Sunday Amatare

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EDUCATION

The University of Texas at Arlington — *Arlington, Texas*
Ph.D. Computer Engineering — Aug. 2023 – Present

The University of Ibadan — *Ibadan, Oyo, Nigeria*
MSc. Computer Science — April. 2018 – Jan. 2021

The University of Ilorin — *Ilorin, Kwara, Nigeria*
BSc. Computer Science — Oct. 2012 – Oct. 2016

RESEARCH INTEREST

Wireless Digital Twins | Wireless Communications | RF Sensing and ISAC | Non-Terrestial Networks (NTN) | Wireless Security and Resilience | Physical AI

AWARDS AND RECOGNITIONS

- Best Paper Award – IEEE INFOCOM (NetRobiCS), 2025
- John S. Schuchman Outstanding Doctoral Award - University Award, UT Arlington, 2025
- Travel Grant Recipient – IEEE INFOCOM 2025
- Travel Grant Recipient – UT Arlington Graduate School, 2025
- Travel Grant Recipient – IEEE MILCOM, 2024
- Travel Grant Recipient – NSF Sponsored OAIC & EdgeRIC Workshop, 2024
- Dean's Summer Research Award – University Award, UT Arlington, 2024
- Jeff and Lisa Smith Outstanding Graduate Researcher – University Award, UT Arlington, 2024
- Honorable Mention – SCFR PhD Lightning Talk, 2024
- Represented CSE Department – College of Engineering Annual Banquet, 2024
- STEM Tuition Support – University Award, UT Arlington, 2023 – Present

JOURNALS & MAGAZINES

- **S. Amatare**, T. Sari, G. Secinti, B. Canberk, & D. Roy, "Scalable Modular Digital Twins for Next-Generation Wireless Networks: A Spatial Fusion Framework", *Elsevier Computer Networks (COMNET) Journal, 2026*
- G. Singh, **S. Amatare**, E. Natalizio, & D. Roy, "Realizing the 6G-Enabled Industrial Internet of Robotic Things: Targets, Enablers, and a Case Study," *IEEE Internet of Things Magazine*, 2026
- **S. Amatare**, & A. K. Ojo, "Predicting customer churn in telecommunication industry using convolutional neural network model," *IOSR Journal of Computer Engineering*, *22*(3), 54-59, 2021
- **S. Amatare,** G. Singh, Alkhateeb, A., & D. Roy, "DT-RaDaR: Digital Twin Assisted Robot Navigation using Differential Ray-Tracing," *IEEE Transactions on Intelligent Transportation Systems (T-ITS) [Submitted 02/12/2026, Revised 11/16/2026]*
- W. Gao*, **S. Amatare***, X. Shang, & D. Roy, "PRISM: Propagation-based RF Indoor Sensing and Material Detection using Mobile Transmitter", *IEEE Transactions on Mobile Computing (TMC) [Submitted 04/28/2026, Revised 10/06/2026] [* Equal Contribution]*

CONFERENCE PROCEEDINGS

- Al Noman, A., T. T. Sari, **S. Amatare,** G. Secinti, & D. Roy, "Space-Air-Ground Network for Direct-to-Cell Communication," *IEEE Military Communications Conference (MILCOM), 2025.*

- G. Singh, **S. Amatare** & D. Roy, "SauRON: Smart Surveillance using Robotic Swarms with Optimized Networks," *IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS)*, 2025, pp. 1-6, DOI: 10.1109/INFOCOMWKSHPS65812.2025.11152894**. [Best Paper Award]**
- **S. Amatare**, J. Meng & D. Roy, "Digital Twins for Identifying Jamming-prone Areas in Smart Cities," *IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS)*, 2025, pp. 1-6, DOI: 10.1109/INFOCOMWKSHPS65812.2025.11152922.
- **S. Amatare**, W. Gao, M.H. Rahman, A. Kharel, R. Shakya, X. Shang, "RF-Vision: Object Characterization Using Radio Frequency Propagation in Wireless Digital Twin," *ICC 2025 - IEEE International Conference on Communications*, pp. 5646-5651, DOI: 10.1109/ICC52391.2025.11160847.
- **S. Amatare**, G. Singh, M. Samson & D. Roy, "RagNAR: Ray-tracing based Navigation for Autonomous Robot in Unstructured Environment," *GLOBECOM 2024 - 2024 IEEE Global Communications Conference*, pp. 3631-3636, DOI: 10.1109/GLOBECOM52923.2024.10901133.
- **S. Amatare**, G. Singh, A. Kharel & D. Roy, "Real-Time Localization of Objects using Radio Frequency Propagation in Digital Twin," *MILCOM 2024 - 2024 IEEE Military Communications Conference (MILCOM)*, pp. 653-654, DOI: 10.1109/MILCOM61039.2024.10774060.
- **S. Amatare**, M. Samson & D. Roy, "Testbed Design for Robot Navigation through Differential Ray Tracing," *2024 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)*, pp. 173-174, DOI: 10.1109/DySPAN60163.2024.10632751.
- **S. Amatare**, S. Khan, Md. S. Parwez, & D. Roy, "DREAMER: Digital Twin-Assisted RF Jamming Reconstruction from Sparse Mobile Measurement" – *IEEE Double Blind Conference [Submitted 06/06/2026]*
- **S. Amatare**, Md. S. Parwez, & D. Roy, "Digital Twin-Assisted Uncertainty-Aware Adaptive Navigation for Last-Mile Delivery Robots Under Mobile Jamming" – *IEEE International Conference on Communications (ICC) [Submitted 11/02/2026]*
- **S. Amatare**, Md. S. Parwez, & D. Roy, "FUSE: Digital Twin-Assisted RF Knowledge-Guided ISAC Resource Allocation Under Mobile Jamming" – *IEEE Double Blind Conference [In Preparation]*

SOFT & TECHNICAL SKILLS

- **Soft Skills:** Leadership, collaboration, agile communication, mentoring, strategic decision-making.
- **Programming Languages & Tools:** Python, C, C++, Java.
- **Simulation tools**: Sionna RT, Wireless Insite, Gazebo, Simulink, Blender.
- **AI/ML Frameworks & Libraries:** TensorFlow, PyTorch, Scikit-learn, Pandas, NumPy.
- **Database management**: MySQL, Oracle, MongoDB, MS Access
- **Data visualization:** Power BI, Matplotlib, Seaborn, Plotly.
- **Web Development:** HTML, CSS, Bootstrap, JavaScript, WordPress.

RESEARCH EXPERIENCE

The University of Texas at Arlington — *Arlington, Texas*
Transformative Wireless Systems & Technology (TWiST) Lab — Aug. 2023 – Present
PhD Student

Privacy-Preservation Autonomous Robot Navigation

- Developed RF-based autonomous robot navigation frameworks using digital twins and deep reinforcement learning.
- Designed privacy-preserving RF sensing techniques to reduce reliance on cameras and LiDAR.
- Implemented DQN, PPO, and SAC algorithms for autonomous navigation in dynamic environments.
- Built a USRP-based testbed for real-world RF measurements and validation.

Radio Frequency-based Object Characterization and Wireless Sensing

- Developed high-fidelity digital twins using Blender and NVIDIA Sionna RT.
- Modeled LoS, NLoS, multipath propagation, and RF coverage across different environments.

- Developed ML models for RF-based object classification and environmental characterization.
- Designed a methodology to accurately configure simulation scenes and compute RF propagation characteristics using transceivers deployed at multiple positions within the environment.
- Investigated RF sensing techniques for privacy-preserving localization and object detection.

Digital Twin-Based Wireless Network Modeling

- Developed scalable modular digital twins for NexG wireless networks.
- Achieved huge simulation speedup while maintaining accurate SINR predictions.
- Generated large-scale RF datasets for wireless sensing, interference analysis, and ML training.
- Applied differentiable ray tracing to wireless channel modeling and optimization.

Wireless Resilience and Interference-Aware Systems

- Developed cGAN models to reconstruct wireless interference maps from sparse RF measurements.
- Applied transfer learning to improve RF interference prediction across digital twin environments.
- Designed interference-aware robot navigation strategies under mobile jamming
- Investigated resilient wireless communication techniques for autonomous systems.

Integrated Sensing and Communication (ISAC)

- Developed digital twin-assisted ISAC frameworks for communication and radar sensing.
- Designed RF knowledge-guided OFDM subcarrier allocation under mobile jamming.
- Integrated RF maps and sparse pilot measurements for adaptive resource allocation.
- Investigated event-triggered reconfiguration to reduce resource allocation overhead.

The University of Ibadan *Ibadan, Oyo, Nigeria*
Department of Computer Science *April.* 2018 – January 2021

Machine Learning for Prediction
- Performed exploratory data analysis on telecommunications customer data and cryptocurrencies using data manipulation and visualization tools such as Pandas, NumPy, Matplotlib, Plotly, and Seaborn.
- Built robust models, including ANN, CNN, and LSTM, to predict customer churn and cryptocurrency prices.

TEACHING EXPERIENCE

The University of Texas at Arlington *Arlington, Texas*
Graduate Teaching Assistant Aug. 2023 – Present
- Led lab sessions independently, including preparation of lab materials, instruction, and student supervision.
- Designed and administered lab assignments aligned with course objectives.
- Provided technical guidance and one-on-one support to students during lab sessions.
- Graded lab submissions, homework, and exams with detailed feedback to support learning outcomes.

COURSES:
- CSE 4322: Software Project Management — Fall ’23, ’25, ’26, Spring ‘26
- CSE 5344: Computer Networks — Spring ‘24
- CSE 1310: Introduction to Computers & Programming — Fall ‘24
- CSE 5334: Data Mining — Summer ‘24
- CSE 1320: Intermediate Programming — Spring ‘24

PROFESSIONAL AFFILIATIONS

- IEEE Graduate Student Member
- ACM Graduate Student Member
- IEEE Communications Society Member
- IEEE Young Professionals

CONFERENCE PRESENTATIONS AND TALKS

- RagNAR: Ray-Tracing based Navigation for Autonomous Robot in Unstructured Environments at GLOBECOM, Cape Town, South Africa, 2024.
- Testbed Design for Robot Navigation Through Differential Raytracing at *IEEE DySPAN Conference* Washington, DC, 2024
- Real-Time Localization of Objects using Radio Frequency Propagation in Digital Twin at *IEEE MILCOM Conference*, Washington, DC, 2024
- RagNAR: Ray-Tracing based Navigation for Autonomous Robot in Unstructured Environments at OAIC Workshop, Starkville, MS, 2024
- Testbed Design for Robot Navigation Through Differential Raytracing at SCFR, UTA, 2024.

PROFESSIONAL CONTRIBUTION

Organizing Committee

- Website Chair: IEEE Military Communications Conference (MILCOM) 2026.
- Publicity/Web Chair: The First Digital Twins over NextG Wireless Networks (DTwin) 2025.
- Technical Program Reviewer: International Workshop on SENET 2024.

Reviewer Role

- **Conferences & Workshops:** IEEE ICNC, IEEE CCNC 2026, EuCNC & 6G Summit 2025, IEEE ICC 2025, IEEE INFOCOM (DTwin25), WiMOB 2025, ICCN 2025, IEEE GLOBECOM 2024, IEEE WONS 2024, SENET 2024, IEEE LANMAN 2024, IEEE DCOSS-IoT 2024
- **Journals:** IEEE Transactions on Machine Learning in Communications and Networking, IEEE Transactions on Mobile Computing, IEEE/ACM Transactions on Networking, Elsevier Computer Communications

Others

- Poster Judge – IEEE MILCOM 2026

Volunteer Experience

- Student Volunteer – OurCS Student Computing Research Festival (SCFR) 2025
- Student Volunteer – OurCS Student Computing Research Festival (SCFR) 2024