

Sanjeev Khare

khare9@purdue.edu • +1 (765) 405 3791 •

github.com/SanjeevKhare, linkedin.com/in/sanjeevkhare

SUMMARY

PhD researcher specializing in numerical modeling, high-performance computing, and machine learning, seeking a summer internship in computational science, quantum technologies, or AI-driven engineering systems. Passionate about writing efficient, scalable code, developing advanced algorithms, and performing massively parallel computations for scientific discovery.

EDUCATION

Purdue University, USA

2023-Present

Ph.D., Electrical & Computer Engineering, GPA: 4.0(Current)

*Thesis: Phase Field Modelling of Quantum Metamaterials **using AI/ML***

*Relevant course work: **Deep Learning (ECE60146)***

Purdue University, USA

2021-2023

MS, Electrical & Computer Engineering, GPA: 3.76

Thesis: Numerical simulation of micro and nano structures in semiconductors at high frequency using Drift Diffusion model

*Relevant course work: **Mixed Signal IC Design, Computational Electromagnetics***

IIT Mandi, India

2013-2017

B.Tech, Major in Electrical Engineering. CGPA: 8.78

Minor in Management

*Relevant course work: **Wireless Communication***

PROFESSIONAL EXPERIENCE

Purdue University, USA

Jan '25 - Present

Graduate Research Assistant

- Conducted micromagnetic simulations to study spintronic behavior in quantum metamaterial, resulting discovery of new magnetization modes in Moire materials.
- Applied machine learning for model discovery from experimental data in spintronics.
- Wrote memory-efficient, parallel scientific code for ODE and DAE equations in ferroelectric material modeling.

Purdue University, USA

Aug '24 – Dec '24

Graduate Teaching Assistant

- Mentored students on algorithmic problem solving and software optimization in Advanced C Programming.

Purdue University, USA

Oct '21 – Jun '24

Graduate Research Assistant

- Contributed to DARPA's NanoSim project with NEGF-Maxwell co-simulation.
- Modeled and simulated micro and nano semiconductor structures, optimizing code efficiency and simulation scalability for HPC clusters.

Indian Space Research Organization, India
Scientist/Engineer 'SD' (Senior Scientist)

Jul '21– Aug '21

- Led a team of team of engineering to **tape out MMICs**, performed design verification, and develop laboratory automation protocols for device characterization.

Indian Space Research Organization (ISRO), India
Scientist/Engineer 'SC'

Jul '17 – Jul '21

- Led design efforts for strategic satellite payloads, including microwave communication and remote sensing.
- **Developed GaN-based MMIC power amplifiers**, LNAs and signal processing algorithms for high frequency modules.

SELECTED PROJECTS

GSAT-7R Satellite Payload **2020-2021**

- Designed and optimized C-band signal processing systems for satellite communications.

RISAT-2B Remote Sensing Payload **2017-2020**

- Designed LNA and high-power amplifiers (HPA) MMICs at X-Band on GaN.
- Miniaturized the radar transponder, significantly reducing the system's weight and volume while enhancing the overall reliability of the payload.

ISRO, SAC Semiconductor Characterization Lab **2017-2020**

- Established a semiconductor characterization and modeling laboratory by procuring advanced instrumentation, including a semi-automatic probe station (FormFactor Tesla with Velox software), Vector Network Analyzer (VNA), and Maury IV system.
- Automated previously manual wafer probing and device measurement workflows, increasing measurement throughput and capacity by approximately 1000x.
- Conducted computational analysis and device parameter extraction using S-parameter de-embedding techniques on calibration structures to isolate intrinsic device characteristics.

Technology Development Program on GaN **2019-2021**

- Led radar system demonstrations on GaN heterostructure devices; engineered scalable workflows for experimental analysis.

Ferroelectric Materials Simulation **2019-2021**

- Describe what you did/built etc. Wrote memory-efficient, parallelized code (ODE/DAE solvers) for modeling ferroelectric material response, supporting large-scale simulations on HPC infrastructure. Skills.

Programming languages: Julia, Python, C, C++

Tools: Proficient in Cadence AWR Microwave office & VBA scripting, Cadence Virtuoso and simulation tools, Keysight's Advanced Design Systems (ADS) & Application Extension Language (AEL) Programming and, ANSYS HFSS, TCAD (silvaco), and VSS.

Languages: English (Proficient), Hindi (Proficient), German (Elementary)

PUBLICATIONS

Rastogi, G., Chaitanya, M. K., **Khare, S.**, Yadav, E., Kaneriy, R. K., Upadhyay, R. B., ... & Bhattacharya, A. N. (2021). Performance improvement of AlO₃. 3GaO₃. 7N/AlN/GaN HEMTs using Nitrogen pre-treated Si₃N₄ passivation. *Microelectronic Engineering*, 249, 111617