

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES INC., ERICSSON INC.,
NOKIA OF AMERICA CORPORATION, AND T-MOBILE USA, INC.,
PETITIONERS,

v.

DAINGEAN TECHNOLOGIES LTD.,
PATENT OWNER.

CASE IPR2024-00402
PATENT 10,841,958

DECLARATION OF DR. KARTHIKEYAN SUNDARESAN

TABLE OF CONTENTS

CURRENT EXHIBIT LIST	ii
INTRODUCTION	1
I. PROFESSIONAL BACKGROUND AND QUALIFICATIONS.....	2
II. RELEVANT TIME.....	7
III. LEVEL OF ORDINARY SKILL IN THE ART	7
IV. MATERIALS CONSIDERED	8
V. BRISMAR.....	8
A. Brismar Only Teaches Timeouts for Dynamic SIBs and Does Not Disclose a Static SIB's Value Tag Updating upon a Dynamic SIB's change.....	8
B. Brismar Teaches to Place the SI Distribution in Progress Flag on Unused Bits to Avoid Backwards Compatibility Problems	10
C. Unused Signaling Bits in Brismar Are Subject to Channel Coding.....	12
D. A Change of Value Tag Merely Signals to a UE the Revision of Information, and Does Not Necessitate that the Way a UE Acquires the New Information Changes.....	13
VI. DECLARATION	14
APPENDIX A (RESUME).....	15

CURRENT EXHIBIT LIST

No.	Brief Description
1001	Intentionally Left Blank
1002	Intentionally Left Blank
1003	Intentionally Left Blank
1004	Intentionally Left Blank
1005	U.S. Pat. Publication No. 2015/0382284 (“Brismar”)
1006	Intentionally Left Blank
1007	Intentionally Left Blank
2001	Intentionally Left Blank
2002	Intentionally Left Blank
2003	Intentionally Left Blank
2004	Intentionally Left Blank
2005	ETSI TS 125 211 V3.1.1 (2000-01) Technical Specification, Universal Mobile Telecommunications System (UMTS); Physical channels and mapping of transport channels onto physical channels (FDD) (3G TS 25.211 version 3.1.1 Release 1999)

INTRODUCTION¹

¶1. My name is Dr. Karthikeyan Sundaresan. I have been retained by Daingean Technologies Ltd. (“Patent Owner” or “DTL”) to provide my expert assessment and technical opinions in connection with the above captioned inter partes review (“IPR”) of U.S. Patent No. 10,841,958 (“’958 Patent” or “Patent-at-Issue”), Ex. 1001.

¶2. Specifically, have been asked to provide my opinion regarding specific aspect of the how a person of ordinary skill in the art (“POSITA”) would understand certain teachings and aspects of U.S. Pat. Publication No. 2015/0382284 (“Brismar”).

¶3. This declaration is based on information currently available to me. I reserve the right to expand, modify, or supplement my opinions if I become aware of evidence or information that was not available for review at the time I drafted this declaration.

¶4. DTL is paying me at a rate of \$450 per hour plus expenses for my study and testimony in this case. This compensation is not contingent upon my performance, the outcome of this IPR, or any issues involved in or related to this IPR.

¹ All emphasis is added in this report unless otherwise noted.

TABLE OF CONTENTS

CURRENT EXHIBIT LIST	ii
INTRODUCTION	1
I. PROFESSIONAL BACKGROUND AND QUALIFICATIONS.....	2
II. RELEVANT TIME.....	7
III. LEVEL OF ORDINARY SKILL IN THE ART	7
IV. MATERIALS CONSIDERED	8
V. BRISMAR.....	8
A. Brismar Only Teaches Timeouts for Dynamic SIBs and Does Not Disclose a Static SIB's Value Tag Updating upon a Dynamic SIB's Change.....	8
B. Brismar Teaches to Place the SI Distribution in Progress Flag on Unused Bits to Avoid Backwards Compatibility Problems	10
C. Unused Signaling Bits in Brismar Are Subject to Channel Coding	12
D. A Change of Value Tag Merely Signals to a UE the Revision of Information, and Does Not Necessitate that the Way a UE Acquires the New Information Changes.....	13
VI. DECLARATION	14
APPENDIX A (RESUME).....	15

CURRENT EXHIBIT LIST

No.	Brief Description
1001	U.S. Pat. No. 10,841,958 (“’958 Patent”)
1002	Expert Declaration of Dr. Wayne Stark
1003	Intentionally Left Blank
1004	Intentionally Left Blank
1005	U.S. Pat. Publication No. 2015/0382284 (“Brismar”)
1006	Intentionally Left Blank
1007	Intentionally Left Blank
2001	Intentionally Left Blank
2002	Intentionally Left Blank
2003	Intentionally Left Blank
2004	Intentionally Left Blank
2005	ETSI TS 125 211 V3.1.1 (2000-01) Technical Specification, Universal Mobile Telecommunications System (UMTS); Physical channels and mapping of transport channels onto physical channels (FDD) (3G TS 25.211 version 3.1.1 Release 1999)

INTRODUCTION¹

¶1. My name is Dr. Karthikeyan Sundaresan. I have been retained by Daingean Technologies Ltd. (“Patent Owner” or “DTL”) to provide my expert assessment and technical opinions in connection with the above captioned inter partes review (“IPR”) of U.S. Patent No. 10,841,958 (“’958 Patent” or “Patent-at-Issue”), Ex. 1001.

¶2. Specifically, I have been asked to provide my opinion regarding specific aspects of the how a person of ordinary skill in the art (“POSITA”) would understand certain teachings and aspects of U.S. Pat. Publication No. 2015/0382284 (“Brismar”).

¶3. This declaration is based on information currently available to me. I reserve the right to expand, modify, or supplement my opinions if I become aware of evidence or information that was not available for review at the time I drafted this declaration.

¶4. DTL is paying me at a rate of \$450 per hour plus expenses for my study and testimony in this case. This compensation is not contingent upon my performance, the outcome of this IPR, or any issues involved in or related to this IPR.

¹ All emphasis is added in this report unless otherwise noted.

I. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

¶5. I have attached my curriculum vitae (“CV”) as Appendix A to this declaration. My CV includes a list of publications on which I am an author. It contains further details regarding my experience, education, and other qualifications. Nonetheless, I now expound upon my qualifications and professional background related to the field of wireless communications, and particularly to methods and apparatus for requesting, transmitting, and using system information in wireless communications.

¶6. I am a Professor in the School of ECE, Georgia Tech. Prior to that, I spent fifteen years in wireless and telecom research at NEC Labs America, Princeton.

¶7. My research interests are broadly in wireless networking and mobile computing, and span both algorithm design as well as system prototyping.

¶8. I am the recipient of ACM Sigmobile’s Rockstar award (2016) for my contributions to mobile computing and wireless networking. I have also received several best paper awards at prestigious ACM and IEEE conferences. I also received a business contribution award for bringing research technology to commercialization at NEC.

¶9. I led the spin-out efforts of two innovative research technologies (NavigateIO Inc. and Wirinos Inc.) for infrastructure-free tracking of first responders in GPS-denied environments and sustainable product tracking in supply chains.

¶10. I have participated in various organizational and editorial roles for IEEE and ACM conferences and journals, and served as the program committee co-chair for ACM MobiCom'16. I am a Fellow of the National Academy of Inventors, Fellow of the IEEE, and an ACM distinguished member.

¶11. I am listed as an inventor/co-inventor on many patents and patent applications. The following list reflects some that are related to requesting, transmitting, and using system information in wireless communications.

Number	Title	Filed
8,098,609	Integrated scheduling of unicast and multicast traffic in relay-enabled wireless networks	2/9/2009
8,134,946	System and method for scheduling in relay-assisted wireless networks	6/27/2008
8,310,975	Optimal beam scheduling for multicasting in wireless networks	1/22/2010
8,340,584	Systems and methods for adaptive beamforming in indoor wireless networks	2/9/2009
8,380,133	Beamforming methods and systems employing measured power at a receiver to perform channel estimation	3/16/2010
8,519,888	Wireless multicasting with beamforming antennas	3/11/2011
8,537,738	Method and a system of video multicast scheduling	11/2/2011
8,537,928	Channel estimation methods and systems based on power measurement at receivers	10/8/2010

Number	Title	Filed
8,767,580	Femtocell resource management for interference mitigation	2/29/2012
8,780,849	Methods and systems for allocation of macro cell resources in a distributed femto cell network and a distributed relay station network	10/12/2012
8,837,332	Method for a canceling self-interference signal using passive noise cancellation for full-duplex simultaneous (in time) and overlapping (in space) wireless transmission and reception on the same frequency band	12/13/2011
8,891,604	Coordinated multi-point transmission	9/27/2012
8,923,907	Scalable network MIMO for wireless networks	1/31/2013
8,976,696	Methods and systems for integrating batch scheduling with external beamforming	11/14/2012
9,066,351	Tailoring wireless transmission strategies to user profiles	7/19/2013
9,125,047	Cloud-based radio access network for small cells	7/25/2013
9,137,788	Multiple-input multiple-output wireless communications with full duplex radios	8/17/2012
9,337,966	Carrier aggregation	7/19/2013
9,537,587	Efficient large-scale multiple input multiple output communications	6/12/2015
9,654,174	Method and apparatus for managing a power line communication network in multi-flow environments	9/4/2015
9,723,566	Interference cancellation	8/5/2015
9,813,944	System and method for dynamic provisioning of Wi-Fi capacity in large venues using C-RAN architecture	12/20/2016
9,936,414	Enabling long-term-evolution/Wi-Fi coexistence	9/20/2016
9,967,860	Efficient network-wide broadcasting over LTE networks	3/10/2016
10,021,172	Software driven long-term-evolution core network for mobile access	9/23/2016
10,122,547	Enabling high-bandwidth, responsive mobile applications in LTE networks	8/15/2016
10,292,054	Enabling technologies for LTE on unlicensed spectrum	2/1/2017

Number	Title	Filed
10,405,373	Distributed core architecture for implementing wireless communication networks	7/17/2018
10,410,025	Product checkout and interest detection in retail environment using radio-frequency identification	4/16/2018
10,469,188	System and method for enabling interference-awareness for LTE operation in unlicensed spectrum	7/19/2018
10,582,529	Speculative scheduling in mobile networks	3/8/2018
10,616,880	Signaling for coordinated multi-point transmission and reception (CoMP)	12/29/2017
11,054,843	Self-configuring long term evolution radio access network on unmanned autonomous vehicles	3/1/2019
11,356,172	Unmanned aerial vehicle network	3/12/2020
11,388,564	Infrastructure-free RF tracking in dynamic indoor environments	8/21/2020
11,595,934	Infrastructure-free tracking and response	3/26/2021
2009 135777	High performance scheduling methods and apparatus for leveraging diversity in relay-enabled wireless networks	11/24/2008
2009 310783	Controlled Dissemination of Information in Mobile Networks	2/17/2009
2010 046414	Systems and methods for leveraging spatial reuse in OFDMA relay networks	2/18/2009
2010 054143	Uplink connectivity for mobile clients	7/9/2009
2011 199913	Multicast scheduling systems and methods for leveraging cooperation gains in relay networks	10/18/2010
2012 026932	High Performance and Low Complexity Scheduling Method for Adaptive Resource Usage in OFDMA Wireless Relay Networks	7/28/2011
2012 322454	Resource management framework for distributed OFDMA femtocell networks	6/13/2012
2015 023248	Multi-user multiple input multiple output (MIMO) communication with distributed antenna systems in wireless networks	7/16/2014
2015 029904	Enabling full-duplex communication in legacy LTE systems	7/17/2014

Number	Title	Filed
2015 029908	Resource Management with Device-Device Communication in Next Generation Cellular Networks	7/24/2014
2015 117370	Coordinated Multi-Point Transmission and Reception (CoMP) with Non-Ideal Backhaul (NIB)	10/30/2014
2015 163716	Intelligent Wi-Fi-offloading for next-generation mobile networks	12/9/2014
2015 281978	Multicell beamforming system and methods for OFDMA small-cell networks	3/31/2014
2015 372743	Interference alignment in a network with asymmetrical channel dimensions	6/17/2015
2016 269941	Asynchronous access and synchronous transmission for coexistence of wireless standards	3/1/2016
2017 126798	Design of randomization function and its application in load balancing	11/1/2016
2018 270690	Blue-printing interference for LTE access in unlicensed spectrum	3/8/2018
2019 036786	Interference topology inference to enhance performance of LTE unlicensed networks	7/24/2018
2021 294993	Reading passive wireless tags using commodity devices	3/16/2021
2022 381870	Visual and RF sensor fusion for multi-agent tracking	5/26/2022
2023 345207	Realizing Enterprise-Grade Localization Using Wi-Fi 802.11mc Fine Tune Measurement	3/13/2023
AU2018203448	Signaling for coordinated multi-point transmission and reception (CoMP)	5/16/2018
EP3175562	Scaling wireless full duplex in multi-cell networks with spatial interference alignment	7/29/2015
JP20082891A	Method for scheduling heterogeneous traffic in b3g/4g cellular network with multiple channels	3/7/2008
WO2016145137	Scaling the LTE control plane for future mobile access	3/10/2016

II. RELEVANT TIME

¶12. I have been asked to assume that the Patent-at-Issue has an effective priority date of July 28, 2016 (“Effective Priority Date”).

¶13. To the extent that I cite to exhibits created or published after the Effective Priority Date, I consider that the reference is still relevant to what a POSITA would have understood the point for which I cite the reference at or around the time of the invention.

III. LEVEL OF ORDINARY SKILL IN THE ART

¶14. I understand that Petitioners have proposed that “[a] person of ordinary skill in the art (‘POSITA’) at the time of Effective Priority Date for the ’958 Patent would have had would have had a B.S. in Electrical Engineering or a related field with at least three years of experience designing, developing, and/or testing telecommunication systems. Pet. 8 (citing Stark Dec’l ¶33). Petitioners view is also that more education may supplement practical experience or *vice versa*. *Id*.

¶15. I understand that Patent Owner generally concurs with Petitioners’ description, with the caveat that the experience would be two years and the relevant field is, as noted in the ’958 Patent, the “TECHNICAL FIELD” concerning “wireless communications, and particularly to methods and apparatus for requesting, transmitting, and using system information (SI) in wireless communications.” See Ex. 1001 1:11–16.

¶16. I have considered both proposals, and my analysis would not change under either.

¶17. It is my opinion that I would at least qualify as a person of ordinary skill in the art at the relevant time under any of the above descriptions, and that I exceed this level of knowledge, experience, and education so that I am qualified to provide an expert opinion in this proceeding.

¶18. I have approached my analysis from the perspective of a POSITA as of the Effective Priority Date.

IV. MATERIALS CONSIDERED

¶19. In forming my opinions expressed herein, I have considered the Petition and exhibits listed on in the Current Exhibit List beginning on page ii.

V. BRISMAR

A. Brismar Only Teaches Timeouts for Dynamic SIBs and Does Not Disclose a Static SIB's Value Tag Updating upon a Dynamic SIB's Change

¶20. Brismar teaches that value tags are used for static SIBs [0012], while dynamic SIBs employ expiry timers [0013]. It discloses that static SIBs carry information that seldom change, while dynamic SIBs contain information that change often. It teaches that both static and dynamic SIBs are distributed on the broadcast channel and configured with potentially different repetition rates.

¶21. Since the information associated with a static SIB changes seldom, it is possible for its SI distribution to be made “on-demand” based on request from the UE instead of periodic broadcast [0159]. This is made possible with the help of value tags associated with these static SIBs. A value tag associated with a static SIB is updated by the network based on change of its corresponding SIB information. The updated value tag is then notified to the UE through the paging and SI change messages on the primary channel. “... a new SB-BC2 value tag may be included in the Paging Type 1 and System Information Change Indication messages.”[0097]. Brismar teaches that the UE will reacquire the modified static SIB if the value tag is updated and different from its stored one. “... the UE may check the SB-BC2 and compare the new value tags for the BC2 SIBs with the stored ones. If they differ the UE may reacquire the modified SIB.” [0097].

¶22. On the other hand, given the dynamic nature of information in the dynamic SIBs, Brismar teaches that dynamic SIBs are instead associated with expiry timers at the UEs. These timers allow a UE to reacquire the dynamic SIB on their expiry. Brismar discloses that dynamic SIBs are periodically broadcasted by the network at a repetition rate and the UEs are meant to obtain the SIB information on expiry of their corresponding timers. These timers are set to be equal to or greater than the repetition rate of the broadcast, indicating that the UEs will have to read and reacquire the dynamic SIB information on the broadcast channel if the timer has

expired. Brismar explicitly teaches the use of expiry timers for dynamic SIBs, which a POSITA would understand to be an efficient, low-overhead method of broadcasting SIBs that change often. Based on Brismar, a POSITA would not be motivated to use value tags for dynamic SIBs since it would lead to value tag updates being sent by the network often, resulting in increased overhead on the downlink of the network. Thus, Brismar does not teach the update of a value tag that is associated with a static SIB based on a change to a dynamic SIB. In fact, it teaches the contrary, where value tags are used for static SIBs to indicate occasional change in static SIB information, allowing for UEs to accordingly reacquire the static SIB from the network and not meant for dynamic SIBs.

B. Brismar Teaches to Place the SI Distribution in Progress Flag on Unused Bits to Avoid Backwards Compatibility Problems

¶23. Brismar teaches the use of a secondary distribution channel to avoid changing format of SI messages in the primary distribution channel. This is to facilitate backwards compatibility that is critical for legacy UEs to be able to obtain the essential SIBs on the primary distribution channel. Without access to the essential SIBs, legacy UEs may be unable to perform critical functions such as connecting to the network, performing handoffs, etc.

¶24. For similar reasons of backward compatibility, Brismar also teaches that the existing unused bits in paging, acquisition and control channels in the primary channel are used for notification of information relating to SIBs in the

secondary distribution channel such as scheduling blocks in BC2 (SB-BC2) as well as the distribution in progress flag. “... the currently unused bits on an already existing channel such as the Paging Indicator Channel (PICH) or Acquisition Indicator Channel (AICH). A PICH radio frame is 10ms long and contains 300 bits. However, only the first 288 are used for paging information. The SI distribution in progress flag can be mapped on the remaining 12 bits (or some parts thereof), for example with simple repetition coding of one bit of information” [0175-0177]. This avoids the need to change the structure of existing messages, while reusing them to maintain backwards compatibility.

¶25. Brismar teaches that the SI distribution in progress flag is used by the network to notify UEs to stop sending further SI distribution requests as it prepares to disseminate the desired SIB information. This helps avoid overhead on the uplink. Further, Brismar explicitly teaches to include this flag in the unused bits of the primary channel, either in the PICH, AICH or P-CCPCH to maintain backwards compatibility. Hence, based on Brismar’s teachings a POSITA would be motivated to place either the flag and/or the information relating to secondary SIBs in the primary channel for backwards compatibility and not in the primary SIB as taught in the ’958.

C. Unused Signaling Bits in Brismar Are Subject to Channel Coding

¶26. The unused bits in the primary channels, namely PICH, AICH or P-CCPCH channels can avail repetition coding to provide reliability to the transmission of the flag. “... the currently unused bits on an already existing channel such as the Paging Indicator Channel (PICH) or Acquisition Indicator Channel (AICH). A PICH radio frame is 10ms long and contains 300 bits. However, only the first 288 are used for paging information. The SI distribution in progress flag can be mapped on the remaining 12 bits (or some parts thereof), for example with simple repetition coding of one bit of information” [0175-0177]. Brismar teaches that one bit of information can leverage the remaining 12 unused bits through repetition coding to provide reliability. And while the standard does not dictate that common physical channels (PICH, AICH) explicitly have channel coding, their bits may be so subject and depends on the implementation, such as where coding can be included as suggested in Brismar’s teaching. Further, with UEs supporting space-time block codes, space-time block coding based transmit diversity encoding can also be applied to the bits of PICH and AICH to provide reliability. *See, e.g.,* Ex. 2005 § 5.3.1.1.1. Based on Brismar’s teachings, there is no motivation for a POSITA to go against the benefit of backwards compatibility and place secondary SIB information inside of primary SIB for the purpose of providing reliability, when reliability can be provided for the unused bits in the primary channel.

D. A Change of Value Tag Merely Signals to a UE the Revision of Information, and Does Not Necessitate that the Way a UE Acquires the New Information Changes

¶27. Brismar discloses that static SIBs are associated with a value tag and a change in their information can lead to an update of the value tag. The updated value tag is then notified to the UE through the paging and SI change messages on the primary channel. "...a new SB-BC2 value tag may be included in the Paging Type 1 and System Information Change Indication messages." [0097]. However, this only notifies the UE of a revision to the SIB information. It does not lead to the UE changing the way in which it acquires the updated SI.

¶28. Brismar only discloses that the UE will reacquire the modified SIB if the value tag is updated and different from its stored one. "... the UE may check the SB-BC2 and compare the new value tags for the BC2 SIBs with the stored ones. If they differ the UE may reacquire the modified SIB." [0097]. If at all, it teaches the contrary that the UE would have to reacquire through a SI distribution request if the SI distribution is originally configured to be "on-demand," or by reading the scheduling blocks of SB-BC2 to obtain the desired broadcasted SI information based on its repetition rate on the secondary channel if the SI distribution is originally configured to be "not on-demand." Either way, it does not teach that the notification of a value tag update leads to a change in the UE's method of SI acquisition. Hence, it does not disclose that the gNB changes the distribution method from on-demand

to broadcast upon change of value tag. Further, with value tags being specific to static SIBs, and dynamic SIBs employing expiry timers, Brismar does not also teach if and how the distribution of dynamic SIBs changes.

VI. DECLARATION

¶29. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross examination on the subject matter of this declaration. If cross examination is required of me, I will appear for cross examination within the United States during the time allotted for cross examination.

¶30. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. Further, these statements are made with the knowledge that willful false statements are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on Apr 22, 2024, at SUWANEE, GA.



Dr. Karthikeyan Sundaresan

APPENDIX A (RESUME)

KARTHIKEYAN (KARTHIK) SUNDARESAN

5152 Centergy One
 75 5th St NW, Atlanta GA 30308
 Ph: 404.894.5141

karthik@ece.gatech.edu
<https://karthik.ece.gatech.edu>

Education

- Georgia Institute of Technology, USA - Ph.D (ECE), 2006; M.S (ECE), 2003
- Anna University, India - B.S. (Electronics and Communications), 2001

Professional Experience

Professor School of ECE, Georgia Institute of Technology, Atlanta, USA	Oct 2021 – Present
Co-founder, CTO NavigateIO Inc.	Apr 2022 – Present
Senior Researcher NEC Labs America, Princeton NJ, USA	Aug 2006 – Sep 2021
Research Assistant Georgia Tech, Atlanta, USA	Aug 2001 – July 2006
Research Intern Intel Research, Cambridge, UK	Jan 2006 – Mar 2006
Research Intern Los Alamos National Lab, Los Alamos, USA	May 2005 – Aug 2005
Research Fellow AU-KBC Research Center, Chennai, India	May 2001 – Jul 2001

Awards/Honors**Professional/Academic**

- IEEE Fellow, 2020 for contributions to algorithms for mobile networking and computing
- ACM Distinguished Member, 2018 for outstanding scientific contributions to computing.
- Association for Computing Machinery (ACM) SIGMOBILE Rockstar Award, 2016 – for early-career contributions to wireless connectivity ([Citation](#)).
- Business Contribution Award for LTE Small-cell Technology Commercialization, NEC 2015.
- University Gold Medal; ranking FIRST in academic performance, School of ECE, Anna University, Aug. 2001.
- Ramanujan Centennial Gold Medal for ranking FIRST in Mathematics courses across all disciplines during the four year under-graduate tenure, Anna University, Aug. 2001.
- Alumni Association's Best Outgoing Student Award, School of ECE, Anna University, Aug 2001.

Research

- Best Paper Award: "Is WiFi 802.11mc FTM Ready for Prime-time Deployment?", ACM Workshop on Wireless Network Testbeds, Experimental Evaluation and Characterization, Oct 2022.
- Best Paper Award: "SkyCore: Moving Core to the Edge for Untethered and Reliable UAV-based LTE Networks", ACM International Conference on Mobile Networking and Computing (MobiCom), Oct 2018.
- Best Paper Finalist: "BLU: Blue-printing Interference for Robust LTE Access in Unlicensed Spectrum", ACM International Conference on Emerging Networking Experiments and Technologies (CoNEXT), Dec 2017.
- Best Paper Award: "MIDAS: Empowering 802.11ac Networks through Multiple-input Distributed Antenna Systems", ACM International Conference on Emerging Networking Experiments and Technologies (CoNEXT), Dec 2014.
- Best Paper Award: "On Exploiting Diversity and Spatial Reuse in Relay-enabled Wireless Networks", in ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), May 2008.
- Best Paper Award: "Routing in Ad-Hoc Networks with MIMO Links", in IEEE International Conference on Network Protocols (ICNP), Nov 2005.
- Best Paper Award: "Practical Limits on Achievable Energy Improvements and Useable Delay Tolerance in Correlation Aware Data Gathering in Wireless Sensor Networks", in IEEE International Conference on Sensing, Communication and Networking (SECON), Sept. 2005.

Dissertations

- Sigma Xi Best Doctoral Thesis Award, Georgia Institute of Technology, USA, Apr. 2007. Thesis title: "Network Protocols for Ad-hoc Networks with Smart Antennas"
- Sigma Xi Best Master's Thesis Award, Georgia Institute of Technology, USA, Apr. 2004. Thesis title: "MAC Protocols for Ad-hoc Networks with Switched Beam Antennas"
- Alumni Association's Best Undergraduate Thesis Award, Anna University, INDIA, Aug. 2001. Thesis title: "Energy Allocation and Multiple Access for Multi-carrier Communication"

Commercialization/ Start-up

My work has also focused on translating research to high impact commercialization and technology transfer activities.

- NavigatelO: Infrastructure-free Tracking of First Responders in Dynamic GPS-denied Indoor Environments
Led its productization through NECx and Alchemist start-up accelerator programs. Successfully raised seed funding; ran numerous proof-of-concept trials with first responders since 2019; co-founder and chief technical advisor of NavigatelO Inc.
- FERMI: Self-Organizing Network Solution for Interference Management in Heterogeneous LTE Networks
Technology-transferred to NEC business units for commercialization through LTE small cell base stations, 2015. Received business award for commercialization.

Technical/Industry Experience

• Leading end-to-end R&D visions and groups targeting challenging problems in the wireless (networking, sensing, embedded and autonomous systems) space:

Work Experience

-
- identifying the key problems, coming up with technically (algorithmically) sound solutions, translating solutions to real-world systems
 - Leading and mentoring a team of researchers in accomplishing challenging R&D projects, as well as numerous Ph.D students and contributing to their thesis
 - Translating research ideas to commercialization: deploying research prototypes in real-world, continuous iteration of solution (towards productization) based on user feedback
 - Taking research solutions through start-up incubation and accelerator programs

Professor, School of ECE, Georgia Tech, Atlanta GA — Oct 2021 - Present
 Director, MARGA (Mobile Advanced Research Lab at Georgia Tech) Lab

Leading a highly motivated group of graduate students on cutting-edge problems in mobile and wireless networks, sensing and computing.

PI on grant proposals (awarded):

- “ARMIN: Autonomous, Resilient Mobility Inverted Networks”, OUSD, Co-PI.
- “Adaptive 5G Core Network”, Strategic Initiative Proposal, Georgia Tech Research Institute (GTRI), Co-PI.
- “Seamless Coexistence of Positioning and Communications in 5G and Beyond Wireless Systems”, Sole PI, NSF.

Co-founder and Chief Technology Officer, NavigatelO Inc. — 2022 - Present
 Inventor of an infrastructure-free, real-time, wireless tracking solution for challenging, GPS-denied indoor environments. Led the research solution from NEC labs through start-up incubation and co-founded the start-up. Numerous successful PoCs with first responder departments across the country, and federal grant recipient for the same.

Senior Researcher, NEC Labs America, Princeton NJ — 2006 - 2021

Led several challenging research projects in the Mobile Communications and Networking department. Recent research thrusts have been along three directions: (1) Confluence of 5G Networks and Autonomous Systems — exploring an alternate, paradigm of rapidly-deployable, on-demand, self-configurable mobile networks that can be hosted and driven by future, pervasive autonomous platforms (UAVs and AGVs). (2) Ultra Low Power Sensing — aims to remove several of the critical barriers in enabling future on-body healthcare applications, by leveraging wireless backscattering to design novel, ultra low power (micro-W) wireless tags with significantly enhanced deployment, communication and sensing capabilities. (3) Tracking in Resource-constrained Environments — rethinking wireless localization and tracking solutions for practical applications like first responder (zero infrastructure support) situations, or massive scale (low-cost, low-power beacons) inventory tracking in warehouses that inherently operate in resource-constrained regimes.

Prior to these, earlier research thrusts have targeted: (i) wireless connectivity: pushed the performance envelope across multiple dimensions (capacity, latency, density, heterogeneity, user experience, availability) through novel network-level as well cross-layer (PHY+MAC) solutions. (ii) software-defined mobile computing: bringing software-defined computing and mobile connectivity together to enable demanding future

applications ranging from massive scale Internet of Things (IoT) to high-bandwidth, low-latency Continuous Mobile Vision (eg. augmented/virtual reality), over mobile networks.

In addition to numerous publications and patents, work has received recognition through numerous awards both from company (for commercialization, startup incubation), as well as the broader research community (IEEE Fellow, ACM distinguished member, ACM early career award, and numerous best paper awards).

More information available at: <https://sites.google.com/view/karthik-s/home/research-latest>; some demos at: <https://sites.google.com/view/karthik-s/home/research/demos>.

Research Assistant, Georgia Tech, Atlanta GA — 2001 - 2006

Graduate research in the [GNAN](#) research group: focused on designing efficient network protocols for wireless networks that leveraged various forms of smart antennas. While advanced antenna technologies like MIMO were becoming popular at the physical layer (on isolated links), it was unclear how they can be effectively leveraged at higher layers of the protocol stack to deliver value to the network as a whole and to end applications. My thesis pushed the boundaries in this direction, and made significant advances in the design of algorithmically-sound solutions for leveraging such smart antennas in the network. My masters and doctoral theses received the best thesis awards at GaTech.

Research Intern, Intel Research, Cambridge UK, Jan – Mar 2006

Designed and implemented algorithms for self-organizing wireless LANs. The algorithms leveraged several cross layer parameters such as load, average contention duration, etc. that were measured at the firmware and instrumented for access at the driver. The algorithms were implemented in the device driver and tested in Intel's wireless LAN access points & client devices. This work was published in ACM IMC 2006.

Research Intern, Los Alamos National Lab, Los Alamos NM, May - Aug 2005

Investigated the problem of communication in multi-hop wireless networks with smart antennas from a combinatorial perspective in the discrete simulation science division. This involved the design of efficient centralized as well as purely localized algorithms with performance guarantees to help nodes determine the optimal usage of available degrees of freedom to improve network utilization; and resulted in a publication in ACM MobiHoc 2006. I also designed and implemented MAC protocols for wireline networks as part of a highly scalable network simulator.

Research Fellow, AU-KBC Research Center, Chennai India, May - Aug 2001

Designed a novel, adaptive allocation algorithm for multi-user OFDM communication systems that minimizes the total transmit power by optimally allocating OFDM sub-carriers and data bits based on instantaneous channel information. This work was later published in Wireless Personal Communications Journal, (Kluwer) Apr 2003.

Research Contributions

- 60+ awarded patents (Appendix A)
 - 100+ research papers in top-tier IEEE and ACM conferences and journals, and book chapter (Appendix B)
 - Several invited talks, tutorials, seminars, keynotes and panels (Appendix C)
-

**Professional
Activities**

- Several leadership (technical and organizational) roles in top tier conferences; service on numerous international-level research review panels, committees and editorial boards (Appendix D)

**Patents
(Appendix A)**
Expert Reviewer

- Broadcom vs. Netflix, retained by Adsero IP LLC, 2022; US Patent # 7,103,794
- Broadcom vs. Netflix, retained by Adsero IP LLC, 2022; US Patent # 8,646,014

Awarded

1. Infrastructure-free RF Tracking in Dynamic Indoor Environments, US patent # 11,388,564, Jul 2022.
 2. Un-manned Aerial Vehicle Network, US patent # 11,356,172, Jun 2022.
 3. Tracking Indoor Objects with Inertial Sensor Measurements, US patent # 11,169,518, Nov 2021.
 4. Tracking Indoor Objects from an Unmanned Aerial Vehicle, US patent # 11,089,432, Aug 2021.
 5. Self-configuring Long Term Evolution Radio Access Network on Unmanned Autonomous Vehicles, US patent # 11,054,843, Jul 2021.
 6. Backscatter-aided Navigation System, US patent # 10,852,415, Dec 2020.
 7. In-home Inventory and Location System, US patent # 10,852,414, Dec 2020.
 8. Tagging Objects in Indoor Spaces using Ambient, Distributed Backscatter, US patent # 10,852,413, Dec 2020.
 9. In-store Interaction and Location System for Interfacing Users with Products, US patent # 10,852,416, Dec 2020.
 10. Signaling for Coordinated Multi-point Transmission and Reception, US patent # 10,616,880, Apr 2020.
 11. Speculative Scheduling in Wireless Networks, US patent # 10,582,529, Mar 2020.
 12. Interference Topology Inference to Enhance Performance of LTE Unlicensed Networks, US patent # 10,574,535, Feb 2020.
 13. Implementing Wireless Communication Networks using Unmanned Aerial Vehicles, US patent # 10,470,243, Nov 2019.
 14. System and Method for Enabling Interference Awareness for LTE Operation in Unlicensed Spectrum, US patent # 10,469,188, Nov 2019.
 15. Product Checkout and Interest Detection in Retail Environment using Radio Frequency Identification, US patent # 10,410,025, Sept 2019.
 16. Distributed Architecture for Implementing Wireless Communication Networks, US patent # 10,405,373, Sept 2019.
 17. Blue-printing Interference for LTE Access In Unlicensed Spectrum, US patent # 10,405,209, Sept 2019.
 18. Battery-free Touch-aware User Input using RFID Tags, US patent # 10,346,655, July 2019.
 19. Systems and Methods for Distributed Assignment of Task Identifiers, US patent # 10,331,493, June 2019.
 20. Design of Randomization Function and its Application in Load Balancing, US patent # 10,298,671, May 2019.
 21. Consistent Hashing, US patent # 10,296,394, May 2019.
 22. Enabling Technologies for LTE on Unlicensed Spectrum, US patent # 10,292,054, May 2019.
 23. Enabling High-bandwidth Responsive Mobile Applications in LTE Networks, US patent # 10,122,547, Nov 2018.
-

-
24. Interference Alignment in a Network with Asymmetrical Channel Dimensions, US patent # 10,110,293, Oct 2018.
 25. Asynchronous Access and Synchronous Transmission for Coexistence of Wireless Standards, US patent # 10,091,114, Oct 2018.
 26. Software-driven Long-Term Evolution Core Network for Mobile Access, US patent # 10,021,172, July 2018.
 27. Efficient Network-wide Broadcasting over LTE Networks, US patent # 9,967,860, May 2018.
 28. Enabling Long Term Evolution/WiFi Coexistence, US patent # 9,936,414, Apr 2018.
 29. System and method for dynamic provisioning of Wi-Fi capacity in large venues using a C-RAN architecture, US patent # 9,813,944, Nov 2017.
 30. Scaling Wireless Full-Duplex in Multi-Cell Networks, US patent # 9,722,720, Aug 2017.
 31. Intelligent WiFi-offloading for Next-generation Mobile Networks, US patent # 9,723,532, Aug 2017.
 32. Degrees of Freedom in Multi-cell Wireless Systems with Full-duplex Base Stations using Interference Alignment, US patent # 9,736,785, Aug 2017.
 33. Method and Apparatus for Powerline Communication and Networking in Multi-flow Environments, US patent # 9,654,174, May 2017.
 34. Efficient Large Scale Multiple Input Multiple Output Communications, US patent # 9,413,474, Sept 2016.
 35. Multi-user Multiple Input Multiple Output (MIMO) Communication with Distributed Antenna Systems in Wireless Networks, US patent # 9,450,654, Sept 2016.
 36. Carrier Aggregation, US patent # 9,337,966, May 2016.
 37. Multiple-Input Multiple-Output Wireless Communications With Full-Duplex Radios, US patent # 9,137,788, Sept 2015.
 38. A Cloud Based Radio Access Network for Small Cells, US patent # 9,125,047, Sept 2015.
 39. Tailoring Wireless Transmission Strategies to User Profiles in Cloud Based Radio Access Networks, US patent # 9,066,351, Jun 2015.
 40. Methods and Apparatus for Integrating Batch Scheduling with External Beamforming, US patent # 8,976,696, Mar 2015.
 41. Scalable Network MIMO for Wireless Networks, US patent # 8,923,907, Dec 2014.
 42. Coordinated Multi-Point Transmission, US patent # 8,891,604, Nov 2014.
 43. Method for a Canceling Self Interference Signal Using Active Noise Cancellation for Full-Duplex Simultaneous (in time) and overlapping (in space) Wireless Transmission and Reception on the Same Frequency Band, US patent # 8,879,433, Nov 2014.
 44. Method for a Canceling Self Interference Signal Using Passive Noise Cancellation for Full-Duplex Simultaneous (in time) and overlapping (in space) Wireless Transmission and Reception on the Same Frequency Band, US patent # 8,837,332, Sep 2014.
 45. Femtocell Resource Management for Interference Mitigation, US patent # 8,767,580, July 2014.
 46. Methods and Systems for Allocation of Macro Cell Resources in a Distributed Femtocell Network and a Distributed Relay Station Network, US patent # 8,780,849, July 2014.
 47. High Performance and Low Complexity Scheduling Method for Resource Usage in OFDMA Wireless Relay Networks, US patent # 8,660,030, Feb 2014.
 48. Channel Estimation Methods and Systems Based on Power Measurement at Receivers, US patent # 8,537,928, Sep 2013.
 49. Video Multicast Scheduling, US patent # 8,537,738, Sep 2013.
-

-
50. Multicast Scheduling Systems and Methods for Leveraging Cooperation Gains in Relay Networks, US patent # 8,537,693, Sep 2013.
 51. Link Layer Multicasting Systems and Methods, US patent # 8,520,764, Aug 2013.
 52. Wireless Multicasting with Beamforming Antennas, US patent # 8,519,888, Aug 2013.
 53. Beamforming methods and systems employing measured power at a receiver to perform channel estimation, US patent # 8,380,133, Feb 2013.
 54. Methods and systems for location-based allocation of macro cell resources, US patent # 8,374,135, Feb 2013.
 55. Systems and methods for adaptive beamforming in indoor wireless networks, US patent # 8,340,584, Dec 2012.
 56. Methods and systems for allocation of macro cell resources in a distributed femto cell network and a distributed relay station network, US patent # 8,311,005, Nov 2012.
 57. Optimal beam scheduling for multicasting in wireless networks, US patent # 8,310,975, Nov 2012.
 58. Systems and methods for leveraging spatial reuse in OFDMA relay networks, US patent # 8,218,472, Jul 2012.
 59. High performance scheduling methods and apparatus for leveraging diversity in relay-enabled wireless networks, US patent # 8,170,031, May 2012.
 60. System and Method for Scheduling in Relay-assisted Wireless Networks, US patent # 8,134,946, Mar 2012.
 61. Integrated scheduling of unicast and multicast traffic in relay-enabled wireless networks, US patent # 8,098,609, Dec 2012.
 62. Method for scheduling heterogeneous traffic in B3G/4G cellular networks with multiple channels, US patent # 7,856,004, Jan 2010.

Publications
(Appendix B)

Conference

1. M. Dasari, R. Sephardi, K. Sundaresan, S. Das, "RoVaR: Robust Multi-agent Tracking through Dual-layer Diversity in Visual and RF Sensing", Proceedings of ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), 2023.
 2. M. Rostami, K. Sundaresan, "Enabling High Accuracy Pervasive Tracking with Ultra Low Power UWB Tracking Tags", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Oct 2022.
 3. S. Aggarwal, R. Seshadri, K. Sundaresan, D. Koutsoukolas, "Is WiFi 802.11mc FTM Ready for Prime-time Deployment", Proceedings of ACM Workshop on Wireless Network Testbeds, Experimental Evaluation and Characterization, **Best Paper Award**, Oct 2022.
 4. T. Woodford, X. Zhang, E. Chai and K. Sundaresan, "FishEye: Leveraging Diverse Reflector Geometries for Omni-directional Around-corner Automotive Radar", Proceedings of ACM International Conference on Mobile Systems, Applications and Services (MOBISYS), June 2022.
 5. M. Rostami, X. Chen, Y. Feng, K. Sundaresan, D. Ganesan, "MIXIQ: Re-thinking Ultra Low Power Receiver Design for Next-generation On-body Applications", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Oct 2021.
-

-
6. R. Seshadri, E. Chai, K. Sundaresan, S. Rangarajan, "SkyHaul" A Self-Organizing Gigabit Network in the Sky", Proceedings of ACM International Symposium on Theory, Algorithmic Foundations and Protocol Design for Mobile Networks and Mobile Computing (MOBIHOC), July 2021.
 7. T. Woodford, X. Zhang, E. Chai and K. Sundaresan, "SpaceBeam: Lidar-driven One-Shot mmWave Beam Management", Proceedings of ACM International Conference on Mobile Systems, Applications and Services (MOBISYS), June 2021.
 8. H. Alhulayyil, K. Apicharttrisor, J. Chen, K. Sundaresan, S. Oymak and S. Krishnamurthy, "WOLT: Auto-configuration of Integrated Enterprise PLC-WiFi Networks", Proceedings of IEEE International Conference on Distributed Computing Systems (ICDCS), Nov 2020.
 9. M. Rostami, K. Sundaresan, E. Chai, S. Rangarajan, and D. Ganesan, "Redefining Passive in Backscattering with Commodity Devices", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Oct 2020.
 10. A. Dhekne, A. Chakraborty, K. Sundaresan, S. Rangarajan, "TrackIO: Tracking First Responders Inside Out", USENIX Symposium on Networked Systems Design and Implementation (NSDI), Feb 2019.
 11. A. Chakraborty, E. Chai, K. Sundaresan, A. Khojastepour, S. Rangarajan, "SkyRAN: A Self-Organizing LTE RAN in the Sky", ACM International Conference on emerging Networking EXperiments and Technologies (CONEXT), Dec 2018.
 12. M. Moradi, K. Sundaresan, E. Chai, S. Rangarajan, "SkyCore: Moving Core to the Edge for Un-tethered and Reliable UAV-based LTE Networks", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), **Best Paper Award**, Oct 2018.
 13. R. Sheshadri, K. Sundaresan, E. Chai, S. Rangarajan, "ELI: Empowering LTE with Interference Awareness in Unlicensed Spectrum", IEEE International Conference on Network Protocols (ICNP), July 2018.
 14. R. Sheshadri, K. Sundaresan, E. Chai, S. Rangarajan and D. Koutsonikolas, "BLU: Blue-printing Interference for Robust LTE Access in Unlicensed Spectrum", ACM International Conference on emerging Networking EXperiments and Technologies (CONEXT), **Best Paper Finalist**, Dec 2017.
 15. S. Pradhan, E. Chai, K. Sundaresan, S. Rangarajan, L. Qiu, "RIO: A Pervasive RFID-based Touch Gesture Interface", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Oct 2017.
 16. R. Sivaraj, M. Arslan, K. Sundaresan, S. Rangarajan, P. Mohapatra, "BoLTE: Efficient Network-wide LTE Broadcasting", Proceedings of IEEE International Conference on Network Protocols (ICNP), Oct 2017.
 17. A. Banerjee, R. Mahindra, K. Sundaresan, S. Rangarajan, S. Kasera, K. V-D. Merwe, "Orchestrating the Data Plane of Virtual LTE Core Networks", Proceedings of IEEE International Conference on Sensing, Communication and Networking (SECON), June 2017.
-

-
18. S. Pradhan, E. Chai, K. Sundaresan, S. Rangarajan, L. Qiu, "Konark: A RFID-based System for Enhancing In-Store Shopping Experience", Workshop on Physical Analytics, Co-located with ACM MobiSys, June 2017.
 19. K. Apichattrisorn, A. Fatya, J. Chen, K. Sundaresan, S. Krishnamurthy, "Enhancing WiFi Throughput with PLC Extenders", Passive and Active Measurements Conference (PAM), Mar 2017.
 20. J. Cho, K. Sundaresan, R. Mahindra, S. Rangarajan, J. V-d. Merwe, "ACACIA: Context-aware Edge Computing over Mobile Networks", ACM International Conference on emerging Networking EXperiments and Technologies (CONEXT), Dec 2016.
 21. R. Seshadri, M. Arslan, K. Sundaresan, S. Rangarajan, D. Koutsonikolas, "AmorFi: Amorphous WiFi Networks for High Density Deployments", ACM International Conference on emerging Networking EXperiments and Technologies (CONEXT), Dec 2016.
 22. E. Chai, K. Sundaresan, M. Khojastepour, S. Rangarajan, "LTE in Un-licensed Spectrum: Are We There Yet?", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Oct 2016.
 23. A. Atya, K. Sundaresan, S. Krishnamurthy, M. Khojastepour, S. Rangarajan, "BOLT: Enabling High-Throughput Powerline Communication Networks", ACM International Conference on emerging Networking EXperiments and Technologies (CONEXT), Dec 2015.
 24. A. Banerjee, R. Mahindra, K. Sundaresan, S. Kasera, J. Van Der Merwe, S. Rangarajan, "SCALE: Scaling the LTE Control Plane for Future Wireless Access", ACM International Conference on emerging Networking EXperiments and Technologies (CONEXT), Dec 2015.
 25. J. Xiong, K. Sundaresan, K. Jamieson, "ToneTrack: Leveraging Frequency-agile Radios for Time-based Indoor Wireless Localization", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Sept 2015.
 26. X. Xie, E. Chai, X. Zhang, K. Sundaresan, M. Khojastepour, S. Rangarajan, "Hekaton: Efficient and Practical Large-Scale MIMO", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Sept 2015.
 27. S. Singh, K. Sundaresan, S. Krishnamurthy, X. Zhang, M. Khojastepour, S. Rangarajan, "Trinity: A Practical Transmitter Cooperation Framework to Handle Heterogeneous User Profiles in Wireless Networks", Proceedings of ACM International Conference on Mobile Ad Hoc Networking and Computing (MOBIHOC), July 2015.
 28. M. Lotfi, K. Sundaresan, M. Khojastepour, S. Rangarajan, "The Economics of Quality-Sponsored Data in Wireless Networks", International Symposium on Modeling and Optimization in Mobile, Ad-hoc and Wireless Networks (WiOPT), May 2015.
-

-
29. M. Khojastepour, K. Sundaresan, S. Rangarajan, "Scaling Wireless Full-duplex to Multi-cell Networks", IEEE International Conference on Computer Communications (INFOCOM), Apr 2015.
 30. J. Xiong, K. Sundaresan, K. Jamieson, M. Khojastepour, S. Rangarajan, "MIDAS: Empowering 802.11ac Networks with Multiple-input Distributed Antenna Systems", **Best Paper Award**, ACM International Conference on emerging Networking EXperiments and Technologies (CONEXT), Dec 2014.
 31. K. Sundaresan, M. Khojastepour, E. Chai, S. Rangarajan, "Full-duplex without Strings: Enabling Full-duplex with Half-duplex Clients", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Sept 2014.
 32. R. Mahindra, H. Viswanathan, K. Sundaresan, M. Arslan, S. Rangarajan, "A Practical Traffic Management System for Integrated LTE-WiFi Networks", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Sept 2014.
 33. J. Xiong, K. Jamieson, K. Sundaresan, "Synchronicity: Pushing the Envelope of Fine-grained Localization with Distributed MIMO", ACM Workshop on Hot Topics in Wireless, Sept 2014.
 34. M. A. Khojastepour, E. Aryafar, K. Sundaresan, S. Rangarajan, "Exploring the Potential of Full-Duplex in Legacy LTE Systems", Proceedings of IEEE International Conference on Sensing, Communication and Networking (SECON), June 2014.
 35. M. Khojastepour, K. Sundaresan, M. Farajzadeh-Tehrani, S. Rangarajan, "Degrees of Freedom per Communication Node", International Symposium on Modeling and Optimization in Mobile, Ad-hoc and Wireless Networks (WiOPT), May 2014.
 36. T. Bansal, K. Sundaresan, S. Rangarajan, P. Sinha, "R2D2: Embracing Device-Device Communication in Next Generation Cellular Networks", IEEE International Conference on Computer Communications (INFOCOM), Apr 2014.
 37. K. Sundaresan, M. Arslan, S. Singh, S. Rangarajan, S. Krishnamurthy, "FluidNet: A Flexible Cloud-based Radio Access Network for Small Cells", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Miami, Oct 2013.
 38. X. Zhang, K. Sundaresan, A. Khojastepour, S. Rangarajan, K. Shin, "NEMOx: Scalable Network MIMO for Wireless Networks", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Miami, Oct 2013.
 39. X. Xie, X. Zhang, K. Sundaresan, "Adaptive Feedback Compression for MIMO Networks", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Miami, Oct 2013.
 40. K. Sundaresan, S. Rangarajan, "Energy-efficient Carrier Aggregation Algorithms for Next Generation Cellular Networks", Proceedings of IEEE International Conference on Network Protocols (ICNP), Oct 2013.
 41. A. Atya, A. Aqil, S. Singh, I. Broustis, K. Sundaresan, S. Krishnamurthy, "Mitigating Malicious Interference Via Subcarrier-level Radio Agility in Wireless Networks",
-

-
- Proceedings of IEEE International Conference on Network Protocols (ICNP), Oct 2013.
42. J. Yoon, K. Sundaresan, A. Khojastepour, S. Rangarajan, S. Banerjee, "ProBeam: A Practical Multi-cell Beamforming System for OFDMA Small Cells", Proceedings of ACM International Conference on Mobile Ad Hoc Networking and Computing (MOBIHOC), Jul 2013.
 43. C. Liu, K. Sundaresan, M. Jiang, S. Rangarajan, G.K. Chang, "The Case for Re-configurable Backhaul for Cloud-RAN based Small Cell Networks", IEEE International Conference on Computer Communications (INFOCOM), Apr 2013.
 44. M. Arslan, I. Singh, S. Singh, H. Madhyastha, K. Sundaresan, S. Krishnamurthy, "Computing while Charging: Building a Distributed Computing Infrastructure with Smartphones", ACM International Conference on emerging Networking Experiments and Technologies (CONEXT), Dec 2012.
 45. S. Singh, K. Sundaresan, A. Khojastepour, S. Rangarajan, S. Krishnamurthy, "One Strategy Does not Serve All: Tailoring Wireless Transmission Strategies to User Profiles", Proceedings of ACM Workshop on Hot Topics in Networks (Hotnets), Nov 2012.
 46. E. Aryafar, M. Khojastepour, K. Sundaresan, S. Rangarajan and M. Chiang, "MIDU: Enabling MIMO Full Duplex", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Istanbul, Turkey, Aug 2012.
 47. M. Arslan, K. Sundaresan, S. Krishnamurthy, S. Rangarajan, "Design and Implementation of an Integrated Beamformer and Uplink Scheduler for OFDMA Femtocells", Proceedings of ACM International Conference on Mobile Ad Hoc Networking and Computing (MOBIHOC), Jun 2012.
 48. J. Yoon, M. Arslan, K. Sundaresan, S. Krishnamurthy, S. Banerjee, "A Distributed Resource Management Framework for Interference Mitigation in OFDMA Femtocell Networks", Proceedings of ACM International Conference on Mobile Ad Hoc Networking and Computing (MOBIHOC), Jun 2012.
 49. S. Singh, M. Shahbazi, K. Pelechrinis, K. Sundaresan, S. Krishnamurthy, S. Addepalli, "A Case for Adaptive Sub-carrier Level Power Allocation in OFDMA Networks", Proc. of ACM International Conf. on Mobile Ad Hoc Networking and Computing (MOBIHOC), Jun 2012.
 50. X. Zhang, M.A. Khojastepour, K. Sundaresan, S. Rangarajan, K. Shin, "Exploiting Interference Locality in Coordinated Multi-Point Transmission Systems", IEEE International Conference on Communications (ICC), June 2012.
 51. S. Barghi, M. Khojastepour, K. Sundaresan, S. Rangarajan, "Characterizing the Throughput Gain of Single Cell MIMO Wireless Systems with Full Duplex Radios", International Symposium of Modeling and Optimization of Mobile, Ad Hoc, and Wireless Networks (WIOPT), May 2012.
 52. K. Sundaresan and S. Rangarajan, "Adaptive Resource Scheduling in Wireless OFDMA Relay Networks", in IEEE International Conference on Computer Communications (INFOCOM), Mar 2012.
-

-
53. E. Aryafar, A. Khojastepour, K. Sundaresan, E. Knightly, S. Rangarajan, "ADAM: An Adaptive Beamforming System for Multicasting in Wireless LANs", in IEEE International Conference on Computer Communications (INFOCOM), Mar 2012.
 54. M. Arslan, J. Yoon, K. Sundaresan, S. Krishnamurthy, S. Banerjee, "Characterization of Interference in OFDMA Femtocell Networks", in IEEE International Conference on Computer Communications (INFOCOM) Mini-Conf, Mar 2012.
 55. A. Khojastepour, K. Sundaresan, S. Rangarajan, X. Zhang, S. Barghi, "The Case for Antenna Cancellation for Scalable Full Duplex Communications", Proceedings of ACM Workshop on Hot Topics in Networks (HotNets), Cambridge, Nov 2011.
 56. M. Arslan, J. Yoon, K. Sundaresan, S. Krishnamurthy and S. Banerjee, "FERMI: A Femtocell Resource Management System for Interference Mitigation in OFDMA Networks", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Las Vegas, Sept 2011.
 57. M. Khojastepour, A. Khajehnejad, K. Sundaresan, S. Rangarajan, "Adaptive Beamforming Algorithms for Wireless Link Layer Multicasting", Proceedings of IEEE Personal Indoor Mobile Radio Communications (PIMRC), Toronto, Sept 2011.
 58. K. Sundaresan and S. Rangarajan, "Scheduling Algorithms for Video Multicasting with Channel Diversity in Wireless OFDMA Networks", Proceedings of ACM International Conference on Mobile Ad Hoc Networking and Computing (MOBIHOC), Paris, May 2011.
 59. H. Zhang, Y. Jiang, K. Sundaresan, and S. Rangarajan, "Wireless Data Multicasting with Switched Beamforming Antennas", Proceedings of IEEE International Conference on Computer Communications (INFOCOM), Mini-Conf, Shanghai, China, April 2011.
 60. S. Lakshmanan, K. Sundaresan, A. Khojastepour and S. Rangarajan, "Practical Multi-link Spatial Reuse in Wireless LANs", Proc. of IEEE International Conference on Broadband Communications, Networks, and Systems (BROADNETS), Athens, Greece, Oct 2010.
 61. K. Sundaresan and S. Rangarajan, "Cooperation vs. Multiplexing: Multicast Scheduling Algorithms for OFDMA Relay Networks", Proceedings of ACM International Conference on Mobile Ad Hoc Networking and Computing (MOBIHOC), Chicago, Sept 2010.
 62. S. Lakshmanan, K. Sundaresan, S. Rangarajan and R. Sivakumar, "The Myth of Spatial Reuse with Directional Antennas in Indoor Wireless Networks", Proceedings of Passive and Active Measurements Conference (PAM), Zurich, Switzerland, Apr 2010.
 63. S. Lakshmanan, K. Sundaresan, S. Rangarajan and R. Sivakumar, "Practical Beamforming based on RSSI Measurements using Off-the-Shelf Wireless Clients", Proceedings of ACM SIGCOMM Internet Measurement Conference (IMC), Chicago, Nov 2009.
 64. K. Sundaresan, K. Ramachandran, and S. Rangarajan, "Optimal Beam Scheduling for Multicasting in Wireless Networks", Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Beijing, China, Sept 2009.
-

-
65. K. Ramachandran, R. Kokku, K. Sundaresan, M. Gruteser and S. Rangarajan, "R2D2: Regulating Beam Shape and Rate as Directionality meets Diversity", Proceedings of ACM International Conference on Mobile Systems, Applications and Services (MOBISYS), Krakow, Poland, June 2009.
 66. K. Sundaresan and S. Rangarajan, "Efficient Resource Management in OFDMA Femto Cells", Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC), New Orleans, May 2009.
 67. K. Sundaresan, and S. Rangarajan, "Efficient Algorithms for Leveraging Spatial Reuse in OFDMA Relay Networks", Proceedings of IEEE International Conference on Computer Communications (INFOCOM), Rio De Janeiro, Brazil, April 2009.
 68. S. Lakshmanan, K. Sundaresan, R. Kokku, M. Khojastepour and S. Rangarajan, "Towards Adaptive Beamforming in Indoor Wireless Networks: An Experimental Approach", Proceedings of IEEE International Conference on Computer Communications (INFOCOM), Mini-Conf, Rio De Janeiro, Brazil, April 2009.
 69. K. Sundaresan, X. Wang and M. Madihian, "Low Overhead Scheduling Algorithms for OFDMA Relay Networks", Proceedings of International Wireless Internet Conference (WICON), Maui, HI Nov 2008.
 70. K. Sundaresan and S. Rangarajan, "On Coexistence of Unicast and Multicast Traffic in Relay- enabled Wireless Networks", Proceedings of IEEE International Conference on Broadband Communications, Networks, and Systems (BROADNETS), London, UK Sept 2008.
 71. R. Kokku, K. Sundaresan, and G. Jiang, "Enabling Location-specific Real-time Mobile Applications", International Workshop on Mobility in the Evolving Internet Architecture (MobiArch), Seattle WA, USA, Aug 2008.
 72. S. Lakshmanan, C.-L. Tsao, R. Sivakumar, and K. Sundaresan, "Securing Wireless Data Networks against Eavesdropping using Smart Antennas", in International Conference on Distributed Computing Systems (ICDCS), Beijing, China, June 2008.
 73. K. Sundaresan and S. Rangarajan, "On Exploiting Diversity and Spatial Reuse in Relay- enabled Wireless Networks", Best Paper Award, Proc. of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC), Hong Kong, May 2008.
 74. M. Blanco, R. Kokku, K. Ramachandran, S. Rangarajan, and K. Sundaresan, "On the Effectiveness of Switched Beam Antennas in Indoor Wireless Environments", Proceedings of Passive and Active Measurement Conference (PAM), Cleveland OH, USA, Apr 2008.
 75. K. Sundaresan, X. Wang, and M. Madihian, "Scheduler Design for Heterogeneous Traffic in Cellular Networks with Multiple Channels", Proceedings of International Wireless Internet Conference (WICON), Austin TX, USA, Oct 2007.
 76. K. Sundaresan, and R. Sivakumar, "Cooperating with Smartness: Using Heterogeneous Smart Antennas in Ad-Hoc Networks", Proceedings of IEEE International Conference on Computer Communications (INFOCOM), Anchorage, Alaska, May 2007.
-

-
77. K. Sundaresan, and K. Papagiannaki, "The Need for Cross-Layer Information in Access Point Selection", Proce. of Internet Measurement Conference (IMC), Rio De Janeiro, Oct 2006.
 78. K. Sundaresan, S. Lakshmanan and R. Sivakumar, "On the Use of Smart Antennas in Multi- Hop Wireless Networks", Proceedings of International Conference on Broadband Communications, Networks, and Systems (BROADNETS), San Jose, USA, Oct 2006.
 79. S. Lakshmanan, K. Sundaresan, and R. Sivakumar, "On Multi-Gateway Association in Wireless Mesh Networks", IEEE Workshop on Wireless Mesh Networks (WiMesh), Reston, VA, USA, September 2006.
 80. K. Sundaresan, W. Wang and S. Eidenbenz, "Algorithmic Aspects of Communication in Ad- hoc Networks with Smart Antennas", Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC), Florence, Italy, May 2006.
 81. K. Sundaresan and R. Sivakumar, "Routing in Ad-Hoc Networks with MIMO Links", **Best Paper Award**, Proceedings of IEEE International Conference on Network Protocols (ICNP), Boston, Nov 2005.
 82. H. Shekhar, K. Sundaresan and M. A. Ingram, "Linear and non-linear receiver processing for MIMO ad-hoc wireless networks", Proceedings of IEEE International Symposium on Wireless Personal Multimedia Communications (WPMC), Aalborg, Denmark, Sept 2005.
 83. Y. Zhu, K. Sundaresan and R. Sivakumar, "Practical Limits on Achievable Energy Improvements and Useable Delay Tolerance in Correlation Aware Data Gathering in Wireless Sensor Networks", **Best Paper Award**, Proceedings of IEEE International Conf. on Sensor and Ad Hoc Communications and Networks (SECON), Sept 2005.
 84. A. Velayutham, K. Sundaresan , and R. Sivakumar, "Non-pipelined Relay Increases Throughput Capacity of Wireless Ad-hoc Networks", Proceedings of IEEE Intl. Conference on Computer Communications (INFOCOM), Mar. 2005.
 85. K. Sundaresan , and R. Sivakumar, "A Unified MAC Framework for Ad-hoc Networks with Smart Antennas", Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC), Tokyo, Japan, May 2004.
 86. K. Sundaresan, R. Sivakumar, and M. A. Ingram, "A Fair Medium Access Control Protocol for Ad-hoc Networks with MIMO Links", Proceedings of IEEE International Conference on Computer Communications (INFOCOM), Honk Kong, Mar 2004.
 87. K. Sundaresan, V. Anantharaman, H.-Y. Hsieh, and R. Sivakumar, "ATP: A Reliable Transport Protocol for Ad-hoc Networks", Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC), Annapolis, MD USA, June 2003.
 88. V. Rajendran, K. Sundaresan , and S. Subramanian, "A Power Efficient Resource Allocation Scheme for Multi-user OFDM", Proceedings of IEEE International Conference on Personal Wireless Communications (ICPWC), New Delhi, India, December 2002.
-

-
89. A. Pachai, V. Rajendran, K. Sundaresan, and S. Subramanian, "Multiple Access Schemes for OFDM based Indoor Wireless Systems", Proceedings of The 8th National Conference on Communications (NCC), 2002, Mumbai, India.

Journals

82. M. Moradi, K. Sundaresan, E. Chai, S. Rangarajan, "SkyCore: Moving Core to the Edge for Un-tethered and Reliable UAV-based LTE Networks", Communications of the ACM, Research Highlights, Jan 2021.
83. M. Moradi, K. Sundaresan, E. Chai, S. Rangarajan, "SkyCore: Moving Core to the Edge for Un-tethered and Reliable UAV-based LTE Networks", ACM Sigmobility, GetMobile Magazine, Research Highlights, 2019.
84. J. Yoon, M. Arslan, K. Sundaresan, S. Krishnamurthy, S. Banerjee, "Characterization of Interference in OFDMA Small-cell Networks", IEEE Transactions on Vehicular Technology, Sept 2018.
85. M. Lotfi, K. Sundaresan, M. Khojastepour, S. Sarkar, S. Rangarajan, "Economics of Quality- Sponsored Data in Non-Neutral Networks", IEEE/ACM Transactions on Networking, 2017.
86. S. Singh, K. Sundaresan, S. Krishnamurthy, X. Zhang, M. Khojastepour, "Trinity: Tailoring Wireless Transmission Strategies to User Profiles in Enterprise Wireless Networks", in IEEE/ACM Transactions on Networking, 2017.
87. J. Yoon, K. Sundaresan, M. Khojastepour, S. Rangarajan, S. Banerjee, "Joint Multi-cell Beamforming and Client Association in OFDMA Small-cell Networks", in IEEE Transactions on Mobile Computing, 2016.
88. K. Sundaresan, M. Arslan, S. Singh, S. Rangarajan, S. Krishnamurthy, "FluidNet: A Flexible Cloud-based Radio Access Network for Small Cells", in IEEE/ACM Transactions on Networking, 2016.
89. M. Arslan, K. Sundaresan, S. Krishnamurthy, S. Rangarajan, "iBUS: An Integrated Beamformer and Uplink Scheduler for OFDMA Femtocells", in IEEE/ACM Transactions on Networking, 2016.
90. M. Arslan, K. Sundaresan, S. Rangarajan, "Software-defined Networking in Cellular Radio Access Networks: Potential and Challenges", IEEE Communications Magazine, Special Issue on Extremely Dense Wireless Networks, Jan 2015.
91. J. Yoon, M. Arslan, K. Sundaresan, S. Krishnamurthy, S. Banerjee, "Self-Organizing Resource Management Framework in OFDMA Femtocells", IEEE Transactions on Mobile Computing, 2015.
92. M. Arslan, I. Singh, S. Singh, H. Madhyastha, K. Sundaresan, S. Krishnamurthy, "CWC: A Distributed Computing Infrastructure using Smartphones", in IEEE Transactions on Mobile Computing, 2015.
93. S. Singh, M. Shahbazi, K. Pelechrinis, K. Sundaresan, S. Krishnamurthy, K. Satish, "Adaptive Sub-carrier Level Power Allocation in OFDMA Networks", IEEE Transactions on Mobile Computing, 2015.
-

-
94. A. Atya, S. Singh, I. Broustis, K. Sundaresan, S. Krishnamurthy, "Exploiting Subcarrier Agility to Alleviate Active Jamming Attacks in Wireless Networks", in IEEE Transactions on Mobile Computing, 2015.
 95. K. Sundaresan, S. Rangarajan, "Video Multicasting with Channel Diversity in Wireless OFDMA Networks", in IEEE Transactions on Mobile Computing, 2014.
 96. K. Sundaresan, S. Rangarajan, "Cooperation vs. Multiplexing: Multicast Scheduling Algorithms for OFDMA Relay Networks", in IEEE/ACM Transactions on Networking, 2014.
 97. E. Aryafar, M. Khojastepour, K. Sundaresan, S. Rangarajan, M. Chiang, "ADAM: An Adaptive Beamforming System for Multicasting in Wireless LANs", in IEEE/ACM Transactions on Networking, 2013.
 98. M. Arslan, J. Yoon, K. Sundaresan, S. Rangarajan, S. Krishnamurthy, "A Resource Management System for Interference Mitigation in Enterprise OFDMA Femtocells", in IEEE/ACM Transactions on Networking, 2013.
 99. H. Zhang, J. Tanis, K. Sundaresan, S. Rangarajan and B. Zhao, "Wireless Multicast Scheduling with Switched Beamforming Antennas", in IEEE/ACM Transactions on Networking, 2012.
 100. K. Sundaresan and R. Sivakumar, "Cooperating with Smartness: Using Heterogeneous Smart Antennas in Multi-hop Wireless Networks", in IEEE Transactions on Mobile Computing, Dec 2011.
 101. S. Lakshmanan, K. Sundaresan and R. Sivakumar, "Multi-gateway Association in Wireless Mesh Networks", in Ad-Hoc Networks Journal, Elsevier, May 2009.
 102. K. Sundaresan, and R. Sivakumar, "Routing in Ad-hoc Networks with MIMO Links: Optimization Considerations and Protocols", in Computer Networks Journal, Elsevier, 2008.
 103. K. Sundaresan and R. Sivakumar, "A Unified MAC Framework for Ad-hoc Networks with Smart Antennas", in IEEE/ACM Transactions on Networking, 2007.
 104. K. Sundaresan, and R. Sivakumar, "Ad-hoc Networks with Heterogeneous Smart Antennas: Performance Analysis and Protocols", in Wireless Communication and Mobile Computing Journal, Special Issue on Wireless Ad-hoc Networks: Technologies and Challenges, 2006.
 105. K. Sundaresan, V. Anantharaman, H.-Y. Hsieh and R. Sivakumar, "ATP: A Reliable Transport Protocol for Ad-hoc Networks", in IEEE Transactions on Mobile Computing, Nov-Dec 2005.
 106. K. Sundaresan, R. Sivakumar, M. A. Ingram and T.-Y. Chang, "Medium Access Control in Ad-hoc Networks with MIMO Links: Optimization Considerations and Algorithms", in IEEE Transactions on Mobile Computing, Oct-Nov 2004.
 107. K. Sundaresan, H.-Y. Hsieh, and R. Sivakumar, "IEEE 802.11 over Multi-hop Wireless Networks: Problems and New Perspectives", in Ad-hoc Networks Journal, Elsevier, Feb 2004. WCMC
 108. V. Anantharaman, S.-J. Park, K. Sundaresan, and R. Sivakumar, "TCP Performance over Mobile Ad-hoc Networks: A Quantitative Study", In Wireless Communications
-

and Mobile Computing Journal (WCMC), Special Issue on Performance Evaluation of Wireless Networks, Mar 2004.

- 109.V. Rajendran, K. Sundaresan and S. Subramanian, "Performance of an OFDM Based Downlink Multiple Access System for Indoor Wireless Communications", in Wireless Personal Communications, Kluwer Academic Publishers, April 2003.

Book Chapters

- 110.K. Sundaresan, S-J. Park, and R. Sivakumar, "Transport Layer Solutions for Ad-hoc Networks", in Ad-hoc Networks: Technologies and Protocols, Kluwer, 2005.

Posters/Demos

- 111.J. Cho, K. Sundaresan, R. Mahindra, S. Rangarajan, J. V-d. Merwe, "ACACIA: Context-aware Edge Computing over Mobile Networks", Demo, Proceedings of ACM International Conference on Mobile Computing and Networking (MOBICOM), Oct 2016.
- 112.K. Sundaresan and R. Sivakumar, "Rate vs. Range vs. Reliability: How to Best Exploit MIMO in Ad-hoc Networks", Poster, Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC), Illinois, May 2005.
- 113.Y. Zhu, K. Sundaresan and R. Sivakumar, "Exposing Two Critical Myths About Correlation-Aware Data Aggregation", Poster, Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC), Illinois, May 2005.
- 114.K. Sundaresan and R. Sivakumar, "On the Medium Access Control Problem in Ad-hoc Networks with Smart Antennas", Poster, Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC), MD USA, June 2003.

Talks (Appendix C)

Tutorials

- "Networks in the Sky: Potential and Challenges", at IEEE-sponsored COMSNETS, India, Jan 2022.
 - "5G: An Evolution towards a Revolution", at ACM MobiCom, India, Oct 2018.
 - "5G: An Evolution towards a Revolution", at Signal Processing and Communications Conference (SPCOM), IISC, Bengaluru, India, July 2018.
-

Invited Panels, Tutorials and Talks

- “Networks in the Sky: Enabling Ubiquitous Connectivity and Sensing”, Seminar talk at Georgia Tech, School of ECE, Feb 2021.
 - “Untethering 5G for Ubiquitous Connectivity”, Invited talk at Comsnets, Jan 2021.
 - “Making Mobile Networks Fly”, Seminar talk (Leaders and Innovators Series), at Texas A&M University, Nov 2019.
 - “Making Mobile Networks Fly”, Keynote talk at ACM S3 workshop, co-located with ACM MobiCom, Oct 2018.
 - “Triple Play: The Confluence of Connectivity, Computing and User Experience in Mobile Networks”, School of Computer Science, University of California, Santa Barbara, Apr 2017.
 - “Connectivity meets Computing: A Wireless Networking Perspective”, School of Electrical Engineering, University of Washington, Seattle, Feb 2017.
 - “Evolving Shades of Wireless Access Research”, ACM Sigmobile Rockstar Award talk, ACM MobiCom, Oct 2016.
 - “Converged Wireless Access: The New Normal”, Talk at Wireless Co-existence Workshop, Univ. of Washington, June 2016.
 - “Blurred Boundaries in Future Wireless Access”, Talk at 5G Forum, UCSD, May 2016.
 - “Connectivity meets Computing: A Wireless Networking Perspective”, School of Computer Science, University of Utah, Apr 2016.
 - “Blurred Boundaries in Future Wireless Access”, Talk at ACM Wireless Networking Industry Day, Mar 2016.
 - “Blurred Boundaries in Future Wireless Access”, Talk at ACM HotWireless Workshop, Sept 2015.
 - “Connectivity meets Computing in the Path to 5G”, Talk at Telecom ParisTech Workshop on 5G, Sept 2015.
 - “Connectivity meets Computing: A Wireless Networking Perspective”, School of ECE, UCSD, Feb 2015.
 - “Cloud-driven Architectures for Next Generation Small Cell Networks”, Keynote at ACM MobiArch workshop, co-located with ACM MobiCom, 2013.
 - “Cloud-driven Architectures for Next Generation Small Cell Networks”, Talk at University of Delaware, CS seminar, 2013.
 - “Realizing the Potential of Small Cells: An Experimental Approach”, Talk at Columbia University, EE seminar, 2012.
 - MIMO in Sensor and Ad Hoc Networks: Challenges and Opportunities” Panel at IEEE SECON 2008.
-

Professional
Activities
(Appendix D)

Editorial Board

Associate Editor, IEEE Transactions on Mobile Computing, Associate Editor, 2012-2018.

Conference/Workshop Organization

- Area Chair for IEEE ICNP, 2020.
- Track Chair for IEEE ICDCS 2017, "Mobile and Wireless Network Computing" Track.
- Program Co-Chair for ACM MobiCom 2016.
- Program Co-Chair for IEEE ICC Workshop on "LTE in Unlicensed Bands: Potential and Challenges", June 2015.
- Program Co-chair for IEEE SECON 2013.
- Poster Chair for ACM MobiHoc 2012.
- Publicity Chair for ACM MobiCom 2010.
- Publicity Chair for ACM MobiHoc 2010.
- Poster and Demo Chair for IEEE SECON 2010.
- Program Co-chair for IEEE Workshop on Wireless Mesh Networks (WiMesh) 2009; co-located with IEEE SECON 2009.
- Publications Chair for ACM Workshop on Dependability Issues in Wireless Ad-hoc and Sensor Networks (DIWANS) 2006; co-located with ACM MOBICOM 2006.

Technical Program Committee Memberships

- ACM MOBICOM 2008, 2011, 2012, 2014 - 2023.
 - ACM SIGCOMM 2009.
 - IEEE INFOCOM 2012, 2013, 2014, 2015 (advisory TPC), 2016, 2017.
 - IEEE SECON 2009, 2012.
 - IFIP Networking 2007, 2008.
 - IEEE ICC 2010, 2012.
 - IEEE MASS 2009.
 - IEEE WoWMoM 2010.
 - IEEE WiMesh 2009, 2010.
-

Referee/Panelist for Journals, Conferences and Review Panels

- Journals: IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing, IEEE Transactions on Wireless Communications, IEEE Journal on Selected Areas in Communications, ACM Mobile Computing and Communications Review
- Conferences: ACM MobiCom, ACM SIGCOMM, ACM CONEXT, IEEE INFOCOM, IEEE ICNP
- Evaluation committee of "MIMONet" project - a 3 year project on MIMO networks funded by Italian National Research Council, along with Dr. Robert Heath; Jan 2012.
- NSF Panelist for Network Technology and Systems 2012, 2013, 2014, 2017, 2019.

Ph.D. Dissertation Committees

- Shruti Lall, School of ECE, Georgia Tech, Atlanta, 2022.
- Yuchen Liu, School of ECE, Georgia Tech, Atlanta, 2022.
- Mallesham Dasari, Computer Science, Stony Brook University, New York, 2021.
- Mohammad Rostami, Computer Science, University of Massachusetts, Amherst, 2021.
- Swadhin Pradhan, Computer Science, University of Texas, Austin, 2020.
- Ashutosh Dhekne, School of ECE, UIUC, 2019