Aditya Guhagarkar

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Education

University of Michigan Aug. 2025 – May 2027
Master of Science, Electrical and Computer Engineering *Ann Arbor, MI*
Coursework: Probability and Random Processes, VLSI for ML and Communications

Indian Institute of Technology, Indore Nov. 2021 – May 2025
Bachelor of Technology, Electrical Engineering | *GPA: 9.05/10* *Indore, India*
Coursework: Signals and Systems, Probability and Random Processes, Communication Systems, Digital Signal Processing, Digital Communications, Information Coding Theory, IoT Communication Systems, Vehicular Communications

Experience

6G Flagship | **University of Oulu** Apr. 2025 – Aug. 2025
Research Intern (Remote) *Oulu, Finland*
- Developed a Graph Neural Network-based framework for power allocation in multi-cell MIMO systems for 6G networks.
- Implemented a Graph Convolutional Network model and benchmarked its performance against the WMMSE algorithm using both supervised and unsupervised learning approaches. Evaluated results based on output data rate distributions.

University of British Columbia May 2023 – Jul. 2023
Research Intern under Prof. David Michelson *Vancouver, Canada*
- Designed a channel sounder and Doppler shifter using ADALM-PLUTO SDRs to measure channel impulse response, path loss, and Doppler shifts, with applications in satellite and wireless communications.
- Executed LTE-based signal processing and real-time Doppler correction in MATLAB, achieving near 100% BER reduction under test conditions through dynamic feedback-based distortion mitigation.

Projects

RL-Based Scheduling in mmWave Networks | *Under Dr. Sumit Gautam & Dr. Vimal Bhatia* Apr. 2024 – Mar. 2025
- Engineered DQN and PPO-based scheduling frameworks for RIS-assisted SWIPT networks and UAV-aided mmWave vehicular networks, achieving up to 90% of CP throughput with 1000× lower latency for RIS systems, and 22% higher throughput with 18% lower transmission time for vehicular networks compared to baseline models.

ASER Estimation of HQAM Signals | *Under Dr. Vimal Bhatia* Apr. 2024 – Jul. 2024
- Validated ASER estimation formulas for high-order HQAM signals in MATLAB, verifying in-house formulations against literature through simulations over AWGN and Rayleigh fading channels.

Ground Penetrating Radar Application of SDRs | *Under Dr. Vimal Bhatia* May. 2022 – Dec. 2023
- Built a narrowband radar system using USRP B210 SDR, integrating MFCW radar algorithms on GNU Radio to enable distance estimation, material penetration analysis, and subsurface metallic object detection.

Technical Skills

Programming: C, C++, Python, MATLAB/Simulink, Simscape, GNU Radio, ROS, Verilog, HTML/CSS
Hardware & Tools: SDR (ADALM-PLUTO, USRP B210), Proteus, PLECS, Arduino
Certifications: 5G Introductory-Level Certification (Qualcomm), Mastering 5G PHY (Udemy) – 3GPP L1, OFDM, MIMO, SSB, PDSCH, PUSCH, CSI-RS, DMRS, HARQ, and physical layer procedures

Leadership

Tinkerers' Lab IIT Indore | *Manager, Head of Public Relations* Oct. 2023 – Apr. 2024
- Handled lab setup, maintenance, onboarding 100+ students, and acted as PoC for collaborations and events.

Intelligent Vehicle Design and Control Club | *President* Apr. 2023 – Apr. 2024
- Led 20+ members across hardware, software, and autonomy to build an intelligent rover and in-house EV.

Selected Publications

1. A. Guhagarkar, T. Sivalingam, V. Bhatia, N. Rajatheva, and M. Latva-aho, "RL-Based Optimization of Relay Selection and Transmission Scheduling for UAV-Aided mmWave Vehicular Networks," in *Proc. WPMC*, 2024. **[Paper]**
2. A. Guhagarkar, V. Bhatia, and S. Gautam, "Comparative Analysis of Scheduling Strategies for RIS-Empowered Wireless Networks with Non-Linear Energy Harvesting," in *Proc. ICCCNT*, 2025. **[Paper]**

Awards & Honors

MITACS Globalink Fellow (2023) – Awarded a fully funded research internship at the University of British Columbia.

IEEE PES India Scholarship (2022–24) – One of 3 students selected nationally for academic excellence and leadership.

Chess – Internationally rated chess player (FIDE 2046); 2-time SGFI U-14 National Champion; State Champion U-9.