Vijay K. Shah, Ph.D.

Contact Information

Assistant Professor (Tenure-track)
Cybersecurity Engineering Department
Lab Director, NextG Wireless Lab@GMU
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NextG Lab site: www.nextgwirelesslab.org
Google scholar: https://tinyurl.com/ShahPubs

Research Focus and Technical Expertise

Research focus: Next-generation wireless communication networks, with a focus on 6G networks, Open radio access network (O-RAN) architecture, wireless security, privacy, and testing, spectrum sharing, 5G NR positioning, mmWave networks and space/non-terrestrial constellation networks

Technical expertise: Wireless system design and development, advanced machine learning algorithms, classical algorithm design and linear/non-linear optimization, and software-defined radio design and development

Education

2015 – 2019 **Doctor of Philosophy (Ph.D.) in Computer Science**
University of Kentucky, Lexington, USA

2009 – 2013 **Bachelor of Technology (B. Tech) in Computer Science and Engineering**
National Institute of Technology, Durgapur, India

Journal Publications

[J20] [JSAC'23] G. Reus-Muns, P. S. Upadhyaya, U. Demir, N. Stephenson, N. Soltani, V. K. Shah, K. R. Chowdhury, SenseORAN: O-RAN based Radar Detection in the CBRS Band, *IEEE Journal on Selected Areas in Communications (JSAC)* Special Issue on Open RAN, 2023. (Accepted)

[J19] [Access'23*] A. Dayal, V. K. Shah, H. S. Dhillon, and J. H. Reed, Adaptive RRI Selection Algorithms for Improved Cooperative Awareness in Decentralized NR-V2X, *IEEE Access 2023*. (Accepted)

[J18] [SmartGrid'23] B. Choudhury, A. Mohammadhassani, B. Alexander, R. Iyer, A. Mehrizi-Sani, J. H. Reed, and V. K. Shah, Control Coordination in Inverter-Based Microgrids Using AoI-based 5G Schedulers, *IET Smart Grid 2023*. (Accepted)

[J17] [WCL'23] T. R. Niloy, Z. Hassan, N. Stephenson, and V. K. Shah, Interference Analysis of Coexisting 5G Networks and NGSO FSS Receivers in the 12 GHz Band, *IEEE Wireless Comms. Letters (WCL)*, 2023.

[J16] [CommMag'23] Z. Hassan, E. Heeren-Moon, J. Sabzehali, V. K. Shah, C. Dietrich, J. H. Reed, and E. W. Burger, Spectrum Sharing of the 12 GHz Band with Two-way Terrestrial 5G Mobile Services: Motivations, Challenges, and Opportunities, *IEEE Communications Magazine*, 2023.

[J15] [CommMag'23] B. Tang, V. K. Shah, V. Marojevic, and J. H. Reed, AI Testing Framework for NextG O-RAN Networks: Requirements, Design and Research Opportunities, *IEEE Wireless Communications Magazine*, 2023.

[J14] [TNSE'22] T. Cousik, V. K. Shah, T. Erpek, Y. Sagduyu, and J. H. Reed, Deep Learning for Fast and Reliable Initial Access in AI-Driven 6G mmWave Networks, *IEEE Transactions on Network Science and Engineering (IEEE TNSE)* Special Issue on AI-Driven 6G Mobile Wireless Networks: Key Enabling Theories, Architectures, Protocols, and Techniques.

[J13] [TNSM'22] P. Karmakar, V. K. Shah, S. Roy, K. Hazra, S. Saha, and S. Nandi, Reliable Backhauling in Aerial Communication Networks against UAV Failures: A Deep Reinforcement Learning Approach, *IEEE Transactions on Network Service and Management (IEEE TNSM)* Special Issue on Design and Management of Reliable Communication Networks, 2022.

[J12] [NetworkMag'22] A. S. Abdalla, P. S. Upadhyaya, V. K. Shah and V. Marojevic, Towards Next Generation Open Radio Access Network - What O-RAN Can and Cannot Do!, *IEEE Network Magazine*, 2022.

[J11] [IoTJ'22] J. SabzehAli, V. K. Shah, Q. Fan, B. Choudhury, L. Liu, and J. H. Reed, *Optimizing Number, Placement and Backhaul Connectivity of Multi-UAV Networks*, *IEEE Internet of Things Journal (IEEE IoTJ)*, 2022.

[J10] [Access'22] T. Oyedare, V. K. Shah, D. J. Jakubisin, and J. H. Reed, Interference Suppression Using Deep Learning: Current Approaches and Open Challenges, *IEEE Access* 2022.

[J9] [IoTJ'21] D. A. Ravi, V. K. Shah, C. Li, T. Hou, and J. Reed, RAN Slicing in Multi-MVNO Environment under Dynamic Channel Conditions, *IEEE Internet of Things Journal (IoTJ)*, 2021.

[J8] [WCL'21] J. Sabzehali, V. K. Shah, H. Dhillon, and J. H. Reed, 3D Placement and Orientation of mmWave-based UAVs for Guaranteed LoS Coverage, *IEEE Wireless Communications Letters (WCL)*, 2021.

[J7] [TNSM'21] K. Hazra, V. K. Shah, S. Roy, S. Deep, S. Saha, and S. Nandi, Exploring Biological Robustness for Reliable Multi-UAV Networks, *IEEE Transactions on Network Service and Management (IEEE TNSM)* Special Issue on Design and Management of Reliable Communication Networks, 2021.

[J6] [TNSM'20] V. K. Shah, B. Luciano, S. Bhattacharjee, S. Silvestri, and S. K. Das, A Diverse Band-aware DSA Network Architecture for Delay-Tolerant Smart City Applications, *IEEE Transactions on Network and Service Management (TNSM)*, Vol. 17 No. 2, pp. 1125-1139, 2020.

[J5] [ComCom'20] K. Hazra, V. K. Shah, S. Silvestri, V. Aggarwal, S. K. Das, S. Nandi and S. Saha, Designing Efficient Communication Infrastructure in Post-disaster Situations with Limited Availability of Network Resources, *in Computer Communications (ComCom)*, 2020.

[J4] [TOSN'18]V. K. Shah, S. Bhattacharjee, S. Silvestri, and S. K. Das, *Designing Green Communication Systems for Smart & Connected Communities via Dynamic Spectrum Access*, *ACM Transactions on Sensor Networks (IEEE TOSN)*, Vol.14, No. 3-4, pp. 1 - 32, 2018.

[J3] [TMBMC'18] S. Roy, V. K. Shah, and S. K. Das, Design of Robust and Efficient Topology using Enhanced Gene Regulatory Networks, *IEEE Transactions on Molecular, Biological and Multi-Scale Communications (TMBMC)*, Vol. 4, No. 2, pp. 73 - 87, 2018.

[J2] [TMC'18] S. Bhattacharjee, N. Ghosh, V. K. Shah, and S. K. Das, QnQ: Quality and Quantity based Unified Approach for Secure and Trustworthy Mobile Crowdsensing, *IEEE Transactions on Mobile Computing (IEEE TMC)*, Vol. 19, No. 1, pp. 200 - 2016, 2018.

[J1] [AdHoc Networks'15] S. Saha, S. Nandi, P. S. Paul, V. K. Shah, A. Roy, and S. K. Das, Designing delay constrained hybrid ad hoc network infrastructure for post-disaster communication, *Ad Hoc Networks*, Vol. 25, pp. 406-429, 2015. (Undergraduate research)

Conference Publications

[C23] [DySPAN'24] T. Niloy, Z. Hassan, R. Smith, V. Anapana, and V. K. Shah, Context-Aware Spectrum Coexistence of Terrestrial Beyond 5G Networks in Satellite Bands, *IEEE Conference of Dynamic Spectrum Access Networks (DySPAN)*, 2024.

[C22] [DySPAN'24] T. Niloy, S. Kumar, A. Hore, Z. Hassan, E. Burger, C. Dietrich, J. Reed, and V. K. Shah, ASCENT: A Context-Aware Spectrum Coexistence Design and Implementation Toolset for Policymakers in Satellite Bands, *IEEE Conference of Dynamic Spectrum Access Networks (DySPAN)*, 2024.

[C21] [DySPAN'24] P. Gajjar, A. Chiejina, and V. K. Shah, Preserving Data Privacy for ML-driven Applications in Open RAN Networks, *IEEE Conference of Dynamic Spectrum Access Networks (DySPAN)*, 2024.

[C20] [WiSec'24] A. Chiejina, B. Kim, K. Chowdhury, and V. K. Shah, System-level Analysis of Adversarial Attacks and Defenses on Intelligence in O-RAN based Cellular Networks, *ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)*, 2024. (Accepted)

[C19] [GLOBECOM'23] N. Sapavath, B. Kim, K. R. Chowdhury, and V. K. Shah, Experimental Study of Adversarial Attacks on ML-based xApps in O-RAN, in *IEEE Global Communications Conference (GLOBECOM)*, 2023.

[C18] [MILCOM'23] T. Cousik, V. K. Shah, T. X. Tran, R. Jana, and J. H. Reed, Deep Learning based Fast and Accurate Beamforming for Millimeter-Wave Systems, *IEEE Military Conference (IEEE MILCOM)*, 2023.

[C17] [ISGT'23] M. Beikbabaei, A. Mohammadhassani, V. K. Radhakrishnan, A. Gorski, A. Mehrizi-Sani, V. K. Shah, A. P. DaSilva, and J. Reed, Experience in Real-Time Simulation of the Power System with 5G Communication, in *IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)*, 2023.

[C16] [MILCOM'21] T. Cousik, V. K. Shah, T. Erpek, Y. Sagduyu, and J. H. Reed, Fast Initial Access with Deep Learning for Beam Prediction in 5G mmWave Networks, *IEEE Military Conference (MILCOM)*, 2021.

[C15] [MASS'21] B. Choudhury, V. K. Shah, A. Ferdowsi, J. H. Reed, and Y. T. Hou, AoI-minimizing Scheduling in UAV-relayed IoT Networks, *IEEE Conference on Mobile Ad-Hoc and Smart Systems (MASS)*, 2021.

[C14] [ISIE'21] R. Iyer, B. Choudhury, V. K. Shah, and A. Mehrizi-Sani, Power Systems Performance under 5G Radio Access Network in a Co-Simulation Environment, *IEEE Sym. on Industrial Electronics (ISIE)*, 2021.

[C13] [Networking'21] A. Dayal, V. K. Shah, B. Choudhury, V. Marojevic, C. Dietrich, and J. H. Reed, Adaptive Semi-Persistent Scheduling for Enhanced On-Road Safety in Decentralized V2X Networks, *IFIP Networking*, 2021.

[C12] [INFOCOM'21] B. Choudhury, V. K. Shah, A. Dayal, J. H. Reed, Joint Age of Information and Self Risk Assessment for Safer 802.11p based V2V Networks, *IEEE Conference on Computer Communications (INFOCOM)*, 2021.

[C11] [GLOBECOM'20] P. S. Upadhyaya, V. K. Shah, J. H. Reed, Cross-layer Band Selection and Routing Design for Diverse Band-aware DSA Networks, *IEEE Global Comms. Conference (GLOBECOM)*, 2020.

[C10] [VTC'20] B. Choudhury, V. K. Shah, A. Dayal, J. H. Reed, Experimental Analysis of Safety Application Reliability in V2V Networks, *IEEE Vehicular Technology Conference (VTC)*, 2020.

[C9] [INFOCOM'19] V. K. Shah, S. Silvestri, B. Luciano and S. K. Das, X-CHANT: A Diverse DSA based Network Architecture for Next-generation Challenged Networks, *IEEE Conference on Computer Communications (INFOCOM)*, 2019.

[C8] [MASS'19] V. K. Shah, S. Roy, S. Silvestri and S. K. Das, Bio-DRN: Robust and Energy-efficient Bio-inspired Disaster Response Networks, *IEEE Conf. on Mobile Ad-Hoc and Smart Systems (IEEE MASS)*, 2019.

[C7] [COMSNETS'19] K. Hazra, V. K. Shah, M. Bilal, S. Silvestri, S. K. Das, S. Nandi, and S. Saha, A Novel Network Architecture for Resource-Constrained Post-Disaster Environments, *IEEE International*

Conference on Communication Systems & Networks (COMSNETS), 2019.

[C6] [ICDCN'19] V. K. Shah, S. Roy, S. Silvestri, and S. K. Das, Towards Energy-efficient and Robust Disaster Response Networks, *ACM International Conference on Distributed Computing and Networking (ICDCN)*, 2019.

[C5] [ISC2'18] V. K. Shah, S. Silvestri, S. Bhattacharjee, and S. K. Das, An Effective Dynamic Spectrum Access based Network Architecture for Smart Cities, *IEEE International Smart Cities Conference (ISC2)*, 2018 (invited paper).

[C4] [BuildSys'17] V. K. Shah, S. Bhattacharjee, S. Silvestri, and S. K. Das, Designing Sustainable Smart Connected Communities using Dynamic Spectrum Access via Band Selection, *ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys)*, 2017.

[C3] [ICC'17] V. K. Shah, S. Roy, S. Silvestri, and S. K. Das, CTR: A Cluster based Topological Routing for Disaster Response Network, *IEEE International Conference on Communications (ICC)*, 2017.

[C2] [CNS'17] S. Bhattacharjee, N. Ghosh, V. K. Shah, and S. K. Das, QnQ: A Reputation Model to Secure Mobile Crowdsourcing Applications from Incentive Losses, *IEEE Conference on Communications and Network Security (CNS)*, 2017.

[C1] [BICT'15] S. Roy, V. K. Shah, and S. K. Das, Characterization of E. coli Gene Regulatory Network and its Topological Enhancement by Edge Rewiring, *EAI Conference on Bio-inspired Information and Communication Technologies (BICT)*, 2015.

Demos, Workshops and Survey Publications

[D1] [MILCOM Demos'23] N. H. Stephenson, A. J. Chiejina, N. B. Kabitging, and V. K. Shah, Demonstration of Closed Loop AI-driven RAN Controllers using O-RAN SDR Testbed, *IEEE MILCOM Demos 2023*. (Accepted) (Best Demo Paper Award)

[W3] [INFOCOM Workshop'23] T. Oyedare, D. Jakubisin, V. K. Shah, and J. H. Reed, Keep It Simple: CNN Model Complexity Studies for Interference Classification Tasks, *IEEE INFOCOM Workshop on Deep Learning for Wireless Communications, Sensing, and Security*, 2023.

[W2] [PerCom Workshop'17] S. Bhattacharjee, N. Ghosh, V. K. Shah, and S. K. Das, W2Q: A Dual Weighted QoI Scoring Mechanism in Social Sensing using Community Confidence, *IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*, 2017.

[W1] [MobiCom Workshop'12] S. Saha, V. K. Shah, R. Verma, R. Mandal, and S. Nandi, Is It Worth Taking A Planned Approach To Design Ad Hoc Infrastructure For Post Disaster Communication?, *ACM MobiCom Workshop on Challenged Networks (MobiCom Workshop)*, 2012, (Undergraduate research)

[S1] [WiMO'11] S. Patra, S. Saha, V. K. Shah, S. Sengupta, K. G. Singh, and S. Nandi, A Qualitative Survey on Multicast Routing in Delay Tolerant Networks, *Springer Recent Trends in Wireless and Mobile Networks (WiMO)*, 2011. (Undergraduate research)

Current Grants

[G10] [NIST, PI]: *5G-based Positioning System for Firefighters using UAVs (5G-IPS)*, Total Amount: $1.2M (PI Share: $350K), 05/2022 - 04/2025.

[G9] [CCI, PI]: *Fingerprinting Technology for Enhancing 5G/NextG O-RAN Supply Chain Risk Management*, CCI, PI, Total Amount: $50K (PI Share: $50K), 12/2023 -12/2024

[G8] [NSF CCRI, GMU PI]: *Collaborative Proposal: CCRI: New: Open AI Cellular (OAIC): Prototyping Artificial Intelligence-enabled Control and Testing Systems for Cellular Communications Research*, NSF (via Virginia Tech), Total Amount: $1M (PI Share: $300K), 01/2022 - 12/2024

[G7] [NTIA, GMU PI]: *A Holistic Cybersecurity Testing Framework for 5G Radio Access Networks*, Total Amount: $2M (PI Share: $480K), 09/2023 - 08/2026

[G6] [NTIA, Co-PI]: *AI-enabled Efficient Testing Methods for 5G O-RAN RU, DU, and CU Components of Radio Access Networks*, Total Amount: $700K (PI Share: $350K), 10/2023 - 09/2027

[G5] [NSF SWIFT, GMU PI]: *Collaborative Proposal: SWIFT: Context-Aware Spectrum Coexistence design and Implementation in Satellite Bands (ASCENT)*, NSF (via Virginia Tech), Total Amount: $562K (PI Share: $185K), 10/2021 - 09/2024

[G4] [NSF CCRI, GMU PI] *Collaborative: CCRI: New: Distributed Space and Terrestrial Networking Infrastructure for Multi-Constellation Coexistence*, Total Amount: $300K (PI Share: $300K), 08/2022 - 07/2025

[G3] [NSF SaTC, Co-PI]: *Collaborative Research: SaTC: CORE: Medium: Securing NextG Millimeter-Wave Communication in Programmable RF Environments with Reconfigurable Intelligent Surfaces (SECURIS)*, Total Amount: $800K (PI Share: $270K), 07/2023 - 06/2026

[G2] [VIPA, Co-PI]: *Open-Milli-IoT: An Open Programmable Platform for mmWave Wireless Internet of Things*, Total Amount: $50K (PI Share: $25K), 05/2023 - 05/2024

[G1] [CCI, GMU PI]: *DoS Attack-Resilient Initial Access for mmWave/THz based NextG Communications*, Total Amount: $100K (PI Share: $50K), 12/2021 - 12/2023

Selected Honors and Awards

- Best Demo Paper Award at IEEE MILCOM 2023.
- Honorable mention by O-RAN ALLIANCE's Next Generation Research Group of our proposal effort on "O-RAN related 6G research". Link: https://tinyurl.com/businesswire-o-ran-awards
- Nominated by the students for 2023 George Mason University Teaching Excellence Award. (*Ineligible to advance to the final ground due to requirement of having completed at least three years of full-time teaching at George Mason.*)
- Recipient of Tau Beta Pi College of Engineering "Outstanding Computer Science PhD Student Award" for consecutive years – 2019 **(Winner)** and 2018 **(Finalist)**.
- Recipient of seven ACM/IEEE and university student travel grant awards
  - *Five ACM/IEEE Student Travel Grant Awards* – IEEE SECON 2019, IEEE COMSNETS 2019, ACM BuildSys 2017, ACM WiSec 2017 and IEEE PerCom 2016
  - *Two University Student Travel Grant Awards* – 1. UKY Computer Science department travel grant award 2018, and 2. Missouri S&T's Council of Graduate Studies (CGS) travel grant award 2017
- Recipient of four best poster (and technology development) awards during PhD study.
  - Two *best poster awards* at consecutive 1^{st} and 2^{nd} Annual Commonwealth Computational Summit (CCS^2), i.e., CCS^2 2017 and CCS^2 2018, organized by the University of Kentucky.
  - One *poster award* at Annual CS Student (Ph.D. Category) Research Poster Competition (CSSRPC 2017), organized by Computer Science Department at Missouri S&T, Rolla, USA (Second position).
  - *Technology development award* at Missouri S&T's "Hackathon for Humanity 2015" competition. (Third place)
- Recipient of Direct Admission of Students Abroad (DASA) Scholarship 2009-13 for admission to undergraduate engineering programs in NITs/IIITs, sponsored by the Government of India. (*Top* 0.01%)

- Recipient of Mahatma Gandhi Scholarship 2006-07 sponsored by Indian Embassy at Kathmandu, Nepal for pursuing Higher Secondary Education (10+2 Science). (*Top* 0.001%)
- Zonal/State Topper in high school (+2 science) in Nepal.

Software Artifacts from Research

- **Open AI Cellular (OAIC) Platform** [2022 -]: A fully open-source software platform (including, software code, library, toolset, and documentation) designed for constructing 4G/5G O-RAN system. This platform facilitates the development, prototyping and testing AI-based radio access network (RAN) controllers enabling cellular research and experimentation. Relevant resources can be found below.
  - OAIC website: www.openaicellular.org
  - OAIC code link: https://github.com/openaicellular/oaic
  - OAIC documentation link: https://openaicellular.github.io/oaic/
- **Context-aware Spectrum Coexistence Analyzer** [2022 -]: A cutting-edge simulation framework for precise analysis of interference between 5G broadband and NGSO FSS receivers in the 12 GHz band. Incorporates 3D building locations, weather conditions, and data traffic characteristics for contextual insights. GitHub link: https://github.com/NextG-Wireless-Lab-Mason/Context-aware-Spectrum-Coexistence-Analyzer.
- **d-DSA Simulator** [2019]: A customized discrete event simulator for analyzing network architecture, cross-layer design protocol, topology control, and AI/ML protocols for novel Diverse Band-aware Dynamic Spectrum Access (d-DSA) networks. Github link: https://github.com/vksh224/d-DSA-simulator

Public Media Coverage

- **O-RAN testing R&D project** featured on GMU CEC news portal. Link: https://cec.gmu.edu/news/2023-12/mason-faculty-part-17-million-ntia-wireless-innovation-fund-project-using-ai-test-o
- **Honorable mention** by O-RAN ALLIANCE's Next Generation Research Group of our proposal effort on O-RAN related 6G research. https://tinyurl.com/businesswire-o-ran-awards
- **Open AI Cellular (OAIC)** featured on NI Wireless Resaerch Customer Stories
  - https://www.ni.com/en/innovations/case-studies/23/next-generation-o-ran-research-testbeds-sdr-hardware html
- **5G Positioning System** featured on GMU CEC Annual Report 2023, dronelife, and GMU CEC news portal.
  - Page 35 of the report: https://issuu.com/volgenauschoolofengineeringannualre2/docs/2023_ar_layout_rev_09_25_web?fr=sNjBjMTY2MTEzMDA
  - https://dronelife.com/2022/10/25/drone-and-wearable-sensor-solution-locates-firefighters-in-a-burning-buil
  - https://cec.gmu.edu/news/2022-10/firefighters-get-assist-5g-equipped-drones-developed-mason
- **O-RAN Integration and Testing (OTIC) Center** featured on GMU CEC news portal:
  - https://cec.gmu.edu/news/2023-07/george-mason-university-improving-next-gen-wireless-networks
- **Space Network Platform** featured on VT news articles:
  - https://news.vt.edu/articles/2023/04/eng-aoe-network-testbed.html

Professional Experience

2021 – Current **Assistant Professor (Tenure-track)**
Cybersecurity Engineering (CYSE) Department, George Mason University
Director, NextG Wireless Lab, WirelessCyber Center

2019 – 2021 **Research Assistant Professor**
Wireless@VT Lab, ECE Department, Virginia Tech
Supervisor: Dr. Jeffrey H. Reed, Willis G. Worcester Professor

2017 – 2019 **Graduate Research Assistant**, Cyber-physical System (CPS) Lab
Computer Science Department, University of Kentucky
Supervisor: Dr. Simone Silvestri

2015 – 2017 **Graduate Research and Teaching Assistant**
Computer Science Department, Missouri S&T Rolla
Supervisors: Dr. Simone Silvestri and Dr. Sajal K. Das

Teaching Experience

- **Instructor**
  - CYSE 640: Wireless Network Security, CYSE GMU (Spring 2024, Fall 2023)
  - CYSE 230: Computer Networks, CYSE, GMU (Spring 2024, Spring 2023, Fall 2022)
  - CYSE 211: Operating Systems and Labs, CYSE, GMU (Spring 2022)
  - CYSE 610: Networks and Cybersecurity, CYSE, GMU (Fall 2021)
- **Teaching Assistant**
  - CS 1510: Data Structures, CS, Missouri S&T (Fall 2016, Fall 2015)
  - CS 1971: Introduction to C++, CS, Missouri S&T (Spring 2015)
- **Guest Lecturer**
  - CS 686: Complex Networks, CS, University of Kentucky (Fall 2018)

Postdoc Mentoring

- Dr. Dara Ron, 2024 - Present, Area: 5G/NextG wireless networks

PhD Student Advising

- **Vikramreddy Anapana**, 2022 - Present, Area: mmWave networks.
- **Ta-seen Reaz Niloy**, 2022 - Present, Area: Spectrum sharing in Satellite Bands
- **Sarik Dhungel**, 2022 - Present, Area: 5G-based Indoor Positioning
- **Azuka Chiejina**, 2023 - Present, Area: AI-driven 5G/NextG O-RAN networks
- **Pranshav Gajjar**, 2023 - Present, Area: AI-driven Wireless Networks

- **Sebastian Kwakye**, 2023 - Present, Area: Space/Non-terrestrial Networks
- **Abiodun Ganiyu**, 2024 - Present, Area: O-RAN security, privacy and testing

Undergraduate Student Advising

- **Nathan Stephenson**, 2022 - Present, Area: O-RAN architecture
- **Nathaniel Stephenson**, 2023 - Present, Area: 5G testbed and prototyping
- **Luis Walder**, 2023 - Present, Area: UAV prototyping
- **Nicolas P. Ammann**, Area: 5G security

High School Student Advising

- **Diana Lin**, 2023 - Present, Area: O-RAN privacy
- **Samarth Bhargav**, 2023 - Present, Area: O-RAN security and privacy

Graduated Postdocs, and PhD/MS Students

- **Dr. Naveen Sapavath**, Postdoc, George Mason University, 2022 - 2023
  Initial Appointment: Teaching Assistant Professor, ECE, Northeastern University
- **Biplav Choudhury**, PhD student, Virginia Tech, Graduated: 2022
  Thesis: Information Freshness: How To Achieve It and It's Impact On Low Latency Autonomous Systems
  Initial Appointment: Senior Inventive Scientist at AT&T Labs
- **Avik Dayal**, PhD student, Virginia Tech, Graduated: 2021
  Thesis: Practical Algorithms and Analyses for Next-Generation Decentralized Vehicular Networks
  Initial Appointment: Senior Staff at Johns Hopkins Applied Physics Lab
- **Darshan A. Ravi**, MS student, Virginia Tech, Graduated: 2021
  Thesis: Identifying and Prioritizing Critical Information in Military IoT: Video Game Demonstration
  Initial Appointment: Wireless Engineer at Analog Devices

Graduated Undergraduate Students

- **Brian Luciano**, University of Kentucky, Graduated: 2019
  Area: Dynamic Spectrum Sharing, First Employment: Cisco Corp.
- **Tej Patel**, University of Kentucky, Graduated: 2019
  Area: Dynamic Spectrum Networks, First Employment: AillianceBernstein.
- **Rishabh Patel**, IIT Guwahati, India, Graduated: 2016
  Area: Network Optimization, First Employment: JP Morgans.
- **Parker Jones**, Missouri S&T, Rolla, Graduated: 2015
  Area: Wireless Network Optimization, First Employment: Ellem Inc.
- **Prasenjit Karmakar**, Maulana Abul Kalam Azad University of Technology, India. *Initial Appointment: PhD student in Computer Science at IIT Kharagpur, India*

Selected Presentations and Talks

- Transforming Cellular Landscape: Open RAN, AI Convergence, and the Journey towards 6G
  ITU FG-AN Build-a-thon 2024 Workshop 5.0, 2024, Virtual (Invited Speaker).
- An Open-source AI-Enhanced O-RAN Platform Enabling 6G Wireless Research
  IEEE PIMRC, 2023, Toronto, Canada (Tutorial Presenter)
- Open AI Cellular: Prototyping AI-driven RAN control and Testing Systems for Cellular Communications
  Inaugural OAIC workshop, 2023, Virginia Tech, Blacksburg, USA (Organizing Speaker)
- Open RAN: Unlocking the Potential for Next-generation Wireless Communications
  University of Texas, Arlington, USA, 2023 (Invited Talk)
- Securing Next-generation 6G Networks: Challenges, Vulnerabilities, and Opportunities
  University of Dschang, Africa, 2023, Virtual (Invited Talk)
- Context-aware Spectrum Coexistence Design and Implementation in Satellite Bands
  NextG Alliance Spectrum WG, 2023, Virtual, (Invited Speaker)
- Road Beyond 5G: Architectures, Applications and Trends
  American Society of Nepalese Engineers (ANSEngr) Seminar Series, 2023, Virtual (Invited Talk)
- 5G-IPS: 5G-based Indoor Positioning System for Emergency Responders in GPS-limited Indoor Scenarios
  ICDCN EmeRTeS Workshop, 2023, IIT Kharagpur, India (Invited Speaker)
- SWIFT: Context-aware Spectrum Coexistence Design and Implementation in Satellite Bands (ASCENT)
  NSF National Radio Dynamic Zones (NRDZCOM) Meeting, 2022, Virtual (Invited Speaker)
- AI Controllers and Testing of NextG Radio Access Networks
  NextG Summit, Johns Hopkins University, 2020 (Invited Talk)
- Open AI Cellular: Prototyping AI-Enabled Control and Testing Systems for Cellular Communications
  Open 5G Forum, 2021, Virtual, (Invited Short Talk),
- Artificial Intelligence meets 5G networks
  Indian Institute of Technology (IIT), BHU Seminar Talk, 2021, Virtual, (Invited Speaker),
- The Freshness of Information: Age of Information and V2X Networks
  Department of Computer Science, Missouri S&T, Rolla, USA, 2020 (Invited Seminar Talk)
- A Diverse Band-aware Dynamic Spectrum Access Network Architecture for Rural Connectivity
  Wireless@Virginia Tech Seminar Talk 2019, Department of ECE, Virginia Tech, 2019
- Towards Efficient d-DSA Communications for Smart Communities
  Institute for Software Integrated Systems, Vanderbilt University, 2019 (Invited Seminar Talk)
- A Dynamic Spectrum Access enabled Delay Tolerant Network Architecture for Smart Cities.
  Annual Commonwealth Computational Summit (CCS^2) 2018, University of Kentucky, (Best poster award)
- Designing Energy-efficient Sustainable Smart Connected Communities using Dynamic Spectrum Access via Band Selection, *ACM Buildsys, 2017*, Delft, Netherlands (Conference talk)
- Bio-inspired Disaster Response Networks.
  Annual Commonwealth Computational Summit (CCS^2), 2017, University of Kentucky (Best Poster Award)

University Service Committee

- Fall, 2023 - Present: Advertisement/External Relations Committee Chair, and Graduate Committee Member, both at CYSE, GMU
- Spring, 2022 - Fall, 2023: CEC Research Representative, CYSE, GMU

- Spring, 2022 - Fall, 2022: Grievance Committee Member, CYSE, GMU
- Fall 2021 - Spring, 2022: Term faculty hiring committee, and CYSE Administrative hiring committee, both at CYSE, GMU

Other Academic Activities and Professional Services

- **Editorial board member** for Computer Networks.
- **Track chair** for IEEE MILCOM 2024 and IEEE CCNC 2025.
- **Local chair** for IEEE DySPAN 2024 and IEEE VTC 2024.
- **Session chair** at IEEE MILCOM 2023.
- **Workshop co-chair** for the following IEEE and ACM workshops
  - IEEE Workshop on Next generation Radio Access Networks: Architectures, Interfaces, and Implementations (**NextGenRAN'22**) co-located with IEEE GLOBECOM 2022.
  - IEEE Workshop on Privacy Preserving Computation in Pervasive Computing (**PrivaCom'22**) co-located with IEEE PerCom 2022.
  - ACM Workshop on Societal Computing for the Internet of Things & You (**SoCIeTY**) 2020 co-located with ACM ICDCN 2020.
- **TPC co-chair** of ICDCN Workshop on Emergency Response Technologies and Services (**EmeRTeS**), 2023
- **Publicity Co-chair** of IEEE SECON 2022 and ACM ICDCN 2022.
- **TPC member** (*partial list*) – ACM MobiHoc 2024, IEEE MASS 2024, IEEE ICC 2024, ACM WiseML 2023, IEEE ICNP 2022, IEEE SECON 2022, IEEE GLOBECOM 2022, ACM/IEEE SEC 2022, IFIP Networking 2022, IEEE COMSNETS 2022, IEEE SMARTCOMP 2022, ACM ICDCN 2021, ACM WearSys 2020, ACM AIMS 2020, IEEE WPSN 2020.
- **Journal Reviewer** (*partial list*) – IEEE JSAC, IEEE TMC, IEEE ToC, IEEE TVT, IEEE TNET, IEEE Access, Computer Networks, PLoS ONE, IEEE Vehicular Technology Magazine.
- **Conference Reviewer** (*partial list*) – IEEE ICC (2017 - 2024), ACM MobiHoc 2022-2024, IEEE SECON 2022, IEEE ICNP 2022, IFIP Networking 2022, IEEE COMSNETS 2021, ACM/IEEE IWQoS 2020, IEEE GLOBECOM (2017-2020), IEEE SMARTCOMP (2017 - 2020), IEEE COMSNETS (2019-2023), IEEE ICNC (2017 - 2020), IEEE WiMob (2020), IEEE PIMRC 2020, IEEE WoWMoM (2017 - 2020), IEEE LCN (2017 - 2019), IEEE VTC (2019- 2020), IEE WF-5G 2019, IEEE DCOSS 2019, ACM MsWIM 2018, IEEE WCNC (2019 - 2020)