

BHUVANA KRISHNASWAMY
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WORK EXPERIENCE

University of Wisconsin-Madison	Fall 2018-Present
Assistant Professor, Electrical and Computer Engineering	
Cisco Systems , San Jose, CA	Summer 2016
Research Intern	
Cable Labs , Louisville, CO	Summer 2015
Research Intern	
Nokia Research , Berkeley, CA	Summer 2014
Research Intern	
Georgia Institute of Technology	Fall 2011-Spring 2018
Graduate Research Assistant	

EDUCATION

Ph.D in Electrical and Computer Engineering	Spring 2013-Summer 2018
Advisor: Dr. Raghupathy Sivakumar	Georgia Institute of Technology, Atlanta
Masters in Electrical and Computer Engineering	Fall 2011-Fall 2013
Advisor: Dr. Raghupathy Sivakumar	Georgia Institute of Technology, Atlanta
Bachelors of Electronics and Communication Engineering	Fall 2007-Spring 2011
College of Engineering, Guindy, Chennai, India	

AWARDS AND HONORS

- Finalist, WARF Wisconsin Innovator Award 2019 (6 out of 300+ teams selected among all innovations in UW system)
- Finalist, WARF Wisconsin Innovator Award 2020 (6 out of 300+ teams selected among all innovations in UW system)
- Madison Teaching and Learning Excellence (MTLE) fellow
- ECE Grainger Faculty Scholarship Award 2021
- Outstanding PC member award, MobiCom 2022
- NSF CAREER Award 2022

PUBLICATIONS

1. Shahid, Muhammad Osama, Millan Philipose, Krishna Chintalapudi, Suman Banerjee, and Bhuvana Krishnaswamy. Concurrent interference cancellation: decoding multi-packet collisions in LoRa. *In Proceedings of ACM Special Interest Group on Data Communication on the applications, technologies, architectures, and protocols for computer communication (ACM SIGCOMM) 2021.*

2. Sangar, Y. and Krishnaswamy, B. WiChronos : Energy-Efficient Modulation for Long-Range, Large-Scale Wireless Networks, *Low-power Design Contest at ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED 2021)*
3. Krishnaswamy, B. and McClean, M., 2020 Shining Light on Molecular Communication *In Proceedings of ACM International Conference on Nanoscale Computing and Communication (ACM NanoCom), 2020*
4. Sangar, Y. and Krishnaswamy, B. WiChronos : Energy-Efficient Modulation for Long-Range, Large-Scale Wireless Networks”, *published in the Annual International Conference on Mobile Computing and Networking (MobiCom), 2020*
5. Sangar, Y. and Krishnaswamy, B., 2019 Poster: Time Encoding for Energy Efficiency and Scalability in Wireless Networks *in the Proceedings of the 11th workshop on Wireless of the Students, by the Students, and for the Students, 2019, Los Cabos, Mexico*
6. Sangar, Y. and Krishnaswamy, B., 2019 Link Layer Protocol for Molecular Communication Networks published *In ACM International Conference on Nanoscale Computing and Communication (ACM NanoCom), 2019, Dublin, Ireland*
7. Krishnaswamy, B. and Sivakumar, R., 2018 Amplitude-Width Encoding for Error Correction in Bacterial Communication Networks *In Proceedings of ACM International Conference on Nanoscale Computing and Communication (ACM NanoCom), 2018, Reykjavik, Iceland*
8. Shih, C.F., Krishnaswamy, B., Jian, Y. and Sivakumar, R., 2018. Scheduled WiFi using distributed contention in WLANs: algorithms, experiments, and case-studies. *Wireless Networks.*
9. Jian, Y., Krishnaswamy, B., Austin, C.M., Bicen, A.O., Einolghozati, A., Perdomo, J.E., Patel, Fekri, F., Akyildiz, I.F., Forest, C.R. and Sivakumar, R., 2017. nanoNS3: A network simulator for bacterial nanonetworks based on molecular communication. *Nano communication networks.*
10. Krishnaswamy, B., Jian, Y., Austin, C.M., Perdomo, J.E., Patel, S.C., Hammer, B.K., Forest, C.R. and Sivakumar, R., 2017. Adma: Amplitude-division multiple access for bacterial communication networks. *IEEE Transactions on Molecular, Biological and Multi-Scale Communications.*
11. Krishnaswamy, B. and Sivakumar, R., 2016, September. Advanced Receiver Designs for Bacterial Communication with Amplitude Source Addressing. *In Proceedings of the ACM International Conference on Nanoscale Computing and Communication (ACM NanoCom), New York City, USA*
12. Jian, Y., Krishnaswamy, B., Austin, C.M., Bicen, A.O., Perdomo, J.E., Patel, S.C., Akyildiz, I.F., Forest, C.R. and Sivakumar, R., 2016, September. nanoNS3: Simulating bacterial molecular communication based nanonetworks in Network Simulator 3. *In Proceedings of ACM International Conference on Nanoscale Computing and Communication (ACM NanoCom), New York City, USA*
13. Krishnaswamy, B. and Sivakumar, R., 2015, September. Source addressing and medium access control in bacterial communication networks. *In Proceedings of the International Conference on Nanoscale Computing and Communication (ACM NanoCom), Boston, USA*
14. Shih, C.F., Krishnaswamy, B. and Sivakumar, R., 2015, December. Rhythm: Achieving scheduled WiFi using purely distributed contention in WLANs. *In IEEE Global Communications Conference (GLOBECOM), 2015, San Diego, USA*

15. Jian, Y., Shih, C.F., Krishnaswamy, B. and Sivakumar, R., 2015, June. Coexistence of Wi-Fi and LAA-LTE: Experimental evaluation, analysis and insights. *In Communication Workshop (ICCW), 2015 IEEE International Conference on, London, UK*
16. Krishnaswamy, B., Austin, C.M., Bardill, J.P., Russakow, D., Holst, G.L., Hammer, B.K., Forest, C.R. and Sivakumar, R., 2013. Time-elapse communication: Bacterial communication on a microfluidic chip. *IEEE Transactions on Communications*, 61(12), pp.5139-5151.
17. Krishnaswamy, B., Henegar, C.M., Bardill, J.P., Russakow, D., Holst, G.L., Hammer, B.K., Forest, C.R. and Sivakumar, R., 2013, June. When bacteria talk: Time elapse communication for super-slow networks. *In 2013 IEEE International Conference on Communications (ICC), Budapest, Hungary*

TALKS

- Introduction to Long range wireless through LoRa, College of Engineering, Guindy, Chennai, April 2022.
- Fundamental Challenges of Low-Power Wide Area networks, IEEE Madison chapter, October, 2021.
- Can low-power, long-range, large-scale co-exist in wireless networks?, TSSG Seminar, Waterford, Ireland, May 2020.
- Can low-power, long-range, large-scale co-exist in wireless networks?, NIST Gaithersburg, August 2019
- Towards an autonomous network of biological sensors, SILO seminar series, UW-Madison, 2018
- “Algorithms and protocols for Molecular Communication”, invited talk at Indian Institute of Technology, Madras, India, April 2017
- “Video Streaming over WiFi : MAC and Transport layer solutions” at Cisco, San Jose, USA, 2016
- “Wireless Drop : A truly wireless broadband experience” at CableLabs, USA , 2015
- How to train Bacteria to talk? in The Marconi Society Paul Baran Young Scholars Symposium, 2015, Georgia Tech, Atlanta
- “Interference Management In Distributed WiFi Networks” at Nokia Labs., USA, 2014

PATENT

- Wireless System Using Sleep-State Modulation, Bhuvana Krishnaswamy and Yaman Sangar, 2019
- A Framework for Biological Sensing and Communication Using Optogenetics And Electronics, Bhuvana Krishnaswamy and Megan McClean, 2020

TEACHING EXPERIENCE

- ECE/CS 707 - Mobile and Wireless Networking Fall 2021
- ECE 901 - Advanced Topics in Wireless Networks and Sensing Spring 2021
- ECE 537 - Communication Networks Spring 2019, Fall 2020

- ECE 554 - Digital Engineering Laboratory
- ECE 203 - Signal, Information, and Computation

Fall 2018, Fall 2019

Spring 2020

SERVICE

- **Technical Program Committee Chair** for NanoCom 2021
- **Posters and Demos Chair** for MobiSys 2021
- **Travel Grant Chair** for MobiCom 2019, MobiSys 2022
- **Peer Review:** Served as reviewer in multiple peer-reviewed journals including Sensors, IEEE Transactions on Mobile Computing, Transactions on Communications, Computer Communications, Wireless Networks, CoNEXT 2019.
- **Technical Program Committee Member** in NanoCom 2019, Globecom 2019, NanoCom 2020, Globecom 2020, MobiCom 2021, MobiCom 2022, SIGCOMM 2022.
- **Judge for Student Research Competition** in MobiCom 2021.
- **Mentoring** young and upcoming female and underrepresented students in N2Women, MobiCom 2019. Organized “Women in Engineering Panel” at NanoCom 2019.