

Curriculum Vitae

ABHISHEK PHADKE

Texas A&M University-Corpus Christi
Department of Computer Science
Conrad Blucher Institute of Surveying and Science
6300 Ocean Drive, Corpus Christi, Texas, 78412
+ 361-355-6608 – aphadke@islander.tamucc.edu
[Website](#) [Google Scholar](#) [LinkedIn](#)

EDUCATION

- 2019 – 2024 **PhD**, Department of Computer Science,
Texas A&M University-Corpus Christi, Corpus Christi, Texas, USA
Dissertation title: Enabling Resilient Operations of Unoccupied Aerial Vehicle (UAV) Swarms
Emphasis on System resilience, robotics, cybersecurity, mobile, and distributed computing.
- 2017 – 2019 **Master of Science** in Electrical Engineering, Texas A&M University-Kingsville
Emphasis on Renewable energy generation and transmission, Electrical machines, Blockchain Development
- 2012 – 2017 **Bachelor of Engineering** in Electronics Engineering, Computer Science (Minor).
University of Mumbai, India (B.S. Equivalent)
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ACADEMIC EMPLOYMENT

- 08/2020--05/2024 **Research Assistant** at Conrad Blucher Institute of Surveying and Science,
Texas A&M University-Corpus Christi, Texas, USA
Geospatial Optimization and Analytics Lab ([GOAL](#)) Headed by: [Dr. F. Antonio Medrano](#)
- 01/2020--08/2020 **Adjunct Faculty**, Department of Engineering, Texas A&M University-Corpus Christi
Texas, USA
- 08/2020--12/2020 **Research Assistant** at Department of Computer Science,
Texas A&M University-Corpus Christi, Texas, USA
- 05/2019--08/2019 **Instructor** in Upward Bound Rural, Upward Bound Math & Science programs
Texas A&M University – Kingsville, Texas, USA
- 08/20218--12/2018 **Teaching Assistant** at the Department of Electrical and Computer Engineering,
Texas A&M University-Kingsville, Texas, USA
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NON-ACADEMIC EMPLOYMENT

04/2018 – 08/2018 **Orientation Leader**, Admissions and Recruitment Office, Texas A&M University – Kingsville, Kingsville, Texas, USA

06/2016 – 07/2017 **Junior Engineer** in R&D, Amber Instruments, Mumbai, India

06/2015 – 05/2016 **Junior Engineer** in Quality Control, Om Energy Savers, Mumbai, India

PUBLICATIONS

PEER REVIEWED JOURNAL ARTICLES

Phadke, A.; Medrano, F.A.; Chu, T.; Sekharan, C.N.; Starek, M.J. Modeling Wind and Obstacle Disturbances for Effective Performance Observations and Analysis of Resilience in UAV Swarms. *Aerospace* 2024, 11, <http://doi.org/10.3390/aerospace11030237>.

Phadke, A.; Medrano, F.A.; Sekharan, C.N.; Chu, T. An Analysis of Trends in UAV Swarm Implementations in Current Research: Simulation Versus Hardware. *Drone Systems and Applications* 2024, 0, null, <http://doi.org/10.1139/dsa-2023-0099>.

Phadke, A.; Medrano, F.A. Increasing Operational Resiliency of UAV Swarms: An Agent-Focused Search and Rescue Framework. *Aerospace Research Communications* 2024, 1, <http://doi.org/10.3389/arc.2023.12420>.

Phadke, A.; Medrano, F.A.; Sekharan, C.N.; Chu, T. Designing UAV Swarm Experiments: A Simulator Selection and Experiment Design Process. *Sensors* 2023, 23, 7359. DOI: <https://doi.org/10.3390/s23177359>

Phadke, A.; Medrano, F.A. Examining application-specific resiliency implementations in UAV swarm scenarios. *Intelligence & Robotics* 2023, 3, 436-461, DOI: <http://doi.org/10.20517/ir.2023.27>

Phadke, A.; Medrano, F.A. Towards Resilient UAV Swarms—A Breakdown of Resiliency Requirements in UAV Swarms. *Drones* 2022, 6, DOI: <https://doi.org/10.3390/drones6110340>

PEER REVIEWED CONFERENCE PROCEEDINGS

Ustymenko, S.; **Phadke, A.** Promise and Challenges of Generative AI in Healthcare Information Systems. In Proceedings of the Proceedings of the 2024 ACM Southeast Conference, New York, 2024; pp. 223–228, <http://doi.org/10.1145/3603287.3651196>.

Phadke, A.; Medrano, F.A.; Chu, T.; Sekharan, C.N.; Starek, M.J. Drone2Drone (D2D): A Search and Rescue Framework Module for Finding Lost UAV Swarm Agents. In Proceedings of the 2023 Congress in Computer Science, Computer Engineering, & Applied Computing (CSCE), 2023; pp. 903-908, <http://doi.org/10.1109/csce60160.2023.00153>.

Phadke, A.; Antonio Medrano, F.; Chu, T. Engineering resiliency in UAV swarms—A bibliographic analysis. In Proceedings of the Journal of Physics: Conference Series, 2022/08/01, 2022; p. 012007. DOI: [10.1088/1742-6596/2330/1/012007](https://doi.org/10.1088/1742-6596/2330/1/012007)

Phadke, A.; Medrano, F.A.; Brahmabhatt, J.; Ustymenko, S. A Framework for an Optimized Smart Energy System. In Proceedings of the 2022 International Symposium on Electrical, Electronics and Information Engineering (ISEEIE), 2022; pp. 240-246. DOI: [10.1109/ISEEIE55684.2022.00049](https://doi.org/10.1109/ISEEIE55684.2022.00049)

Phadke, A.; Medrano, F.A.; Ustymenko, S. Applications of Blockchain in E-government. In Proceedings of the 2022 International Symposium on Electrical, Electronics and Information Engineering (ISEEIE), 2022; pp. 157-164. DOI: [10.1109/ISEEIE55684.2022.00035](https://doi.org/10.1109/ISEEIE55684.2022.00035)

Phadke, A.; Medrano, F.A.; Brahmabhatt, J. A conceptual framework for a Blockchain-based Tax payment financial service. In Proceedings of the 2021 International Conference on Computational Science and Computational Intelligence (CSCI), 2021; pp. 1523-1527. DOI: [10.1109/CSCI54926.2021.00296](https://doi.org/10.1109/CSCI54926.2021.00296)

Phadke, A.; Medrano, F.A.; Ustymenko, S. A Review of Vehicular Micro-Clouds. In Proceedings of the 2021 International Conference on Computational Science and Computational Intelligence (CSCI), 2021; pp. 411-417. DOI: [10.1109/CSCI54926.2021.00139](https://doi.org/10.1109/CSCI54926.2021.00139)

Phadke, A.; Ustymenko, S. Updating the Taxonomy of Intrusion Detection Systems. In Proceedings of the 2021 IEEE 45th Annual Computers, Software, and Applications Conference (COMPSAC), 2021; pp. 1085-1091. DOI: [10.1109/COMPSAC51774.2021.00148](https://doi.org/10.1109/COMPSAC51774.2021.00148)

EDITORIALS, LETTERS AND SHORT ARTICLES

Phadke, A.; Boyd, J.; Medrano, F.A.; Starek, M. Navigating the skies: examining the FAA's remote identification rule for unmanned aircraft systems. *Drone Systems and Applications* **2023**, *11*, 1-4, <http://dx.doi.org/10.1139/dsa-2023-0029>

Phadke, A.; Medrano, F.A. A conceptual Blockchain backed framework for Healthcare Data access – Extended abstract series; 2022. <https://doi.org/10.20935/AI4944>

Phadke, A.; Medrano, A. A Resilient Multi-UAV System of Systems (SoS); 2771-9359; 2021. <https://doi.org/10.20935/AI1659>

BOOK CHAPTERS AND DISSERTATIONS

Phadke, A.; Medrano, F.A.; Ustymenko, S.; Chu, T. On the Inclusion of Heterogeneous Agents in Unmanned Vehicle Swarms, The 20th International Conference on Embedded Systems, Cyber-physical Systems, & Applications (ESCS22), July 25th-28,2022, Las Vegas, Nevada. (Accepted, pending publication, delayed)

Phadke A. and S. Ustymenko, “Examining Security and Forensics across Database Management Systems”, 2021 International Conference on Security and Management (SAM21), July 26th-29,2021, Las Vegas, Nevada. (Accepted, pending publication, delayed)

RESEARCH POSTERS

Phadke A.; Medrano, F.A. “Drone2Drone: A search and rescue framework for finding lost UAV swarm agents”, at the Symposium for Student Innovation, Research, and Creative Activities 2023, Texas A&M University-Corpus Christi, URI: <https://tamucc-ir.tdl.org/handle/1969.6/97196>

SUBMITTED ARTICLES UNDER REVIEW

Phadke, A. et.al. U-SMART: Unified Swarm Management and Resource Tracking framework for Unoccupied Aerial Vehicles, Submitted to Drone Systems and Applications, Canadian Science Press (Under revision after successful peer-review)

Phadke, A et.al. Game-Based Discovery: Harnessing Mini-Games within Primary Games for Scientific Data Collection and Problem Solving, Submitted to CSCE 2024 (Under peer-review)

Phadke, A et.al. Unifying Sky and Chain: A Perspective on Blockchain's Role in UAV Swarms (Under peer-review)

An additional two journal articles and three conference proceeding articles on systemic resilience are being prepared for submission, with expected publication dates before end of 2024.

PRESENTATIONS, INVITED TALKS AND LECTURES

Unmanned Aerial Systems: From Foundations to the Future, Guest talk at Montana Technological University, UAS development & analytics undergraduate certificate, September 14th, 2023

Drone2Drone (D2D): a Search and Rescue framework module for finding lost UAV swarm agents, The 21st International Conference on Embedded Systems, Cyber-physical Systems, & Applications (ESCS23), July 24th-27, 2023, Las Vegas, Nevada

On the Inclusion of Heterogeneous Agents in Unmanned Vehicle Swarms, The 20th International Conference on Embedded Systems, Cyber-physical Systems, & Applications (ESCS22), July 25th-28, 2022, Las Vegas, Nevada

Engineering resiliency in UAV Swarms- A bibliographic analysis, 2022 International Symposium on Intelligent Unmanned Systems and artificial Intelligence (SIUSAI 2022) April 22-24, 2022. (Virtual)

A Framework for an Optimized Smart Energy System, 2022 International Symposium on Electrical, Electronics and Information Engineering (ISEEIE), February 25-27. (Virtual)

Applications of Blockchain in E-government, 2022 International Symposium on Electrical, Electronics and Information Engineering (ISEEIE), February 25-27. (Virtual)

A Conceptual Framework for a Blockchain-based Tax payment Financial Service. 2021 International Conference on Computational Science and Computational Intelligence (CSCI 2021), December 15-17, (Virtual)

A Review of Vehicular Micro Clouds 2021 International Conference on Computational Science and Computational Intelligence (CSCI 2021), December 15-17, (Virtual)

AWARDS AND GRANTS

Total to date: \$62,500.

Additionally, \$12000 in external APC waivers and scholarships for publications

May 2024 1st place Engineering Student awards (Graduate category) and 2nd place 15-minute oral presentation (Graduate category) at the SSIRCA 2024 (Symposium for Student Innovation, Research, and Creative Activities.)

April 2024 3 Minute thesis competition, University level, Texas A&M University

Fall 2023 to Spring 2024	Corpus Christi, People's Choice Award Division of Research and Innovation, Texas A&M University-Corpus Christi Student research grant
Fall 2023 to Spring 2024	International Graduate Scholarship - Texas A&M University-Corpus Christi
Fall 2023 to Spring 2024	Islander Leadership Scholarship, Texas A&M University-Corpus Christi
April 2023	3 Minute thesis competition, University level, Texas A&M University-Corpus Christi, People's Choice Award
Spring 2022	Geospatial Engineering Graduate Scholarship - Texas A&M University-Corpus Christi
Fall 2022	Islander Leadership Scholarship, Texas A&M University-Corpus Christi
Fall 2021	CBI endowment- Texas A&M University-Corpus Christi
August 2021 to May 2022	Geospatial Engineering GR Scholarship- Texas A&M University-Corpus Christi
August 2021 to May 2022	International Impact Scholar - Texas A&M university-Corpus Christi
September 2021	Division of Research and Innovation - Texas A&M University-Corpus Christi, Student research Competition award (Equipment Grant)
April 2021	3M thesis competition, University level, Texas A&M University-Corpus Christi, People's Choice award
Spring 2021	Geospatial Engineering GR Scholarship- Texas A&M University-Corpus Christi
Spring 2021	CBI endowment- Texas A&M University-Corpus Christi
August 2020 to May 2021	International Impact Scholar - Texas A&M University-Corpus Christi
August 2017 to July 2018	Graduate Student Merit Scholarship – Texas A&M University-Kingsville

TEACHING

Spring 2020	EEEN- 3345-001 – Electronic Devices and Circuits Department of Engineering, Texas A&M University-Corpus Christi
Summer 2019	Upward Bound – High School level – Math & Science Texas A&M University – Kingsville

PROGRAM SERVICE

09/2021-05/2024	Vice President Geospatial Computer Science Graduate Student Organization
09/202-07/2021	Technical Advisory Chair IEEE Student Branch

EDITORIAL POSITIONS AND REVIEWER SERVICE

EDITORIAL POSITIONS

Review Editor	Aerospace Research Communications	Frontier Publishing Partnerships
Junior Editor	Intelligence and Robotics	OAE Publishing

PEER-REVIEWED JOURNALS

MDPI Journals: Drones; ISSN: 2504-446X; **Robotics;** ISSN: 2218-6581; **Aerospace;** ISSN: 2226-4310; **Sensors;** ISSN: 1424-8220; **Electronics** ISSN 2079-9292.

Journal of Engineering Research and Sciences; ISSN: 2831-4085

IEEE Transactions on Mobile Computing

IEEE Transactions on Cybernetics.

Intelligence and Robotics; Online ISSN: 2770-3541.

Eksploracja i Niezawodność – Maintenance and Reliability.

Advances in Networks-Science PG.

Reliability Engineering & System Safety; Online ISSN: 1879-0836

PEER-REVIEWED REGIONAL AND ANNUAL CONFERENCES

4th International Conference on Electrical, Computer and Energy Technologies (ICECET 2024)

International Conference on Artificial Intelligence, Computer, Data Sciences and Applications (ACDSA 2024)

The 5th International Conference on Machine Learning and Intelligent Systems (MLIS 2023)

7th Int'l Conf. on Energy Engineering and Environmental Protection.

RESEARCH INTERESTS

Resiliency in systems	Multi-agent modeling, Swarms, Distributed Cyber-Physical Systems, Disruption modeling and threat analysis.
Core Computer Science	Geospatial algorithms and methods, Spatial data analytics and processing, Distributed computing, Operating Systems, Data structures, and Computer architecture.
Network and Cybersecurity	Intrusion Detection Systems, Database Management Systems, Network Security
Electrical Engineering	Energy generation using renewable energy sources, Efficient transmission, Electrical Machines, Electronic devices, and Circuits.
Blockchain	Applications in E-governance, Smart City, Finance and Healthcare

TECHNICAL SKILLS

Languages: Python, Java, C++, Swift.

Development tools: MATLAB, XCode, Autodesk, Android Studio, Adobe Creative Studio, Snapchat Lens Studio, Eclipse, Visual Studio, Unreal Engine, Octave.

Spatial tools: ArcGIS, Global Mapper, ArcMap.

Cloud platforms: Microsoft Azure, AWS.

Business intelligence: Tableau, Qlik sense.

Operating system familiarity: Windows, Mac OSx, Ubuntu

PCB design: Proteus

Simulation platforms: CoppeliaSim, Webots, Microsoft AirSim, Gazebo, AnyLogic.

Spatial Skills: Geospatial data analysis, spatial database design, spatial computing, spatial networks, UAV mission planning, field data collection.

Other skills: Hardware management and design tools, enterprise system management and security, I.T. support, and project management. Renewable energy and green building entrepreneurship, Blockchain development, M.S. Office suite, Database management

RESEARCH PROJECTS¹

06/2024 – 09/2024*	An examination of considerations, policy and challenges for Urban Aerial Mobility and Personal Aerial Vehicles.
08/2023 – 05/2024	Disruption and threat modeling for performance analysis and validation of aerial CPS.
04/2023 – 06/2024	Unified Swarm Management And Resource Tracking framework (USMART).
04/2023 – 07/2023	A simulator selection and experiment design process for UAV swarms.
11/2021 – 11/2022	Swarm-specific agent rescue for increasing operational resilience of nodes in a network.
04/2021 – 01/2022	Inclusion of heterogeneous agents in swarms as a means of increasing operational robustness.
06/2021 – 09/2021	Blockchain-based reverse token system for tax payment.
03/2021 – 06/2021	Optimized smart energy transaction system for renewable energy smart grids.
09/2019 - 03/2024	Enabling resilient operations of robotic swarms

¹ Each project is expected to produce a minimum of one peer reviewed article or conference proceeding.

* Indicates expected project completion dates

RESEARCH PROFILES

[Google Scholar](#)

[ResearchGate](#)

[ORCID](#)

[Semantic Scholar](#)

CERTIFICATIONS

Associate certification in *CIRTL Network MOOC, An Introduction to Evidence-Based Undergraduate STEM Teaching* from Texas A&M University [Certification link](#)

Certifications in Electric utility fundamentals, Renewable energy, Digital manufacturing, Enterprise system management, Advanced manufacturing process analysis, IoT, and embedded systems.
Transcript: [Click here to visit.](#)