

Sreevatsank Kadaveru

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Research Areas: Physical AI | Networked Systems & 5G | Spectrum Sensing

Building Networks and Systems for Physical AI
with Wireless Systems expertise

Education

PhD, *University of California*, San Diego. **2023–Now**
Communication Theory and Systems | PI: Dinesh Bharadia

Masters, *University of California*, San Diego. **2021–2023**
Communication Theory and Systems | ECE Department

Certificate, *Rady School of Management*, San Diego. **2022–2023**
Technology Management Program

Bachelors, *Indian Institute of Technology*, Indore. **2016–2020**
Electrical Engineering

Experience

WRD, Qualcomm, *Research Intern*, San Diego. **Jun'26–Sept'26**
Developed a rigorous framework to study LLMs for RF+Vision based multimodal sensing tasks, to identify and isolate failures to gaps in domain knowledge, domain reasoning or domain-specific data interpretation, and prescribe targeted fine-tuning remedies.

JASR Systems, *Research Intern*, San Diego. **Jun'22–Sept'22**
Blind Detection and Tracking of Low Probability of Intercept Signals.
- Developed a novel statistical approach for wideband spectrum sensing, improving state-of-the-art prediction and enabling multi-receiver capability via an optimal cooperative scheduling algorithm. [Poster]

Tata Digital, *DevOps Engineer*, Mumbai. **Sept'20–Sept'21**
Developed highly automated CI/CD Kubernetes workflows improving reliability and efficiency by 90%.

Télécom Paris, *Summer Research Intern*, France. **May'19–Aug'19**
Improving Reliability of MIMO Mission Critical Systems using LDPC in 5G.
- Demonstrated a novel latency-reliability trade-off in LDPC code selection for video traffic

Research

Systems for Physical AI. **Jun'25-Now**
- **PAIQoO**: Quantifying the network requirements of Physical AI applications
  - Characterizing how sensor fidelity and end-to-end latency trade off in robotic task performance
- **mmsRAN**: Radio Access Networks for Physical AI [Paper]
  - Building an Uplink Scheduler for Multimodal sensor flows that need to be low latency, synchronized and in lock-step order.
- **P2SIF**: Plug-n-Play Sensor Integration Framework [Proposal]
  - Developed a decoupled architecture for new modality integration into existing LLMs without needing to modify LLM weights

PHY layer Spectrum sensing. **2024-2026**
- **PHYNet**: A gold-standard PHY layer labelled dataset
  - Establishing a standard for evaluating PHY layer algorithms by building a multi-purpose labelled PHY dataset
  - Studied the problem of PHY spectrum ignorance in today's world
- **CamoPHYlage**: Hiding signals in plain sight
  - Developed adversarial mimicking techniques to evade all PHY layer detectors, enabling surreptitious communication in plain sight

Spectrum Intelligence Systems, *IARPA funded project.* **Nov'22-Mar'24**

- **rfYOLO**: Phase modality for better detection
  - Developed phase transform to improve PHY layer characterisation of signals using YOLO networks
- **Nomad**: Architected a high throughput spectrum sensing system with a line rate of 40Gbit/s [Link]
  - Developed containerised micro-services with well-defined high throughput shared memory interface
  - Achieved major throughput gains with the use of copy-efficient shared memory and a Redis-based in-memory database.

Federated Learning. **Mar'22-Nov'22**

- **Curriculum FL**: Studied effect of curriculum learning in a federated context. We showed that curriculum can significantly improve convergence time of training. [Paper]

Selected Graduate Projects

Course Projects, *UCSD*. **2021-22**

- **Audio-StyleCLIP**: Extended capabilities of StyleCLIP and AudioCLIP models to create a model that can perform style transfer onto an image using an audio styling input. [Report]
- **Convexifying Neural Network**: Implemented the state-of-the-art technique for modelling a ReLU neural network as a convex optimisation problem, the solution of which is a globally optimal neural network. [Report]
- **Training Robust NN**: Implemented Lipschitz constant based regularization for training robust Neural Networks and compared performance against L_2 and other baseline techniques. [Report]
- **Lattice Basis Reduction Performance Study**: We evaluate the basis reduction algorithms, such as LLL, BKZ, Slide, Self-dual BKZ, to study accuracy vs performance trade-off on COTS hardware. We also study scaling of these algorithms with problem size. [Report]

Publications

MobiCom'26: "RoboNEST: Robotics Networked Edge Systems Testbed for Physical AI". [Demo]

MobiCom'26: "WiP: mmsRAN: Multimodal Cellular Uplink for Physical AI". [Paper]

MobiCom'24: "Nomad: Providing Insights into the Spectrum Environment". [Paper]

ICCV'23: "When Do Curricula Work in Federated Learning?". [Paper]

Awards

Qualcomm Innovation Fellowship [Website] *2026*

Powell Foundation Fellowship [Website] *2023*

Shah Family Entrepreneurial Fellowship *2023*

Positions of Responsibility

Teaching Assistant, UCSD *2025-26*

Graduate & Professional Student Association, Representative, UCSD *2023-25*

ECE Graduate Student Council, Board Member, UCSD *2023-25*

Electronics Club, President, IIT Indore *2018-19*

Team Robocon, Technical Lead, IIT Indore *2018-19*

Service

S3 Reviewer & Student Panellist: MobiCom *2026*

Artifact Evaluation Committee: NSDI *2026*

Artifact Evaluation Committee: SIGCOMM *2025*

GPSA Award Committee: UCSD *2024*