

Zerina Kapetanovic

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Professional Experience

- 2023 - Present **Assistant Professor**, *Department of Electrical Engineering*, Stanford University
2022 - 2023 **Postdoctoral Researcher**, *Microsoft Research*, Redmond, WA

Education

- 2022 **Ph.D., Electrical Engineering**, *University of Washington*, Seattle, WA
Advisor: Professor Joshua R. Smith
College of Engineering Distinguished Dissertation Award
- 2020 **M.S., Electrical Engineering**, *University of Washington*, Seattle, WA
Advisor: Professor Joshua R. Smith
- 2015 **B.S., Electrical Engineering**, *University of Washington*, Seattle, WA
Outstanding Undergraduate Student Award

Select Publications

- 2023 Cosmic Backscatter: New Ways to Communicate via Modulate Noise, **Z. Kapetanovic**, S. Garman, D. Stotland J.R. Smith, *ACM HotNets 2023*
- 2023 Modulated Noise Communication: Reading UHF RFID tags without a carrier, S. Garman, A. Saffari, D. Kobuchi, J.R. Smith, **Z. Kapetanovic**, *IEEE RFID 2023*
- 2022 Communication by means of Modulated Johnson Noise, **Z. Kapetanovic**, M. Morales, J.R. Smith, *Proceedings of the National Academy of Sciences (PNAS)*
- 2022 WHISPER: IoT in the TV White Space Spectrum, T. Chakraborty, H. Shi, **Z. Kapetanovic**, B. Priyantha, D. Vasisht, B. Bu, P. Pandit, P. Pillai, Y. Chabria, A. Nelson, M. Daum, R. Chandra, *USENIX NSDI*
- 2022 Democratizing Data-Driven Agriculture using Affordable Hardware, R. Chandra, M. Swaminathan, T. Chakraborty, J. Ding, **Z. Kapetanovic**, P. Kumar, D. Vasisht, *IEEE Micro*
- 2019 Glaze: Overlaying Occupied Spectrum with Downlink IoT Transmissions, **Z. Kapetanovic**, A. Saffari, R. Chandra, J.R. Smith, *ACM IMWUT*
- 2019 Low-cost Aerial Imaging for Small Holder Farmers, V. Swamy, A. Kumar, R. Patil, A. Jain, **Z. Kapetanovic**, R. Sharma, D. Vasisht, M. Swaminathan, R. Chandra, A. Badam, G. Ranade, S. Sinha, A. Nambi, *ACM Compass - Best Paper Award*
- 2018 Wireless Quantization Index Modulation: Enabling Communication Through Existing Signals, **Z. Kapetanovic**, V. Talla, A. Parks, J. Qian, J.R. Smith, *IEEE RFID - Best Paper Award Nominee*
- 2017 Experiences Deploying An Always-on Farm Network, **Z. Kapetanovic**, D. Vasisht, J. Won, R. Chandra, M. Kimball, *ACM GetMobile - Featured on Cover*
- 2017 FarmBeats: An IoT Platform for Data-Driven Agriculture, D. Vasisht, **Z. Kapetanovic**, J. Won, X. Jin, R. Chandra, S. Sinha, A. Kapoor, M. Sadurshan, S. Stratman, *USENIX NSDI*

- 2016 Battery-free Connected Machine Vision with WISPCam, S. Naderparizi, **Z. Kapetanovic**, J.R. Smith, *ACM GetMobile - Featured on Cover*
- 2015 WISPCam: A battery-free RFID camera, S. Naderparizi, A. Parks, **Z. Kapetanovic**, B. Ransford, J.R. Smith, *IEEE RFID - Best Paper Award Nominee*

Teaching

- 2023 EE 108: Digital System Design
- 2023 EE 392D: Wireless Sensing Systems
Electrical Engineering, Stanford University
- 2021 EE 271: Introduction to Digital Circuits and Systems
Pre-Doctoral Instructor, University of Washington

Select Patents

- 2022 Satellite Backscatter Communication, **Z. Kapetanovic**, B. Priyantha, R. Chandra, *US Patent Application*
- 2022 Communication by means of Modulated Johnson Noise, **Z. Kapetanovic**, J.R. Smith, *US Patent Application*
- 2022 Power Efficient Base Station, R. Chandra, **Z. Kapetanovic**, D.Vasisht, *US Patent*
- 2021 Adaptive Radio Configurations in Wireless Networks, T. Chakraborty, **Z. Kapetanovic**, D. Vasisht, R. Chandra, *US Patent Application*
- 2021 Device Communication Over Television White Space, H. Shi, R. Chandra, T. Chakraborty, B. Priyantha, **Z. Kapetanovic**, B. Vu, *US Patent Application*
- 2021 Communication using Dynamic Spectrum Access Based on Channel Selection, T. Chakraborty, D. Vasisht, R. Chandra, **Z. Kapetanovic**, H. Shi, B. Priyantha, *US Patent Application*
- 2020 Sensor Fall Curve Identification, T. Chakraborty, A. Narashiman, R. Chandra, R. Sharma, M. Swaminathan, **Z. Kapetanovic**, J. Appavoo, *US Patent Application*

Awards and Achievements

- 2023 Terman Faculty Fellow
- 2023 Gabilan Faculty Fellowship
- 2022 Distinguished Dissertation Award, University of Washington
- 2022 Yang Research Award, University of Washington
- 2020 Microsoft Research Dissertation Grant
- 2020 EECS Rising Star
- 2017 FarmBeats listed as one of the 10 projects that inspired Satya Nadella (CEO, Microsoft)

Public Media

- FarmBeats BBC, The Economist, Gates' Notes, Forbes, Business Insider, Economic Times, Tech Crunch, Agri-Pulse, Fruit Grower Network, SIAM News, and many more
- Johnson Noise Communication The Conversation, Fast Company, Hackaday, Hackster.io, BGR, Tech Xplore, Interesting Engineering

Talks

- 2023 **Backscatter Communication without a Carrier**
 UIUC Wireless Networking Seminar
Cosmic Backscatter
 ACM HotNets 2023
- 2022 **RFID without a Carrier**
 UCSC Cyberphysical Systems Research Seminar
- 2018-2022 **FarmBeats: AI and IoT for Data-Driven Agriculture**
 CS Explore (2021, 2022)
 Climate Change AI Workshop (2020)
 Female Farmer Project Podcast at AAAS (2020)
 Grace Hopper Celebration (2019)
 SIAM Conference (2019)
 National FFA Convention and Expo (2018)
 CHANGE Seminar, University of Washington (2018)
 Microsoft Research Faculty Summit (2018)
- 2021 **Connectivity in the Farm**
 Microsoft Research Summit

Outreach

WomXn at the Forefront of ECE Research

I organized the first WomXn at the Forefront of ECE Research event for the Electrical and Computer Engineering Department at the University of Washington.

Microsoft FarmBeats Student Kit

I worked with Microsoft Philanthropies to develop the first FarmBeats Student Kit.

Girls Who Code

I ran the Girls Who Code club at Tukwila Elementary during 2020 Winter and Spring quarters.

Service

Technical Program Committee ACM Mobicom 2022/23/24, USENIX NSDI 2024, EWSN 2024

External Reviewer ACM IMWUT 2021/22/23, IEEE Pervasive Computing, 2019, Climate Change Innovation Grant 2021

Workshop Chair ACM AgSys 2022, ACM LP-IoT 2022