

# Yoon Chae

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## RESEARCH INTERESTS

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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

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<b>George Mason University, Fairfax, USA</b> <i>Ph.D., in Computer Science</i> Advisor: Prof. Parth Pathak	2017.01 – 2024.05 (Expected)
<b>George Mason University, Fairfax, USA</b> <i>M.S., in Computer Science</i>	2020.09 – 2022.05
<b>University of Minnesota, Minneapolis, USA</b> <i>M.S., in Electrical and Computer Engineering</i>	2010.09 – 2012.02
<b>Yonsei University, Seoul, South Korea</b> <i>B.S., in Electrical and Electronic Engineering</i>	2003.03 – 2009.08 Millitray service (2005.02 – 2007.02)

## PROFESSIONAL EXPERIENCE AND EMPLOYMENT

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<b>George Mason University, Fairfax, USA</b> <i>Research Assistant</i>	2017.01 - Present
<b>Seagate Technology, South Korea</b> <i>Firmware Engineer, Firmware and ASIC Team</i>	2012.03 - 2017.01

## PUBLICATIONS

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### Peer Reviewed Conference and Workshop:

1. [NSDI'24 (Spring)]  
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%**)
2. [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**)

### 3. [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%**)

### 4. [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)**

### 5. [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%**)

### 6. [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

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- **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

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**Co-instructor** | *CS 655: Wireless and Mobile Computing* 2023.09 – Present

- 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 – Present

- 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**

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**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**

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**Conference Reviewer**

- IEEE International Conference on Computer Communications (INFOCOM) 2022 & 2023
- IEEE Wireless Communications and Networking Conference (WCNC) 2023
- IEEE 25th International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM) 2024

**Journal Reviewer**

- IEEE/ACM Transactions on Networking (IF: 3.7) 2023
- IEEE Wireless Communication Letter (IF:5.28) 2022
- IEEE Transactions on Mobile Computing (IF:5.577) 2019 & 2023