

Yoon Chae

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RESEARCH INTERESTS

My research interests span a wide spectrum of topics in wireless networking, mobile computing, and low-power Internet of Things (IoT) systems for cyber-physical system applications.

- **Wireless Systems and Networking:** high-speed next-generation wireless network architectures (6G and beyond networks, 802.11 ad/ay 60GHz mmWave WiFi), mmWave V2X communication, Internet-of-Things (IoT), ultra-wide-band millimeter wave backscatter communication.
- **Mobile Computing:** mmWave sensing systems (virtual/augmented reality, localization, block-age detection), ubiquitous computing, and cyber-physical systems (CPS)

EDUCATION

George Mason University, Fairfax, USA <i>Ph.D., in Computer Science</i> Advisor: Prof. Parth Pathak	2017.01 – 2024.12
University of Minnesota, Twin Cities Minneapolis, USA <i>M.S., in Electrical and Computer Engineering</i>	2010.09 – 2012.02
Yonsei University, Seoul, South Korea <i>B.S., in Electrical and Electronic Engineering</i>	2003.03 – 2009.08 Military service (2005.02 – 2007.02)

PROFESSIONAL EXPERIENCE AND EMPLOYMENT

University of Texas at Arlington, TX, USA <i>Assistant professor in the Department of Computer Science and Engineering</i>	2025.01 - Present
George Mason University, Fairfax, USA <i>Teaching Assistant</i>	2024.09 - 2024.12
George Mason University, Fairfax, USA <i>Research Assistant</i>	2017.01 - 2024.08
Seagate Technology, South Korea <i>Firmware Engineer, Firmware and ASIC Team</i>	2012.03 - 2017.01

PUBLICATIONS

Peer Reviewed Conference and Workshop:

1. [MobiSys'26]
Zhenzhe Lin, **Yoon Chae**, Panneer Selvam Santhalingam, Mingyo Jeong, Parth Pathak. "Wide-band Low-complexity High-speed 5G NR Backscatter" *ACM International Conference on Mobile Systems, Applications, and Services, Saint-Cambridge, UK. (Acceptance Rate 68/302=22.5%)*
2. [SenSys'26]
Zhenzhe Lin*, **Yoon Chae***, Mingyo Jeong, Parth Pathak. (*: equal contribution) "B³: Bistatic

Backscatter Beamforming for mmWave IoTs" *ACM/IEEE International Conference on Embedded Artificial Intelligence and Sensing Systems, Saint-Malo, France.* (**Acceptance Rate 49/258=18.9%**)

3. [NSDI'24]

Yoon Chae, Zhenzhe Lin, Kang Min Bae, Song Min Kim, Parth Pathak. "mmComb: High-speed mmWave CommodityWiFi Backscatter." *Proceedings of the 21st USENIX Symposium on Networked Systems Design and Implementation, Santa Clara, California.* (**Acceptance Rate: 17.6%**)

4. [GetMobile'24]

Kang Min Bae, Namjo Ahn, **Yoon Chae**, Parth Pathak, SungMin Sohn, Song Min Kim. "OmniScatter: Extreme Sensitivity mmWave Backscattering Using Commodity FMCW Radar." *ACM GetMobile: Mobile Computing and Communications 27 (4), 26-30, Jan. 2024* (**Invited**)

5. [MobiCom'23]

Ahmad Kamari, **Yoon Chae**, Parth Pathak. "mmSV: mmWave Vehicular Networking using Street View Imagery in Urban Environments." *Proceedings of the 29th Annual International Conference on Mobile Computing and Networking, Madrid, Spain.* (**Acceptance Rate: 24.4%**)

6. [MobiSys'22]

Kang Min Bae, Namjo Ahn, **Yoon Chae**, Parth Pathak, SungMin Sohn, Song Min Kim. "OmniScatter: Extreme Sensitivity mmWave Backscattering Using Commodity FMCW Radar." *Proceedings of the 20th Annual International Conference on Mobile Systems, Applications and Services, Portland, Oregon.* (**Acceptance Rate: 21.6%**)
(**Best Paper Award, SIGMOBILE Research Highlight**)

7. [SenSys'18]

Yoon Chae, Shuai Wang, Song Min Kim. "Exploiting WiFi Guard Band for Safeguarded ZigBee." *Proceedings of the 16th ACM Conference on Embedded Networked Sensor Systems, Shenzhen, China.* (**Acceptance Rate: 15.6%**)

8. [WiNTECH'20]

Yoon Chae, Kang Min Bae, Parth Pathak, Song Min Kim. "On the feasibility of Millimeter-wave Backscatter using Commodity 802.11ad 60 GHz Radios." *Proceedings of the 14th International Workshop on Wireless Network Testbeds, Experimental evaluation and Characterization, London, United Kingdom.*

Demo:

1. [SenSys'18]

Yoon Chae, Song Min Kim. "Demo: Safeguarded ZigBee via WiFi Guard Band." *Proceedings of the 16th ACM Conference on Embedded Networked Sensor Systems, Shenzhen, China.*

Poster:

1. [CCI'24]

Yoon Chae, Zhenzhe, Parth Pathak. "mmWave WiFi backscatter communication." *Commonwealth Cyber Initiative (CCI) Symposium.*

HONORS AND AWARDS

- **UT System Rising STARS (Science and Technology Acquisition and Retention), UT System 2024**
- **Best Paper Award at MobiSys 2022**
- **SIGMOBILE Research Highlight 2023**
- Honors Student Award in Electrical and Electronic Engineering, Yonsei University, 2009
- 2nd-award Undergraduate Creative Research, Yonsei University, 2008
- National Science and Technology Scholarship, Korea Science and Engineering Foundation department, 2003, 2004, 2007, and 2008

TEACHING EXPERIENCES

Research Experience for Undergraduates (REU) 2026.01 – 2026.08

- Ko, Ivan (UTA CSE undergraduate student)
- Abuhilal, Angelina (UTA CSE undergraduate student)
- Tahmid Hossain (UTA CSE undergraduate student)
- Adaora Tolulope Ebolum (UTA CSE undergraduate student)

UR2PhD Mentorship | *Research Opportunities for Undergrads at UTA* 2025.09 – 2025.12

- Ko, Ivan (UTA CSE undergraduate student)
- Abuhilal, Angelina (UTA CSE undergraduate student)

Instructor

- CSE 4344: Computer Network Organization 2025 Fall
- CSE 4344: Computer Network Organization 2025 Spring

Co-instructor | *CS 655: Wireless and Mobile Computing* 2023 Fall

- Conducting lectures on mobile computing and next-generation millimeter-wave wireless.
- Mentoring student course projects.

Mentorship | *Mentored Ph.D. students at George Mason University* 2021.02 – 2024.12

- Zhenzhe Lin (Ph.D. student), publication in NSDI '24
- Ahmad Kamari (Ph.D. student), publication in MobiCom '23
- Mingyo Jeong (Ph.D. student), mentoring in progress
- Hemant Kumar (Ph.D. student), mentoring in progress

Teaching Training Courses at George Mason University 2024.01

- Graduate Teaching Training (Online)
- Inclusive Teaching Mini-Course for STEM graduate students (Online)

TALKS & PRESENTATIONS

Wideband Low-complexity High-speed 5G NR Backscatter 2026
ACM MobiSys'26 in Cambridge, UK

B³: Bistatic Backscatter Beamforming for mmWave IoTs 2026
ACM/IEEE SenSys'26 in Saint-Malo, France

mmComb: Highspeed mmWave CommodityWiFi Backscatter 2024
USENIX NSDI'24 Conference in Santa Clara, USA

- Millimeter-wave IoT: Towards High-speed and Massive-scale Next Generation IoT Systems** 2024
Seminar in Electrical Engineering at University of Colorado Denver
- On the feasibility of Millimeter-wave Backscatter using Commodity 802.11ad 60 GHz Radio** 2020
Co-located with ACM MobiCom'20 Conference (online conference due to COVID)
- Exploiting WiFi Guard Band for Safeguarded ZigBee** 2018
ACM Sensys'18 Conference in Shenzhen, China
- Demo: Safeguarded ZigBee via WiFi Guard Band** 2018
ACM Sensys'18 Conference in Shenzhen, China

SERVICES

Department Committee

- Serving as a PhD Admissions Committee 2025
- Serving as a Student Outreach and Recruitment Committee 2025

Conference Committee

- Serving as a Technical Program Committee (TPC) for MSN'26 2026
- Serving as a Technical Program Committee (TPC) for ACM MobiCom'27 2026
- Serving as a Technical Program Committee (TPC) for IEEE LANMAN'26 2026
- Serving as a Technical Program Committee (TPC) for SenSys'26 2025
- Serving as a Registration Co-chairs for ICNP'25 2025
- Serving as a Artifact Evaluation Committee for MobiSys'25 2025

Conference Reviewer

- IEEE International Conference on Local and Metropolitan Area Networks (LANMAN) 2026
- ACM/IEEE International Conference on Embedded Artificial Intelligence and Sensing Systems (SenSys) 2025
- IEEE 44th Military Communications Conference (MILCOM) 2024
- IEEE 21st International Conference on Mobile Ad-Hoc and Smart Systems (MASS) 2024
- ACM 30th Annual International Conference On Mobile Computing And Networking (MobiCom) 2024
- IEEE 25th International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM) 2024
- IEEE International Conference on Computer Communications (INFOCOM) 2022 - 2025
- IEEE Wireless Communications and Networking Conference (WCNC) 2023

Journal Reviewer

- IEEE Transactions on Wireless Communications (TWC) 2026
- ACM Transactions on Internet of Things (IF:3.9) 2025 & 2026
- IEEE Wireless Communication Letter (IF:5.28) 2022 & 2024
- IEEE/ACM Transactions on Networking (IF: 3.7) 2023
- IEEE Transactions on Mobile Computing (IF:5.577) 2019 & 2023 & 2024 & 2025