

Department of Computer Science, Oklahoma State University, Stillwater, OK- 74078.

Research Interests

Protocols Design and Development for Enhancing Security and Routing in Vehicular Ad hoc Networks (VANETs)

Detecting Security Attacks in VANETs; Rogue Node Detection and Prevention in VANETs using Fog Computing; Intrusion Detection in VANETs; Routing Protocols using Fog Computing; Routing Protocols using Social Trust Model; Message Dissemination in Connected Vehicles; Platooning for Co-operative Driving; Congestion Detection and Control in VANETs.

Teaching Interests

Introduction to Programming, Object Oriented Programming, Introduction to Cybersecurity, Computer Organization, Data Structures, Cloud Computing, Computer Networks, Distributive Computing, Mobile Ad hoc Networks, and Network Security.

Education

Doctor of Philosophy in Computer Science

2023

University of Oklahoma, Norman, USA

GPA: 4.0

Thesis: *Misbehavior Aware on-demand Intrusion Detection System to Enhance Security in VANETs with Efficient Rogue Nodes Detection and Prevention Techniques*

Advisor: Dr. Mohammed Atiquzzaman

Master of Science in Computer Science

2017

Texas A&M University, Kingsville, USA

GPA: 4.0

Thesis: *Location Aware Message Dissemination in Connected Vehicles using Multi hop Technique*

Advisor: Dr. Mohammad S. Khan

Bachelor of Engineering in Computer Science and Engineering

2014

Anna University, India

GPA: 3.7

Professional Experience

Assistant Professor

August 2022 - Present

Oklahoma State University, Stillwater, USA

Graduate Research Assistant

June 2019 – July 2022

University of Oklahoma, Norman, USA

Graduate Teaching Assistant

August 2017 – May 2019, August 2020 – May 2022

University of Oklahoma, Norman, USA

Graduate Teaching Assistant

August 2015 – May 2017

Texas A&M University, Kingsville, USA

Publications

Peer-Reviewed Journal Articles (Published)

- [J8] Anirudh Paranjothi and Mohammed Atiquzzaman, "A Statistical Approach for Enhancing Security in VANETs with Efficient Rogue Node detection using Fog Computing," *Digital Communications and Networks*, 2021, doi: <https://doi.org/10.1016/j.dcan.2021.09.010>

- [J7] *Anirudh Paranjothi*, Mohammad S. Khan, and Sherali Zeadally, "A Survey on Congestion Detection and Control in Connected Vehicles," **Ad Hoc Networks**, Volume 108, Pages 102277, 2020, doi: <https://doi.org/10.1016/j.adhoc.2020.102277>
- [J6] *Anirudh Paranjothi*, Mohammad S. Khan, Rizwan Patan, Reza M. Parizi, and Mohammed Atiquzzaman, "VANETomo: A Congestion Identification and Control Scheme in Connected Vehicles using Network Tomography," **Computer Communications**, Volume 151, Pages 275-289, 2020, doi: <https://doi.org/10.1016/j.c-comcom.2020.01.017>
- [J5] *Anirudh Paranjothi*, Mohammed Atiquzzaman, and Mohammad S. Khan, "PMCD: Platoon-Merging approach for cooperative driving," **Internet Technology Letters**, Volume 3, Pages 1-6, 2019, doi: <https://doi.org/10.1002/itl2.139>.
- [J4] *Anirudh Paranjothi*, Urcun Tanik, Yuehua Wang, and Mohammad S. Khan, "Hybrid-Vehfog: A Robust Approach for Reliable Dissemination of Critical Messages in Connected Vehicles," **Transactions on Emerging Telecommunications Technologies**, Volume 30, Pages e3595, 2019, doi: <https://doi.org/10.1002/ett.3595>
- [J3] Yasmin Jahir, Mohammed Atiquzzaman, Hazem Refai, *Anirudh Paranjothi*, and Peter G. LoPresti, "Routing Protocols and Architecture for Disaster Area Network: A Survey," **Ad Hoc Networks**, Volume 82, Pages 1-14, 2019, doi: <https://doi.org/10.1016/j.adhoc.2018.08.005>
- [J2] *Anirudh Paranjothi*, Mohammad S. Khan, Sherali Zeadally, Ajinkya Pawar, and David Hicks, "GSTR: Secure Multi-hop Message Dissemination in Connected Vehicles using Social Trust Model," **Internet of Things**, Volume 7, Pages 100071, 2019, doi: <https://doi.org/10.1016/j.iot.2019.100071>
- [J1] *Anirudh Paranjothi*, Mohammad S. Khan, and Mais Nijim, "Survey on Three Components of Mobile Cloud Computing: Offloading, Distribution and Privacy," **Journal of Computer and Communications**, Volume 5, Pages 1-31, 2017, doi: <https://doi.org/10.4236/jcc.2017.56001>

Peer-Reviewed Journal Articles (In Preparation)

- [J4] *Anirudh Paranjothi* and Mohammed S. Khan, "Decentralized Detection of GPS Spoofing Attacks in Connected Vehicles using Fog Computing," **IEEE Transactions on Vehicular Technology**, 2023.
- [J3] *Anirudh Paranjothi* and Madhusudan Srinivasan, "Message Dissemination in Autonomous Vehicles using C-V2X," **IEEE International Conference on Communications (ICC)**, 2023.
- [J2] Abinash Borah and *Anirudh Paranjothi*, "Decentralized Detection and Prevention of False Information Attacks in VANETS using Parallel Algorithms," **IEEE Communication Letters**, 2023.
- [J1] Abinash Borah, *Anirudh Paranjothi* and Mohammad S. Khan, "Privacy Preserving Rogue Node Detection in VANETs using Parallel Algorithms," **Elsevier Vehicular Communications**, 2023.

Peer-Reviewed Conference Papers

- [C4] *Anirudh Paranjothi*, Mohammed Atiquzzaman, and Mohammed S. Khan, "F-RouND: Fog-Based Rogue Nodes Detection in Vehicular Ad Hoc Networks," **IEEE Global Communications Conference (Globecom)**, Taipei, Taiwan, Pages 1-6, 2020, doi: <https://doi.org/10.1109/GLOBECOM42002.2020.9322131> (*IEEE Communications Society Flagship Conference*).
- [C3] *Anirudh Paranjothi*, Mohammad S. Khan, and Mohammed Atiquzzaman, "Hybrid-Vehcloud: An Obstacle Shadowing Approach for VANETs in Urban Environment," **IEEE 88th Vehicular Technology Conference (VTC-Fall)**, Chicago, USA, Pages 1-5, 2018, doi: <https://doi.org/10.1109/VTCFall.2018.8690729> (*IEEE Vehicular Technological Society Flagship Conference*).
- [C2] *Anirudh Paranjothi*, Mohammad S. Khan, and Mohammed Atiquzzaman, "DFCV: A Novel Approach for Message Dissemination in Connected Vehicles using Dynamic Fog," **IFIP 16th International Conference on Wired/Wireless Internet Communication (WWIC)**, Boston, USA, Pages 311-322, 2018, doi: https://doi.org/10.1007/978-3-030-02931-9_25
- [C1] *Anirudh Paranjothi*, Mohammad S. Khan, Mais Nijim and Rajab Chaloo, "MAvanet: Message Authentication in VANET using Social Networks," **IEEE 7th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)**, New York, USA, Pages 1-8, 2016, doi: <https://doi.org/10.1109/UEMCON.2016.7777915>.

Peer-Reviewed Conference Papers (In Preparation)

- [C1] Abinash Borah, *Anirudh Paranjothi*, and Mohammad S. Khan, "A Novel Framework for Defending Against Multi-Source Sybil Attacks under Single Point Failure in Connected Vehicles," *IEEE Conference on Local Computer Networks (LCN)*, 2023.

Peer-Reviewed Book Chapters

- [B1] *Anirudh Paranjothi*, Mohammed Atiquzzaman, and Mohammed S. Khan, "Message Dissemination in Connected Vehicles," *Connected and Autonomous Vehicles in Smart Cities*, CRC Press, Pages 203-232, 2020 (<https://www.routledge.com/Connected-and-Autonomous-Vehicles-in-Smart-Cities/Mouftah-Erol-Kantarci-Sorour/p/book/9780367350345>).

Technical Report

- [T1] *Anirudh Paranjothi*, "[Performance Analysis of Message Dissemination Techniques in VANET using Fog Computing](https://shareok.org/handle/11244/323804)," *University of Oklahoma*, Pages 1-28, 2018 (<https://shareok.org/handle/11244/323804>).

Extramural Funding

Accepted

1. FY 2022 OSU College of Arts and Science Research (ASR) program \$10000

Participated in Writing

1. SAFE-T: Statewide Analysis for Engineering and Technology, State of Oklahoma, Oklahoma Department of Transportation (O-DoT) • Project Number: OHSO – FFY2022 – OU - 00122 • \$117,867 (per year)
my contribution was writing couple of chapters in this grant proposal. 2020 - 2022

In Preparation

1. NSF; Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII); "*Enhancing Security in Vehicular Ad Hoc Networks using Fog Computing*."
2. O-DoT; "*Message Authentication and Trust Evaluation in Connected Vehicles using Fog Computing*." (PIs: Anirudh Paranjothi and Mohammed Atiquzzaman)
3. NSF; Computer and Network Systems (CNS); Computer and Information Science and Engineering: Core Programs; NSF; Computer and Network Systems (CNS); Computer and Information Science and Engineering: Core Programs; "*Next-Generation Intrusion Detection in Autonomous Vehicles using C-V2X*."

Synergistic Activities

Student Advising

1. **Advisor:** Abinash Borah (Fall 22 – Present), Mohammed Suratwala (Fall 22 – Present), Adele Gideon (Spring 23 – Present), Shashank Pola (Fall 22)
2. **Mentor:** Reece Harrel (Fall 22)

Department Service

1. Member of Graduate committee, Department of Computer Science, Oklahoma State University
2. Thesis committee member for Master's and Ph.D. students
3. Creative component committee chair and member for Master's students

Invited Talks and Presentations

- ❖ Presentation: "*Cellular Vehicle-to-Everything (CV2X) for Connected Vehicles*," O-DoT 2022
- ❖ Invited Talk: "*Vehicular Ad-hoc Networks Challenges and Future Directions*," West Virginia University 2022
- ❖ Invited Talk: "*Intrusion Detection and Prevention in Connected Vehicles*," University at Albany - SUNY 2022
- ❖ Invited Talk: "*Efficient Routing and Types of Security Attacks in VANETs*," California State University - Fullerton 2021
- ❖ Invited Talk: "*Network Attacks and Network Security Threats in Mobile Networks*," University of Oklahoma 2021
- ❖ Invited Talk: "*Fog computing for Connected Vehicles*," Oklahoma Transportation Research Day (OTRD) 2019

- ❖ Invited Talk: "*Message Dissemination in Connected Vehicles using Dynamic Fog*," University of Oklahoma 2019
- ❖ Invited Talk: "*Reliable Critical Message Dissemination in Connected Vehicles*," University of Oklahoma 2018
- ❖ Invited Talk: "*Dynamic Fog for Connected Vehicles*," Oklahoma Transportation Research Day (OTRD) 2018
- ❖ Invited Talk: "*Message Authentication using Social Networks*," Texas A&M University, Kingsville 2016

Professional Services

- ❖ TPC Program Committee: IEEE Symposium on Computational Intelligence in IoT and Smart Cities (IEEE CIIoT) 2020 - 2022
- ❖ Reviewed journal articles for:
 - Transactions on Emerging Telecommunication Technologies
 - Elsevier Vehicular Communication
 - Elsevier Ad hoc Networks
 - IEEE Access
 - IEEE Communication Letters
 - Elsevier Internet of Things
 - CRC Press – Taylor and Francis Group – Computer System and Network Security
- ❖ Reviewed conference papers for:
 - IEEE Symposium on Computational Intelligence in IoT and Smart Cities (IEEE CIIoT) 2020 - 2022