using a Smart LED”

Chi Zhang, Shilin Zhu, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2017

(35 out of 186 submissions. Acceptance ratio: 19%) (**ACM SIGMOBILE Research Highlight. Communications of the ACM Research Highlight.**)

[C42] “Pulsar: Towards Ubiquitous Visible Light Localization”

Chi Zhang, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2017

(35 out of 186 submissions. Acceptance ratio: 19%)

[C43] “WiFi-Assisted 60 GHz Networks”

Sanjib Sur, Ioannis Pefkianakis, **Xinyu Zhang**, Kyu-Han Kim

ACM International Conference on Mobile Computing and Networking (MobiCom), 2017

(35 out of 186 submissions. Acceptance ratio: 19%)

[C44] “Towards Seamless Coverage and Mobility Support for 60 GHz Millimeter-wave Networks”

Teng Wei, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2017

(35 out of 186 submissions. Acceptance ratio: 19%)

[C45] “Accelerating Mobile Web Loading Using Cellular Link Information”

Xiufeng Xie, **Xinyu Zhang**, Shilin Zhu

ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), 2017

(34 out of 188 submissions. Acceptance ratio: 18%)

[C46] “Enabling High-Precision Visible Light Localization in Today's Buildings”

Shilin Zhu, **Xinyu Zhang**

ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), 2017

(34 out of 188 submissions. Acceptance ratio: 18%)

[C47] “Facilitating Robust 60 GHz Network Deployment By Sensing Ambient Reflectors”

Teng Wei, Anfu Zhou, **Xinyu Zhang**

USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2017

(46 out of 253 submissions. Acceptance ratio: 18%)

[C48] “Beam-forecast: Facilitating Mobile 60 GHz Networks via Model-driven Beam Steering”

- Anfu Zhou, **Xinyu Zhang**, Huadong Ma
IEEE Conference on Computer Communications (INFOCOM), 2017
 (292 out of 1295 submissions. Acceptance ratio: 21%)
- [C49]** “LiTell: Robust Indoor Localization Using Unmodified Light Fixtures”
Chi Zhang, **Xinyu Zhang**
ACM International Conference on Mobile Computing and Networking (MobiCom), 2016
 (One of **top 3** papers pre-accepted to MobiCom’16, out of 226 submissions).
- [C50]** “Gyro in the Air: Tracking 3D Orientation of Batteryless Internet-of-Things”
Teng Wei, **Xinyu Zhang**
ACM International Conference on Mobile Computing and Networking (MobiCom), 2016
 (One of **top 3** papers pre-accepted to MobiCom’16, out of 226 submissions). (**Highlighted** by ACM GetMobile.)
- [C51]** “OpenMili: A 60 GHz Software Radio Platform With a Reconfigurable Phased-Array Antenna”
Jialiang Zhang, **Xinyu Zhang**, Pushkar Kulkarni, Parameswaran Ramanathan
ACM International Conference on Mobile Computing and Networking (MobiCom), 2016
 (31 out of 226 submissions. Acceptance ratio: 14%)
- [C52]** “Practical MU-MIMO User Selection on 802.11ac Commodity Networks”
Sanjib Sur, Ioannis Pefkianakis, **Xinyu Zhang**, Kyu-Han Kim
ACM International Conference on Mobile Computing and Networking (MobiCom), 2016
 (31 out of 226 submissions. Acceptance ratio: 14%)
- [C53]** “BeamSpy: Enabling Robust 60 GHz Links Under Blockage”
Sanjib Sur, **Xinyu Zhang**, Parameswaran Ramanathan, Ranveer Chandra
USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2016
 (45 out of 225 submissions. Acceptance ratio: 20%)
- [C54]** “Random Access Signaling for Network MIMO Uplink”
Teng Wei, **Xinyu Zhang**
IEEE Conference on Computer Communications (INFOCOM), 2016
 (300 out of 1644 submissions. Acceptance ratio: 18%)
- [C55]** “Continuous and Fine-grained Breathing Volume Monitoring from Afar Using Wireless Signals”
 Phuc Nguyen, **Xinyu Zhang**, Ann Halbower, Tam Vu
IEEE Conference on Computer Communications (INFOCOM), 2016
 (300 out of 1644 submissions. Acceptance ratio: 18%)
- [C56]** “Scoping Environment for Robust 60 GHz Link Deployment”
Sanjib Sur, **Xinyu Zhang**
IEEE Information Theory and Applications Workshop (ITA), invited paper, 2016
- [C57]** “Towards a Visible Light Network Architecture for Continuous Communication and Localization”
Jialiang Zhang, Chi Zhang, **Xinyu Zhang**, Suman Banerjee
ACM Workshop on Visible Light Communication Systems (VLCS), 2016
- [C58]** “mTrack: High-Precision Passive Tracking Using Millimeter Wave Radios”
Teng Wei, **Xinyu Zhang**
ACM International Conference on Mobile Computing and Networking (MobiCom), 2015
 (38 out of 207 submissions. Acceptance ratio: 18%)
- [C59]** “Acoustic Eavesdropping through Wireless Vibrometry”
Teng Wei, Shu Wang, Anfu Zhou, **Xinyu Zhang**
ACM International Conference on Mobile Computing and Networking (MobiCom), 2015
 (One of **top 9** papers pre-accepted to MobiCom’15, out of 207 submissions).
- [C60]** “Hekaton: Efficient and Practical Large-Scale MIMO”
Xiufeng Xie, Eugene Chai, **Xinyu Zhang**, Karthikeyan Sundaresan, Amir Khojastepour, Sampath Rangarajan
ACM International Conference on Mobile Computing and Networking (MobiCom), 2015

(One of **top 9** papers pre-accepted to MobiCom'15, out of 207 submissions).

[C61] "piStream: Physical Layer Informed Adaptive Video Streaming Over LTE"

Xiufeng Xie, **Xinyu Zhang**, Swarun Kumar, Li Erran Li

ACM International Conference on Mobile Computing and Networking (MobiCom), 2015

(One of **top 4** MobiCom'15 papers **highlighted** in ACM GetMobile Journal;

One of **top 9** papers pre-accepted to MobiCom'15, out of 207 submissions).

[C62] "Extending Mobile Interaction Through Near-Field Visible Light Sensing"

Chi Zhang, Joshua Tabor, Jialiang Zhang, **Xinyu Zhang**

ACM International Conference on Mobile Computing and Networking (MobiCom), 2015

(38 out of 207 submissions. Acceptance ratio: 18%)

[C63] "Energy Efficient WiFi Display"

Chi Zhang, **Xinyu Zhang**, Ranveer Chandra

ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), 2015

(29 out of 219 submissions. Acceptance ratio: 13.2%)

[C64] "60 GHz Indoor Networking through Flexible Beams: A Link-Level Profiling"

Sanjib Sur, Vignesh Venkateswaran, **Xinyu Zhang**, Parameswaran Ramanathan

ACM Conference on Measurement and Modeling of Computer Systems (SIGMETRICS), 2015

(32 out of 239 submissions. Acceptance ratio: 13.4%)

[C65] "Cross-Cell DoF Distribution: Combating Channel Hardening Effect in Multi-Cell MU-MIMO Networks"

Xiufeng Xie, **Xinyu Zhang**, Eugene Chai

ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2015

(37 out of 250 submissions. Acceptance ratio: 14.8%)

[C66] "Signpost: Scalable MU-MIMO Signaling with Zero CSI Feedback"

Anfu Zhou, Teng Wei, **Xinyu Zhang**, Min Liu, Zhongcheng Li

ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2015

(37 out of 250 submissions. Acceptance ratio: 14.8%)

[C67] "TRINITY: Tailoring Wireless Transmission Strategies to User Profiles in Enterprise Wireless Networks"

Shailendra Singh, Karthik Sundaresan, Srikanth Krishnamurthy, **Xinyu Zhang**, Amir Khojastepour, Sampath Rangarajan

ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2015

(37 out of 250 submissions. Acceptance ratio: 14.8%)

[C68] "Bringing Multi-Antenna Gain to Energy-Constrained Wireless Devices"

Sanjib Sur, Teng Wei, **Xinyu Zhang**

ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN), 2015

(27 out of 111 submissions. Acceptance ratio: 24.3%)

[C69] "Bridging Link Power Asymmetry in Mobile Whitespace Networks"

Sanjib Sur, **Xinyu Zhang**

IEEE Conference on Computer Communications (INFOCOM), 2015

(316 out of 1640 submissions. Acceptance ratio: 19.2%)

[C70] "Exploring Full-Duplex Gains in Multi-Cell Wireless Networks: A Spatial Stochastic Framework"

Shu Wang, Vignesh Venkateswaran, **Xinyu Zhang**

IEEE Conference on Computer Communications (INFOCOM), 2015

(316 out of 1640 submissions. Acceptance ratio: 19.2%)

[C71] "Dancing with Light: Predictive In-frame Rate Selection for Visible Light Networks"

Jialiang Zhang, **Xinyu Zhang**, Gang Wu

IEEE Conference on Computer Communications (INFOCOM), 2015

(316 out of 1640 submissions. Acceptance ratio: 19.2%)

[C72] "Autodirective Audio Capturing through a Synchronized Smartphone Array"

Sanjib Sur, Teng Wei, **Xinyu Zhang**

ACM International Conference on Mobile Systems, Applications, and Services (**MobiSys**), 2014
(25 out of 185 submissions. Acceptance ratio: 13.5%)

[C73] “Ubiquitous Keyboard for Small Mobile Devices: Harnessing Multipath Fading for Fine-grained Keystroke Localization”

Junjue Wang, Kaichen Zhao, **Xinyu Zhang**, Chunyi Peng

ACM International Conference on Mobile Systems, Applications, and Services (**MobiSys**), 2014
(25 out of 185 submissions. Acceptance ratio: 13.5%)

[C74] “Leveraging Directional Antenna Capabilities for Fine-Grained Gesture Recognition”

Pedro Melgarejo, **Xinyu Zhang**, Parameswaran Ramanathan, David Chu

ACM International Joint Conference on Pervasive and Ubiquitous Computing (**UbiComp**), 2014
(62 out of 454 submissions. Acceptance ratio: 13.7%)

[C75] “Semi-Synchronous Channel Access for Full-duplex Wireless Networks”

Xiufeng Xie, **Xinyu Zhang**

IEEE International Conference on Network Protocols (**ICNP**), 2014
(15 out of 79 submissions. Acceptance ratio: 19%)

[C76] “Does Full-duplex Double the Capacity of Wireless Networks?”

Xiufeng Xie, **Xinyu Zhang**

IEEE Conference on Computer Communications (**INFOCOM**), 2014
(320 out of 1645 submissions. Acceptance ratio: 19.4%)

[C77] “Scalable User Selection for MU-MIMO Networks”

Xiufeng Xie, **Xinyu Zhang**

IEEE Conference on Computer Communications (**INFOCOM**), 2014
(320 out of 1645 submissions. Acceptance ratio: 19.4%)

[C78] “Adaptive Feedback Compression for MIMO Networks”

Xiufeng Xie, **Xinyu Zhang**, Karthikeyan Sundaresan

ACM International Conference on Mobile Computing and Networking (**MobiCom**), 2013
(28 out of 208 submissions. Acceptance ratio: 13.5%)

[C79] “NEMOx: Scalable Network MIMO for Wireless Networks”

Xinyu Zhang, Karthikeyan Sundaresan, Amir Khojastepour, Sampath Rangarajan, Kang G. Shin

ACM International Conference on Mobile Computing and Networking (**MobiCom**), 2013
(28 out of 208 submissions. Acceptance ratio: 13.5%)

[C80] “Gap Sense: Lightweight Coordination of Heterogeneous Wireless Devices”

Xinyu Zhang, Kang G. Shin

IEEE Conference on Computer Communications (**INFOCOM**), 2013
(280 out of 1613 submissions. Acceptance ratio: 17%)

[C81] “E-MiLi: Energy-Minimizing Idle Listening in Wireless Networks”

Xinyu Zhang, Kang G. Shin

ACM International Conference on Mobile Computing and Networking (**MobiCom**), 2011
(29 out of 214 submissions. Acceptance ratio: 14%)

(**Best Paper Award, fast-tracked** to IEEE Transactions on Mobile Computing)

[C82] “Enabling Coexistence of Heterogeneous Wireless Systems: Case for ZigBee and WiFi”

Xinyu Zhang, Kang G. Shin

ACM International Symposium on Mobile Ad Hoc Networking and Computing (**MobiHoc**), 2011
(25 out of 127 submissions. Acceptance ratio: 20%)

[C83] “Adaptive Subcarrier Nulling: Enabling Partial Spectrum Sharing in Wireless LANs”

Xinyu Zhang, Kang G. Shin

IEEE International Conference on Network Protocols (**ICNP**), 2011
(31 out of 189 submissions. Acceptance ratio: 16%)

[C84] “The Case for Antenna Cancellation for Scalable Full Duplex Wireless Communications”
Mohammad A. Khojastepour, Karthikeyan Sundaresan, Sampath Rangarajan, **Xinyu Zhang**, Sanaz Barghi
ACM Workshop on Hot Topics in Networks (HotNets), 2011
(24 out of 119 submissions. Acceptance ratio: 20%)

[C85] “Chorus: Collision Resolution for Efficient Wireless Broadcast”
Xinyu Zhang, Kang G. Shin
IEEE Conference on Computer Communications (INFOCOM), 2010
(276 out of 1575 submissions. Acceptance ratio: 18%)

[C86] “DAC: Distributed Asynchronous Cooperation for Wireless Relay Networks”
Xinyu Zhang, Kang G. Shin
IEEE Conference on Computer Communications (INFOCOM), 2010
(276 out of 1575 submissions. Acceptance ratio: 18%)

[C87] “Spatio-Temporal Fusion for Small-scale Primary Detection in Cognitive Radio Networks”
Alexander W. Min, **Xinyu Zhang**, Kang G. Shin
IEEE Conference on Computer Communications (INFOCOM, mini-conference), 2010
(106 mini-conference papers out of 1575 submissions)

[C88] “On the Market Power of Network Coding in P2P Content Distribution Systems”
Xinyu Zhang, Baochun Li
IEEE Conference on Computer Communications (INFOCOM), 2009
(282 out of 1435 submissions. Acceptance ratio: 20%)

[C89] “Dice: a Game Theoretic Framework for Wireless Multipath Network Coding”
Xinyu Zhang, Baochun Li
ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2008
(44 out of 300 submissions. Acceptance ratio: 15%)

[C90] “Drift: A Highly Condensed Emulation Framework for Mobile Nodes in Server Clusters”
Xinyu Zhang, Baochun Li
IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS), 2008
(26 regular plus 5 extended papers out of over 250 submissions. Acceptance ratio: 12%)

[C91] “Optimized Multipath Network Coding in Lossy Wireless Networks”
Xinyu Zhang, Baochun Li
International Conference on Distributed Computing Systems (ICDCS), 2008
(102 out of 638 submissions. Acceptance ratio: 16%)

[C92] “On the Benefits of Network Coding in Multi-Channel Wireless Networks”
Xinyu Zhang, Baochun Li
IEEE Conference on Sensor, Mesh and Ad hoc Communications and Networks (SECON), 2008
(64 out of 304 submissions. Acceptance ratio: 21%)

[C93] “Network Coding Aware Dynamic Subcarrier Assignment in OFDMA Wireless Networks”
Xinyu Zhang, Baochun Li
IEEE International Conference on Communications (ICC), 2008

Journal Publications:

[J1] “HiveMind: Towards Cellular Native Machine Learning Model Splitting”
Song Wang, **Xinyu Zhang**, Hiromasa Uchiyama, Hiroki Matsuda
To appear in IEEE Journal on Selected Areas in Communications (JSAC), 2021

[J2] “Guidepost: Scalable MU-MIMO User Selection via Indirect Channel Orthogonality Evaluation”
Anfu Zhou, Teng Wei, **Xinyu Zhang**, Huadong Ma
IEEE Transactions on Mobile Computing (TMC), 2019

[J3] “Visible Light Localization Using Conventional Light Fixtures and Smartphones”

Chi Zhang, **Xinyu Zhang**

IEEE Transactions on Mobile Computing (TMC), 2019

[J4] “FastND: Accelerating Directional Neighbor Discovery for 60 GHz Millimeter-Wave Wireless Networks”

Anfu Zhou, Teng Wei, Huadong Ma, **Xinyu Zhang**
ACM/IEEE Transactions on Networking (ToN), 2019

[J5] “Visible Light Localization Using Conventional Light Fixtures and Smartphones”

Chi Zhang, **Xinyu Zhang**

IEEE Transactions on Mobile Computing (TMC), 2019

[J6] “Fundamental Analysis of Full-duplex Gains in Wireless Networks”

Shu Wang, Vignesh Venkateswaran, **Xinyu Zhang**
ACM/IEEE Transactions on Networking (ToN), 2016

[J7] “Fair and Efficient Coexistence of Heterogeneous Channel Widths in Next-Generation Wireless LANs”

Sihui Han, **Xinyu Zhang**, Kang G. Shin

IEEE Transactions on Mobile Computing (TMC), 2016

[J8] “Cooperation Without Synchronization: Practical Cooperative Relaying for Wireless Networks”

Xinyu Zhang, Kang G. Shin

IEEE Transactions on Mobile Computing (TMC), 2015.

[J9] “Cooperative Carrier Signaling: Harmonizing Coexisting WLAN and WPAN Devices”

Xinyu Zhang, Kang G. Shin

ACM/IEEE Transactions on Networking (ToN), 2012.

[J10] “E-MiLi: Energy-Minimizing Idle Listening in Wireless Networks”

Xinyu Zhang, Kang G. Shin

IEEE Transactions on Mobile Computing (TMC), 2012

[J11] “Delay-Optimal Broadcast for Multi-Hop Wireless Networks Using Self-Interference Cancellation”

Xinyu Zhang, Kang G. Shin

IEEE Transactions on Mobile Computing (TMC), 2011.

[J12] “On the Market Power of Network Coding in P2P Content Distribution Systems”

Xinyu Zhang, Baochun Li

IEEE Transactions on Parallel and Distributed Systems (TPDS), 2011

[J13] “Network Coding Aware Dynamic Subcarrier Assignment in OFDMA Wireless Networks”

Xinyu Zhang, Baochun Li

IEEE Transactions on Vehicular Technology (TVT), 2011

[J14] “Optimized Multipath Network Coding in Lossy Wireless Networks”

Xinyu Zhang, Baochun Li

IEEE Journal on Selected Areas in Communications (JSAC), 2009

[J15] “Detection of Small-scale Primary Users in Cognitive Radio Networks”

Alexander W. Min, **Xinyu Zhang**, Kang G. Shin

IEEE Journal on Selected Areas in Communications (JSAC), 2011

[J16] “Exploiting Spectrum Heterogeneity in Dynamic Spectrum Market”

Alexander W. Min, **Xinyu Zhang**, Jaehyuk Choi, Kang G. Shin

IEEE Transactions on Mobile Computing (TMC), 2011

Patents

[T1] “Visual Privacy System”

Co-inventors: **Xinyu Zhang**, Shilin Zhu, Chi Zhang

U.S. Utility Patent No. 15/616386, 2017

[T1] “Spatial Location Indoors Using Standard Fluorescent Fixtures”

Co-inventors: **Xinyu Zhang**, Chi Zhang
U.S. Utility Patent No. 15/164195, 2016

[T2] “Location-Aware Communication System Using Visible Light Transmission”
Co-inventors: **Xinyu Zhang**, Suman Banerjee, Jialiang Zhang, Chi Zhang
U.S. Utility Patent No. 14/980,103, 2015

[T3] “Touch Surface for Mobile Devices Using Near Field Light Sensing”
Co-inventors: **Xinyu Zhang**, Chi Zhang, Joshua Tabor, Jialiang Zhang
U.S. Utility Patent No. 14/885490, filed on Oct. 2015

[T4] “Radio Frequency Communication with Antenna Index Coding”
Co-inventors: **Xinyu Zhang**, Sanjib Sur, Teng Wei
U.S. Utility Patent No. 14/921346, filed on Oct. 2015

[T5] “Lightweight Coordination of Heterogeneous Wireless Devices”
Co-inventors: **Xinyu Zhang**, Kang G. Shin
U.S. Provisional Patent No. 61/754,162, filed on Jan. 2013

[T6] “Scalable network MIMO for wireless networks”
Co-inventors: **Xinyu Zhang**, Mohammad A. Khojastepour, Karthikeyan Sundaresan, Sampath Rangarajan
US Patent No. 13/755,485, filed on Mar. 2012

[T7] “Reducing Energy Consumption in Wireless Devices”
Co-inventors: **Xinyu Zhang**, Kang G. Shin
U.S. Provisional Patent No. 61/473,356, filed on Apr. 2011.

(Licensed to a major mobile device manufacturer and to be implemented in next-generation WiFi chipsets.)

Extramural Grants

- **DoD, PI**, 10/2023 to 09/2025.
 - *Project title*: “RayNet: A Full-Stack Programmable Experimental Testbed to Support Research in Extremely Heterogeneous Networks”
 - *Co-PI*: Prof. Farinaz Koushanfar (UCSD)
- **NSF CNS, PI**, 10/2023 to 09/2027.
 - *Project title*: “NeTS: Medium: Scalable Metasurface Array for mmWave Communication and Sensing”
 - *Co-PI*: Prof. Tina Ng (UCSD), Suman Banerjee (University of Wisconsin-Madison)
- **National Institute on Aging (NIA) A2 Pilot Research Award, PI**, 07/2023 to 06/2024.
 - *Project title*: “Non-Intrusive, Fine-Grained In-Home Daily Activity Transcription for Alzheimer’s Monitoring”
 - *Co-PI*: Alison Moore
- **Cisco Research grant, PI**, 10/2023 to 09/2024.
 - *Project title*: “Efficient Data Transport Over Highly Dynamic LEO Satellite Networks”
- **NSF-SWIFT, PI**, 10/2021 to 09/2024.
 - *Project title*: “Collaborative Research:SWIFT: Exploiting Application Semantics in Intelligent Cross-Layer Design to Enhance End-to-End Spectrum Efficiency”
 - *Co-PI*: Prof. Zhi-Li Zhang and Feng Qian (University of Minnesota)
- **NSF-CCRI, PI**, 10/2019 to 09/2022.
 - *Project title*: “CCRI: ENS: Millimeter-Wave Massive MIMO Platform for 5G V2X Networking and Automotive Sensing”
 - *Co-PI*: Prof. Gabriel Rebeiz, Dinesh Bharadia, Sujit Dey, Vincent Leung
- **NSF-NeTS, PI**, 10/2019 to 09/2023.
 - *Project title*: “CNS Core: Medium: Networked Smart Paper: Towards Invisible Wearables for Humans and Things”
 - *Co-PI*: Prof. Tina Ng, Vincent Leung
- **Sony Focused Research Award, PI**, 03/2018 to 02/2019.
 - *Project title*: “Millimeter Wave Architectures for Automated Vehicles: An Experiment-Driven Exploration”
- **Google Faculty Research Award, PI**, 06/2018 to 05/2019.
 - *Project title*: “Exploring Interactive Virtual Reality Over Wireless Access Networks”

- **Google Faculty Research Award, PI**, 06/2017 to 05/2018.
 - *Project title*: “Enabling Immersive Virtual-Reality Through 60 GHz Communications and Localization”
- **NSF-RCN, Co-PI**, 09/2016 to 08/2019.
 - *Project title*: “RCN: Millimeter-Wave Wireless Research: Hardware, Communication, Computation, and Networking”
 - *PI*: Prof. Akbar Sayeed (UW-Madison)
- **NSF-NeTS, PI**, 08/2016 to 08/2019.
 - *Project title*: “NeTS:Small:Collaborative Research:Fine-Grained Spectrum Access for Carrier-Aggregation Based Wireless”
 - *Collaborating PI*: Prof. Li Xiao (Michigan State University, leading institution)
- **NSF-CRI, Co-PI**, 09/2016 to 08/2020.
 - *Project title*: “II-NEW: WiNEST: A Prototype for a City-scale Living Laboratory for Wide-area Wireless Experimentation”
 - *PI*: Prof. Suman Banerjee (CS, UW-Madison), *co-PI*: Patrick Christian (UW Network Services)
- **HP Labs gift fund, PI**, 09/2015 to 12/2015.
 - *Project title*: “Multi-AP Management in Gbps 802.11ac Networks with Multi-user MIMO support”
- **NSF-NeTS, PI**, 10/2015 to 08/2020.
 - *Project title*: “NeTS: Large: Collaborative Research: GigaNets: A Path to Experimental Research in Millimeter Wave Networking”
 - *Collaborating PIs*: Prof. Upanmayu Madhow, Prof. Heather Zheng, Prof. Mark Rodwell, Prof. James Buckwalter (UCSB, leading institution), Prof. Amin Arbabian (Stanford)
- **NSF-CRI, PI**, 07/2015 to 06/2018.
 - *Project title*: “II-NEW: WiMi: A Reconfigurable Platform for Millimeter-Wave Wireless Networking and Sensing”
 - *Co-PIs*: Prof. Parameswaran Ramanathan, Prof. Daniel van der Weide (UW-Madison)
- **NSF-CRI, PI**, 07/2014 to 06/2015.
 - *Project title*: “CI-P: Reconfigurable Infrastructure for 60 GHz Wireless Communications, Networking and Sensing”
 - *Co-PI*: Prof. Parameswaran Ramanathan (UW-Madison)
- **NSF CAREER, PI**, 04/2014 to 03/2019.
 - *Project title*: “CAREER: Scalable Distributed MIMO: Towards Density-Proportional Capacity Scaling for Infrastructure Wireless Networks”
- **NSF-EARS, co-PI**, 01/2014 to 12/2017.
 - *Project title*: “EARS: TV Whitespace Networking for Vehicular Internet Services”
 - *PI*: Prof. Prof. Suman Banerjee (CS, UW-Madison), *co-PI*: Prof. Xiaojin Zhu (CS, UW-Madison)
- **NSF-NeTS, PI**, 10/2013 to 09/2016.
 - *Project title*: “NeTS: Small: Collaborative Research: Efficient Spectrum Access for Gbps WLANs in a Crowd of Legacy Networks”
 - *Collaboration PI*: Prof. Kang G. Shin, University of Michigan (leading institution)
- **Rockwell Collins research equipment grant, PI**, 08/2013 to 07/2014.
 - *Project title*: “Bridging the Knowledge Gap Between Wireless Communications and Computer Networks Using Software Radios”
 - *Co-PI*: Prof. Parameswaran Ramanathan (UW-Madison)

Intramural Grants

- **Smart Transportation Program, Center for Wireless Communications, UC San Diego**, 04/2018-03/2019
- **Machine learning / data science initiative, Dept. of ECE, UC San Diego**, 05/2018-04/2019
Project title: “All Weather Sensing for Autonomous System Using Machine Learning” (with Dinesh Bharadia and Hao Su (CSE))
- **Dugald C. Jackson Faculty Scholar, UW-Madison**, 02/2017
- **Madison Teaching and Learning Excellence (MTLE) faculty fellowship**, 01/2015 to 12/2015.
- **UW-Madison Fall Research Competition, PI**, 07/2015 to 06/2016.
Project title: “Visible Light Networking with a Powerline Backhaul”
- **UW-Madison Fall Research Competition, PI**, 07/2014 to 06/2015.
Project title: “Networking and Localization Through the 60 GHz Spectrum”

- **Hilldale Fellowship, UW-Madison, PI**, 06/2014 to 08/2014.
Project title: "D-Mart: A Resale Market for Cellular Bandwidth"
- **Hilldale Fellowship, UW-Madison, PI**, 06/2013 to 08/2013.
Project title: "Paper Keyboard for Smartphones"

Research Supervision

Postdoc Scholars:

- Kun Qian (05/2019 to 12/2023, now Assistant Professor at the University of Virginia)

Ph.D. Students:

- Xingyu Chen (CSE, since Sep. 2022)
- Baicheng Chen (CSE, since Sep. 2021)
- Songlin Xu (ECE, since Sep. 2021)
- Dae Cheol Kwon (ECE, since Sep. 2021, Samsung Fellowship)
- Kai Zheng (ECE, since Sep. 2020)
- Ke Sun (CSE, since Sep. 2019, **Google PhD Fellowship**)
- John Nolan (ECE, since Sep. 2019, part-time)
- Song Wang (ECE, Sep. 2018 to Aug. 2023. Now at ByteDance)
- Renjie Zhao (ECE, Sep. 2018 to June 2023. Now Assistant Professor at Johns Hopkins University)
- Timothy Woodford (ECE, Sep. 2018 to June 2023. Now Research Scientist at MIT Lincoln Lab)
- Shilin Zhu (CSE, Sep. 2016 to Dec. 2021, **Google PhD Fellowship**, now at Pixar)
- Sanjib Sur (Sep. 2013 to July 2018, now Assistant Professor at the University of South Carolina)
- Teng Wei (Sep. 2013 to July 2018, now Research Staff at Google Research)
- Xiufeng Xie (Sep. 2012 to Aug. 2017; Research Staff at HP Labs→Nvidia)
- Chi Zhang (Sep. 2014 to Dec. 2017; now at Google)
- Chuhan Gao (Sep. 2016 to Sep. 2017; UW-Madison→Microsoft)

Recent M.S. Students:

- William Sun (04/2022 to 06/2023. Now Ph.D. student at UW-Madison)
- Cheng Huang (04/2022 to 06/2023. Now at Juniper Networks)
- Dongyin Hu (09/2021 to 06/2023. Now Ph.D. student at UPenn)
- Wenyuan Zhao (04/2022 to 06/2023. Now Ph.D. student at TAMU)
- Xuyang Cao (05/2021 to 06/2023. Now at Apple)
- Ru Wang (06/2020 to 05/2021. Now PhD student at UW-Madison)
- Chunyu Xia (09/2020 to 05/2022. Now Ph.D. student at USC)
- Changhan Ge (09/2018 to 05/2020. Now Ph.D. student at UT-Austin)
- Jingqi Huang (09/2018 to 05/2020. Now Ph.D. student at Purdue)
- Zhaoyuan He (09/2017 to 05/2019. Now Ph.D. student at UT-Austin)

Teaching

- ECE 191, Engineering Group Design Project, 2019 to now.
- ECE 158b, Data Networks II, 2018 to now.
- ECE 257a, Modern Communication Networks, 2017 to now.
- ECE/CS 707, Mobile and Wireless Networking, Spring'13, Fall'14.
- ECE 537, Communication Networks, Spring'17,
- ECE 454, Mobile Computing Laboratory, Fall'12, Fall'13, Fall'15, Fall'16.
- ECE/CS 352, Digital System Fundamentals, Spring'15, Spring'16

Professional Services

- Panel Chair for IEEE INFOCOM, 2022
- SIGMOBILE Student Community Grant Co-Chair, 2022
- Technical Program Co-Chair for the 25th ACM International Conference on Mobile Computing and Networking

- (MobiCom), 2019
- Panel Chair for ACM MobiHoc, 2018
 - Associate Editor, IEEE Transactions on Mobile Computing, Oct. 2017-Sep. 2020.
 - Technical Program Chair for the 14th IEEE Conference on Sensing, Communication and Networking (SECON), 2017.
 - Chair for the subcommittee on advanced wireless technologies, ACM/IEEE Design Automation Conference, 2017
 - Program Chair of 3rd ACM Workshop on Hot Topics in Wireless (HotWireless), 2016
 - Workshop co-chair of IEEE SECON'15; Poster co-chair of ACM MobiCom, 2014.
 - Serving on the TPC of the following conferences: USENIX NSDI'19; ACM MobiCom'15 to '21; ACM MobiSys'18; ACM HotWireless'14 to '17; ACM MobiHoc'14; IEEE INFOCOM'14 to '19; IEEE ICNP'15 to '17; IEEE SECON'13 to '17; ACM/IEEE IWQoS'13 to '17