

RESEARCH	I am a wireless and cyber-physical systems researcher that builds compact wireless systems with high fidelity sensing and communication capabilities unlocking new application potentials.	
EDUCATION	Carnegie Mellon University Ph.D. in Electrical and Computer Engineering <i>Advisors:</i> Prof. Anthony Rowe and Prof. Swarun Kumar <i>Thesis:</i> High-resolution Imaging with Compact Millimeter Wave Radars	2018 - 2024
	National Institute of Technology Karnataka B.Tech. in Electronics and Communication Engineering GPA: 9.6/10.0	2014 - 2018
EMPLOYMENT	University of Wisconsin - Madison Assistant Professor	Jan 2025 onwards
	Zendar, Berkeley Research Intern with Dr. Darsh Ranjan	May 2022 - Aug 2022
	Optum, Pittsburgh Corporate Startup Lab Fellow with Danita Kiser	May 2021 - Aug 2021
	Texas Instruments, Dallas Research Intern at Kilby Labs with Xiaolin Lu	May 2019 - Aug 2019
	Microsoft Research, Bangalore Research Intern with Dr. Harsha Simhadri	Aug 2017 - Dec 2017
	University of Lübeck, Germany Research Intern with Dr. Alfred Mertins	May 2017 - July 2017
	Indian Institute of Science, Bangalore Research Intern with Dr. GV Anand	May 2016 - July 2016
AWARDS	<ul style="list-style-type: none">• CVPR Oral• Best Presentation Runner Up, Ph.D. Forum ACM/IEEE IPSN• Best Demo Runner Up, ACM/IEEE IPSN• Top 5 Best Demos, ACM MobiCom• Trailblazer Alumni - Kumarans Educational Council• ACM GetMobile Research Highlight for Quasar• Corporate Startup Lab Fellowship• ACM GetMobile Research Highlight for Osprey• CMU ECE Department Award for Exemplary Qualifying Exam Performance• Best Paper Honorable Mention, ACM MobiSys• Best Demo, ACM MobiSys• Carnegie Institute of Technology Dean's Fellowship• DAAD WISE Fellowship• Indian Academy of Sciences' Summer Research Fellowship• Final Fifteen of the IEEE Signal Processing Cup• Best Outgoing Student Award	<div>2024</div> <div>2023</div> <div>2023</div> <div>2023</div> <div>2022</div> <div>2022</div> <div>2021</div> <div>2021</div> <div>2020</div> <div>2020</div> <div>2018-2019</div> <div>2017</div> <div>2016</div> <div>2016</div> <div>2014 and 2012</div>

- CONFERENCE & JOURNAL PUBLICATIONS (PEER REVIEWED)
- Towards Foundational Models for mmWave Radar.**
T Huang, A Prabhakara, C Chen, J Karhade, D Ramanan, M O'Toole, A Rowe.
 IEEE/CVF ICCV 2025.
- Shape-programming Robotic Reflectors for Wireless Networks.**
Y Liu, A Prabhakara, J Zhu, S Qiao, S Kumar.
 IEEE ICRA 2025.
- Reinforcement Learning-Based Framework for Whale Rendezvous via Autonomous Sensing Robots.**
N Jadhav, S Bhattacharya*, D Vogt, Y Aluma, P Tønnesen, A Prabhakara, S Kumar, S Gero, R Wood, S Gil*
 Science Robotics 2024.
- Hydra: Exploiting Multi-Bounce Scattering for Beyond-Field-of-View mmWave Radar.**
N Mehrotra, D Pandey, A Prabhakara, Y Liu, S Kumar, A Sabarwal
 ACM MobiCom 2024.
- DART: Implicit Doppler Tomography for Radar Novel View Synthesis.**
T Huang, J Miller*, A Prabhakara, T Jin, T Laroia, Z Kolter, A Rowe.*
 IEEE/CVF CVPR 2024.
 CVPR Oral (90 orals / 2719 accepted papers = 3.3%)
- High Resolution Point Clouds from mmWave Radar.**
A Prabhakara, T Jin, A Das, G Bhatt, L Kumari, E Soltanaghahi, J Bilmes, S Kumar, A Rowe.
 IEEE ICRA 2023.
- Platypus: Sub-mm μ -Displacement Sensing with Passive mmWave Tags As Phase Carriers.**
T King, J. He, C. Yao, A Prabhakara, M Alipour, S Kumar, A Rowe, E Soltanaghahi.
 ACM/IEEE IPSN 2023.
- Exploring mmWave Radar and Camera Fusion for High-Resolution and Long-Range Depth Imaging.**
A Prabhakara, D Zhang*, C Li, S Munir, A Sankaranarayanan, A Rowe, S Kumar.*
 IEEE/RSJ IROS 2022.
- Zoom Out: Abstractions for Efficient Radar Algorithms on COTS architecture.**
TM Low, Y Chi, J Hoe, S Kumar, A Prabhakara, L Shi, U Sridhar, N Tukanov, C Wang, Y Wu.
 IEEE Phased Array Systems and Technology (PAST) 2022.
- Millimetro: mmWave Retro-Reflective Tags for Accurate, Long Range Localization.**
E Soltanaghahi, A Prabhakara*, A Balanuta*, M Anderson, J Rabaey, S Kumar, A Rowe.*
 ACM MobiCom 2021.
- A Community-Driven Approach to Democratize Access to Satellite Ground Stations.**
V Singh, A Prabhakara, D Zhang, O Yağan, S Kumar.
 ACM MobiCom 2021.
 ACM GetMobile Research Highlight
- TagFi: Locating an Ultra-Low Power Tag Using Existing WiFi Infrastructure.**
E Soltanaghahi, A Dongare, A Prabhakara, S Kumar, A Rowe, K Whitehouse.
 Ubicomp 2021.
- Osprey: A mmWave Approach to Tire Wear Sensing.**
A Prabhakara, V Singh, S Kumar, A Rowe.
 ACM MobiSys 2020.
 Best Paper Honorable Mention, ACM GetMobile Research Highlight
 Press: Gizmodo, Hackster.io, TedX Innovation Expo and That's Cool News Podcast.

Underwater Acoustic Source Localization by Vector Sensor Array using Compressive Sampling.

PV Nagesha, GV Anand, S Gurugopinath, [A Prabhakara](#).

MTS/IEEE Oceans 2016.

POSTERS,
DEMOS,
MAGAZINES
(PEER
REVIEWED)

RadarHD: Demonstrating Lidar-like Point Clouds from mmWave Radar.

[A Prabhakara](#), T Jin, A Das, G Bhatt, L Kumari, E Soltanaghahi, J Bilmes, S Kumar, A Rowe.

ACM MobiCom Demo 2023.

Top 5 Best Demos

Pushing the Limits of High Resolution Sensing with Single-Chip mmWave Radar.

[A Prabhakara](#).

ACM/IEEE IPSN Ph.D. Forum 2023.

Best Presentation Runner Up

Demo Abstract: Platypus: Sub-mm μ -Displacement Sensing with Passive mmWave Tags As Phase Carriers.

J. He, T King, C. Yao, [A Prabhakara](#), M Alipour, S Kumar, A Rowe, E Soltanaghahi..

ACM/IEEE IPSN Demo 2023.

Best Demo Runner Up

A Community-Driven Approach to Democratize Access to Satellite Ground Stations.

V Singh, [A Prabhakara](#), D Zhang, O Yağın, S Kumar.

ACM GetMobile Magazine Mar 2022.

Long-range Accurate Ranging of Millimeter-wave Retro-reflective Tags in High Mobility.

TH King, E Soltanaghahi, [A Prabhakara](#), A Balanuta, S Kumar, A Rowe.

ACM MobiCom Demo 2021.

OSPREY: A mmWave Approach to Tire Wear Sensing.

[A Prabhakara](#), V Singh, S Kumar, A Rowe.

ACM GetMobile Magazine Dec 2020.

Osprey Demo: A mmWave Approach to Tire Wear Sensing.

[A Prabhakara](#), V Singh, S Kumar, A Rowe.

ACM MobiSys Demo 2020.

Best Demo

PATENTS

Exploiting Multi-Bounce Scattering to Increase the Field-of-View of Millimeter-Wave Radar Imaging.

N Mehrotra, D Pandey, [A Prabhakara](#), Y Liu, S Kumar, A Sabarwal

Patent Pending

Methods, Systems And Low Power Retrodirective RF Tags for Localization.

E Soltanaghahi, A Rowe, S Kumar, [A Prabhakara](#), A Balanuta

US 2022/0244374A1

Tire Sensing Systems and Methods.

[A Prabhakara](#), V Singh, S Kumar, A Rowe, T Wei, H Dorfi

WO 2021/231381

RESEARCH
TALKS

- ASU, NC State, UCLA, University of British Columbia, UW-Madison 2024
High quality sensing from compact radio frequency systems
- ICRA 2023 2023
[High resolution point clouds from mmWave radar](#)
- Microsoft Research India 2022
Pushing the limits of high resolution sensing with single-chip mmWave radar

	<ul style="list-style-type: none"> • IROS 2022 2022 <i>Exploring mmWave radar and camera fusion for high-resolution and long-range depth imaging</i> • DARPA/SRC CONIX Annual Review 2022 <i>RF Sensing: CONIX and beyond ...</i> • TedX CMU Innovation Expo 2021 • MobiSys 2020 2020 <i>Osprey: A mmWave approach to tire wear sensing</i> • DARPA/SRC CONIX Student Seminar 2020 <i>Osprey: A mmWave approach to tire wear sensing</i>
PRESS ARTICLES	<ul style="list-style-type: none"> • Pioneering Minds “Low Power, High Accuracy Tag That Can Improve Autonomous Driving” • That’s Cool News Podcast “Osprey: Utilizing mmWaves to Sense Vehicle Tire Wear and Tear — Akarsh Prabhakara” • Hackster.io “Researchers Develop System That Monitors Tire Wear in Real-Time” • Gizmodo “Researchers Find That Radar Can Be Used to Detect a Nail in a Tire Long Before It Goes Flat” • Weibold “Radar to monitor tire wear developed by American engineers” • Wonderful Engineering “This Radar Based Device Can Detect Tire Punctures Along With Wear And Tear” • Interesting Engineering “Radar Can Be Used to Detect Tire Wear and Tear, Nail Punctures” • Tyrepress.com “Measuring tyre wear with on-car radar”
ENGINEERING TEAM COMPETITIONS	<p>DARPA Subterranean Challenge 2019 As part of the winning CMU team, I performed initial experimentation on wireless mesh networking for consistent communication among robots, access points and base station in mines and caves.</p> <p>IEEE Signal Processing Cup 2017 We built a real-time beat tracking algorithm running on an embedded device reacting to a variety of music signals. Check out our trippy visualizations here!.</p> <p>IEEE Signal Processing Cup 2016 We developed a solution to extract power signal leaking into recorded audio signals and geolocate the power grid where audio was recorded. We finished top 15 in the world!</p>
TEACHING	<ul style="list-style-type: none"> • At UW-Madison <ul style="list-style-type: none"> • COMPSI839: Big Ideas in Wireless: Perception and Comms. Spring 2025 • Graduate Teaching Assistant at CMU <ul style="list-style-type: none"> • Wireless Communication Fall 2021 • Computer Networks Spring 2020 • Guest Lectures <ul style="list-style-type: none"> • Intro to Computer Systems, CMU ECE Spring 2023 • Advanced Topics in Communication, UW EE Spring 2023
PEER REVIEWING / TECHNICAL PROGRAM COMMITTEE	<ul style="list-style-type: none"> • 2026: SenSys • 2025: MobiCom, MobiSys, ICRA, IROS, IMWUT, ToSN, TMC, SenSys Posters, ENSys • 2024: MobiCom Posters, ICRA, IMWUT, RAL, ToN, Network Magazine • 2023: Transactions on Networking (ToN), Intelligent Vehicles (TIV), Sensor Networks (ToSN) • 2022: IMWUT, Transactions on Sensor Networks (ToSN) • 2021: Shadow Program Committee ACM Compass