

## Research Statement

My research takes a multi-faceted approach to optimize wireless networks. I focus on enhancing throughput and addressing crucial factors such as reliability, low latency, security, and ease of deployment in real world scenarios.

## Education

- 2018 - 2024 **University of California San Diego, CA.**  
PhD, Electrical and Computer Engineering, GPA: 4.0  
Advisor: Prof. Dinesh Bharadia
- 2016 - 2018 **New York University, Tandon School of Engineering, NY.**  
MS, Electrical and Computer Engineering, GPA: 3.96  
Advisor: Prof. Shiv Panwar
- 2012 - 2016 **Indian Institute of Technology (IIT Kanpur), India.**  
Bachelors of Technology (B.Tech.), Electrical Engineering, GPA: 9.5 (out of 10)

## Professional Experience

- June–Sep 2022 **VMware, Palo Alto, CA, USA.**  
Mentor: Dr. Rakesh Misra  
◦ Designed and patented a near-real-time application (xApps) with VMware RIC in Open-RAN framework.
- June–Aug 2017 **Nokia Bell Labs, Murray Hill, NJ, USA.**  
Mentor: Dr. Özge Kaya  
◦ Developed an RL-based beam management for mmWave links, demonstrating 60% efficiency improvement over a baseline on real-world data.

## Awards and Honors

- Best Poster Runner-up, Hotmobile 2023.
- VMware intern achievement award with \$250,000 research grant 2022–23.
- Qualcomm Innovation Fellowship winner \$100,000 research grant 2022–23.
- Winner of 3-minute research talk competition at ACM Mobisys'20, Mobicom'21, Mobicom'22.
- Commencement award for the best graduate student service in ECE, UC San Diego, May 2021.
- Commencement award for the best MS Academic Achievement in ECE, New York University, May 2019.
- Commencement award (Motorola Gold Medalist) for the best all-round performance in Electrical Engineering and Computer Science, IIT Kanpur, May 2016.
- Travel grant for MobiCom New Delhi 2018, Hotmobile CA 2023, Infocom NY 2023.
- Samuel Morse MS Fellowship ( \$100,000 financial support during MS at NYU) 2016–2018.
- Secured All India Rank 390 (amongst 0.5 million students) in IIT–Joint Entrance Exam 2012.

## Publications

- Under Submission BeamArmor: Anti-Jamming in 5G Cellular Networks with MIMO Null-steering  
F Zumegen, **IK Jain**, D Bharadia
- IEEE Infocom 2023 mmFlexible: Flexible Directional Frequency Multiplexing for Multi-user mmWave Networks  
**IK Jain**, RR Vennam, R Subbaraman, D Bharadia – [Media coverage](#)

- IEEE S&P 2023 mmSpooF: Resilient Spoofing of Automotive Millimeter-wave Radars using Reflect Array  
*IEEE Security and Privacy* 2023.  
RR Vennam, **IK Jain**, K Bansal, A Ranganathan, D Bharadia – **Media coverage**
- WPMC 2022 VRProj: Delivering 360-degree video with Viewport-adaptive Truncation  
*International Symposium on Wireless Personal Multimedia Communications (WPMC)* 2022.  
T Qiu, **IK Jain**, R Wu, P Cosman, D Bharadia
- HotCarbon 2022 Multiple smaller base stations are greener than a single powerful one: Densification of Wireless Cellular Networks, *ACM HotCarbon Workshop* 2022  
A Gupta, **IK Jain**, D Bharadia
- Sigcomm 2021 [mmReliable] Two beams are better than one: Towards Reliable and High Throughput mmWave Links  
**IK Jain**, R Subbaraman, D Bharadia – **Media coverage**
- ACM mmNets 2020 mMobile: Building a mmWave Testbed to Evaluate and Address Mobility Effects  
*4th ACM Workshop on Millimeter-Wave Networks and Sensing Systems (Mobicom Workshop)*, 2020.  
**IK Jain**, R Subbaraman, TH Sadarahalli, X Shao, H Lin, D Bharadia
- Usenix NSDI 2020 LocAP: Autonomous Millimeter Accurate Mapping of WiFi Infrastructure  
R Ayyalasomayajula, A Arun, C Wu, S Rajagopalan, S Ganesaraman, A Seetharaman, **IK Jain**, D Bharadia
- MDPI Journal 2019 Extreme Multiclass Classification Criteria, *MDPI Computation Journal*, 2019.  
A Choromanska, **IK Jain**
- IEEE JSAC 2018 The Impact of Mobile Blockers on Millimeter Wave Cellular Systems  
*IEEE Journal on selected areas in communications (JSAC)*, 2018  
**IK Jain**, R Kumar, S Panwar
- IEEE ITC 2018 Driven by Capacity or Blockage? A Millimeter-wave Blockage Analysis  
*IEEE International Teletraffic Congress (ITC)* 2018  
**IK Jain**, R Kumar, S Panwar – **Invited paper**

## Posters/ Demos

- Mobicom 2023 [Demo] A Compact and Real-Time Millimeter-wave Experiment Framework with True Mobility Capabilities  
**IK Jain**, S MM, D Bharadia
- Hotmobile 2023 [Poster] Delay Phased Arrays: Towards programmable beam-bandwidth for 5G networks  
**IK Jain**, RR Vennam, D Bharadia – **Best Poster Runner-up**
- Mobicom S3 2021 Demo and dataset for mmWave multi-beam tracking using mMobile 28 GHz testbed  
**IK Jain**, R Subbaraman, D Bharadia
- MobiCom 2018 [Poster] Facilitating Low Latency and Reliable VR over Heterogeneous Wireless Networks  
A Ravichandran, **IK Jain**, R Hegazy, T Wei, D Bharadia

## Patents

- US Patent (provisional) R Misra, **IK Jain**, et al., inventors. A platform for xApp development with RAN intelligent controller.  
*Patent pending, contact VMware*
- US Patent (provisional) D Bharadia, **IK Jain**, R Subbaraman, T Sadarahalli, inventors. Enabling Reliable Mmwave Link Using Multi-Beam Pro-Active Tracking. *Patent pending, contact UC San Diego (innovation@ucsd.edu)*

US Patent D Bharadia, R Ayyalasomayajula, A Arun, C Wu, S Rajagopalan, S Ganesaraman, A Seetharaman, **IK Jain**, (granted) inventors. Enable Indoor Navigation with Context assisted Localization.

## Teaching and Mentoring Experience

### Teaching Assistant.

- WI 2021,23 ECE 257B- Modern Wireless Communication (Graduate) – best TA 10/10 rating.  
Spring 2020 ECE 157B- Communication and Sensing Systems (Undergraduate) – helped design a new class.  
Spring 2018 EEGY 9123- Introduction to Machine Learning (Graduate).  
Fall 2017 EEUY 4563- Introduction to Machine Learning (Undergraduate) – helped design a new class.  
Spring 2017 ELGY 6373- Internet Architecture and Protocols Lab (Graduate).

**Mentorship**, I mentored two PhD students and 10+ BS/MS students at UC San Diego. I particularly help historically underrepresented and underprivileged students.

## Leadership

- 2021–2022 **The Marconi Society**, *Scholar in Residence*.  
Served as a student scholar for facilitating the Marconi Society meetings with the chair Vint Cerf and other prominent scientists, engineers, and policymakers.
- 2021–2022 **Escribamos Ciencia K12 team**, *UC San Diego*.  
Developed interesting science modules and videos for K12 students on topics such as electricity, internet, nuclear power, etc., under guidance of Prof. Olivia Graeve.
- 2020–2021 **O.W.L Reading group**, *Inter-continental collaboration*.  
Founded in Fall 2020 as a small group of Ph.D. students interested in research talks and discussion on recent conference papers and has grown over 100+ members in a year.
- 2019–2021 **Vice President, ECE graduate student council**, *UC San Diego*.  
Responsible for providing communication between ECE students and the ECE department and organizing weekly events such as seminars and coffee hours.

## Services

- 2023 **Co-chair**.  
ACM Mobicom S3 Workshop 2023  
ACM Mobicom mmNets 2023
- 2019–2023 **Artifact Evaluation Committee**.  
ACM Sigcomm 2023  
ACM Mobicom 2023  
ACM CoNEXT 2019
- 2021–2022 **Technical Program Committee (TPC)**.  
ACM Mobicom S3 Workshop 2021  
IEEE WCNC 2022
- 2019–2023 **Technical Reviews**.  
IEEE Trans. Vehicular Technology (TVT) 2019-23  
IEEE/ACM Transactions on Networking (TNET) 2023  
IEEE Access 2021-23  
IEEE Comm Letter 2022-23  
IEEE JSAC 2023  
IEEE WCNC 2022-23
- 2021–2022 **Lead organizer and moderator**.  
Sigcomm'21 Social Trivia  
COMSNETS'22 Panel Moderator