Joshua (Josh) Peeples, Ph.D.

ASSISTANT PROFESSOR · ELECTRICAL AND COMPUTER ENGINEERING

3128 TAMU, College Station, TX

📱 +1 205-401-5197 | ✉ jpeeples@tamu.edu | 🏠 avll.engr.tamu.edu | jkpeeples | 🐦 @jpeeples67 | 🎓 Scholar

Research Interests ───────────────────

Machine Learning, Deep Learning, Texture Analysis, Pattern Recognition, Computer Vision, Image Processing

Education ───────────────────

University of Florida   *Gainesville, FL*
PHD ELECTRICAL AND COMPUTER ENGINEERING   *June 2017 - May 2022*
- Advisor: Dr. Alina Zare
- Dissertation: "Connecting the Past and the Present: Histogram Layers for Texture Analysis" 📄

University of Florida   *Gainesville, FL*
MS ELECTRICAL AND COMPUTER ENGINEERING   *June 2017 - Dec 2019*

University of Alabama at Birmingham   *Birmingham, AL*
BS ELECTRICAL ENGINEERING (MINOR: MATHEMATICS)   *Aug 2013 - April 2017*
- Magna Cum Laude

Professional Experience ───────────────────

Texas A&M University Department of Electrical and Computer Engineering   *College Station, TX*
ASSISTANT PROFESSOR (TENURE-TRACK)   *Aug 2024 - Present*
VISITING ASSISTANT PROFESSOR   *Aug 2022 - July 2024*

Los Alamos National Lab Space Remote Sensing and Data Science (ISR-6)   *Los Alamos, NM*
GUEST SCIENTIST   *April 2023 - Present*

Massachusetts Institute of Technology Lincoln Laboratory (Group 37)   *Lexington, MA*
VISITING SCIENTIST   *June 2025 - July 2025*

United States Air Force Research Laboratory   *Dayton, Ohio*
SUMMER FACULTY FELLOW   *June 2023 - July 2023*

University of Florida Machine Learning and Sensing Laboratory   *Gainesville, FL*
GRADUATE RESEARCH ASSISTANT   *June 2017 - July 2022*

Naval Research Enterprise Internship Program   *Panama City, FL*
GRADUATE SUMMER RESEARCH INTERN (VIRTUAL)   *May 2021 - Aug 2021*

Michigan State University Summer Research Opportunities Program   *East Lansing, MI*
UNDERGRADUATE SUMMER RESEARCH INTERN   *May 2016 - July 2016*

University of Alabama at Birmingham Signal Processing and Embedded Systems Laboratory   *Birmingham, AL*
UNDERGRADUATE RESEARCH ASSISTANT   *Jan 2014 - Dec 2016*

Publications

TOTAL PUBLICATIONS: 30 **JOURNAL ARTICLES**: 8 **CONFERENCE PROCEEDINGS**: 22

+ students advised by J. Peeples

IN REVIEW

R4. T. Jefferis, J. Gauderman[+], A. Biradar[+], D. Pruss, K. Griffin, **J. Peeples**, and C. Sayes, "Learning from Limited Data: Application of Machine Learning Models for Cellular Morphology Analysis in Light Microscopy," in Review.

R3. S. Salehi[+], A. Agashe[+], A. J. McFarland, and **J. Peeples**, "LGDWT-GS: Local and Global Discrete Wavelet-Regularized 3D Gaussian Splatting for Sparse-View Scene Reconstruction," in Review. doi: arXiv:2601.17185. 📄

R2. A. Mohammadi[+], D. Carreiro, A. V. Dine, and **J. Peeples**, "Histogram-based Parameter-efficient Tuning for Passive Sonar Classification," in Review. doi: arXiv:2504.15214. 📄

R1. J. Ritu[+], A. Mohammadi[+], D. Carreiro, A. V. Dine, and **J. Peeples**, "Structural and Statistical Audio Texture Knowledge Distillation (SSATKD) for Passive Sonar Classification," in Review. doi: arXiv:2501.01921. 📄

JOURNAL ARTICLES

J8. Md Z. Iqbal, R. Hardin, **J. Peeples**, and E. Barnes, "Cover Damage Detection of Round Cotton Modules using Convolutional Neural Networks (CNN)," in *Computers and Electronics in Agriculture*, Volume 239, Part B, 111023, 2025. doi: 10.1016/j.compag.2025.111023 📄

J7. **J. Peeples**, S. Al Kharsa[+], L. Saleh, and, A. Zare, "Histogram Layers for Neural Engineered Features," in *IEEE Transactions on Artificial Intelligence*, July 2025. doi: 10.1109/TAI.2025.3593445. 📄

J6. J. Liu, **J. Peeples**, and C. Sayes, "Evaluation of Machine Learning Based QSAR Models for the Classification of Lung Surfactant Inhibitors," in *Environment & Health*, 2024. doi: 10.1021/envhealth.4c00118. 📄

J5. **J. Peeples**, W. Xu, R. Gloaguen, D. Rowland, A. Zare, and Z. Brym, "Spatial and Texture Analysis of Root System Distribution with Earth Mover's Distance (STARSEED)," in *Plant Methods* 19, 2023. doi: 10.1186/s13007-022-00974-z. 📄

J4. **J. Peeples**, J. Jameson, N. Kotta, J. Grasman, W. Stoppel, and A. Zare, "Jointly Optimized Spatial Histogram UNET Architecture (JOSHUA) for Adipose Tissue Segmentation," in *BME Frontiers Special Issue: AI for Advanced Biomedical Applications*, vol. 2022, doi: 10.34133/2022/9854084. 📄

J3. **J. Peeples**, S. Walker, C. McCurley, A. Zare, J. Keller, and W. Xu, "Divergence Regulated Encoder Network for Joint Dimensionality Reduction and Classification," in *IEEE Geoscience and Remote Sensing Letters*, vol. 19, pp. 1-5, 2022, Art no. 3511305, doi: 10.1109/LGRS.2022.3156532. 📄

J2. R. Gloaguen, Z. Brym, **J. Peeples**, W. Xu, C. Hyen-Chung, and D. Rowland, "The Plasticity of Early Root Development in Sesamum indicum L. as Influenced by Genotype and Water Availability", in *Rhizosphere*. Elsevier BV, 2022, doi: 10.1016/j.rhisph.2021.100457. 📄

J1. **J. Peeples**, W. Xu, and A. Zare, "Histogram Layers for Texture Analysis," in *IEEE Transactions on Artificial Intelligence*, vol. 3, no. 4, pp. 541-552, Dec. 2021, doi: 10.1109/TAI.2021.3135804. 📄📶

CONFERENCE PROCEEDINGS

C22. F.O. Nia[+], A. Mohammadi[+], S.A. Kharsa[+], P. Naikare[+], Z. Hampel-Arias, and **J. Peeples**, "Neighborhood Feature Pooling for Remote Sensing Image Classification," in *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Computer Vision for Earth Observation (CV4EO) Workshop*, 2026, in Press, doi: arXiv:2510.25077. 📄

C21. F.O. Nia[+], S. Salehi[+], and **J. Peeples**, "Evaluating GAN-LSTM for Smart Meter Anomaly Detection in Power Systems," in *IEEE Texas Power and Energy Conference (TPEC)*, 2026, in Press, doi: arXiv:2601.09701. 📄

C20. J. Ritu[+], T. Jefferis, C. Sayes and **J. Peeples**, "Morphological Change Detection for Scanning Electron Microscope Images of Lung Cell Surfaces," in International Conference on Advances in Artificial Intelligence and Machine Learning (AAIML), 2026, in Press, doi: 10.2139/ssrn.5553087. 📄

C19. J. Ritu[+], A. V. Dine, and **J. Peeples**, "Quantitative Measures for Passive Sonar Texture Analysis," in *Synthetic Data for Artificial Intelligence and Machine Learning: Tools, Techniques, and Applications IV*, International Society for Optics and Photonics (SPIE), 2026, in Press, doi: arXiv:2504.14843. 📄

C18. L. Chauvin[+], S. Gupta[+], A. Ibarra[+] and **J. Peeples**, "Benchmarking suite for synthetic aperture radar imagery anomaly detection (SARIAD) algorithms," in *Algorithms for Synthetic Aperture Radar Imagery XXXII*, International Society for Optics and Photonics (SPIE), 2025, doi: 10.1117/12.3052519. 📄

C17. A. Ibarra[+] and **J. Peeples**, "Patch distribution modeling framework learnable adaptive cosine estimator (PaDiM-LACE) for anomaly detection in synthetic aperture radar imagery," in *Algorithms for Synthetic Aperture Radar Imagery XXXII*, International Society for Optics and Photonics (SPIE), 2025, doi: 10.1117/12.3052541. 📄

C16. A. Agashe[+], D. Carreiro, A. V. Dine, and **J. Peeples**, "Neural Edge Histogram Descriptors for Underwater Acoustic Target Recognition," in *OCEANS 2025 Brest*, BREST, France, 2025, pp. 1-6, doi: 10.1109/OCEANS58557.2025.11104298. 📄

C15. A. Mohammadi[+], I. Masabarakiza[+], E. Barnes[+], D. Carreiro, A. V. Dine, and **J. Peeples**, "Investigation of Time-Frequency Feature Combinations with Histogram Layer Time Delay Neural Networks," in *OCEANS 2025 Brest*, BREST, France, 2025, pp. 1-6, doi: 10.1109/OCEANS58557.2025.11104751. 📄

C14. A. Mohammadi[+], T. Kelhe[+], D. Carreiro, A. V. Dine, and **J. Peeples**, "Cross-Domain Knowledge Transfer for Underwater Acoustic Classification Using Pre-trained Models," in *OCEANS 2025 Brest*, BREST, France, 2025, pp. 1-6, doi: 10.1109/OCEANS58557.2025.11104545. 📄

C13. A. Mohan[+], T. Jefferis, C. Sayes and, **J. Peeples**, "Texture Analysis of Lung Cell Surface Morphology After Nanoparticle Exposure," in *Medical Imaging 2025: Digital and Computational Pathology*, vol. 13413, pp. 221-230. SPIE, 2025, doi: 10.1117/12.3047087. 📄

C12. Y. Zambre[+], E. Rajkitkul[+], A. Mohan[+] and, **J. Peeples**, "Spatial Transformer Network YOLO Model for Agricultural Object Detection," in *IEEE International Conference on Machine Learning and Applications (ICMLA)*, Miami, FL, 2024, pp. 115 - 121, in Press. doi: 10.1109/ICMLA61862.2024.00022. 📄

C11. A. Mohan[+] and **J. Peeples**, "Lacunarity Pooling Layers for Plant Image Classification using Texture Analysis," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, 2024, pp. 5384-5392, doi: arXiv:2404.16268. 📄

C10. F. Safdarian, **J. Peeples**, D. Richards, and T. Overbye, "A Fast Learning-Based Unit Commitment Strategy with AC Optimal Power Flow for Large Grids with Direct Inclusion of Weather", in *IEEE Kansas Power and Energy Conference (KPEC)*, 2024, doi: 10.1109/KPEC61529.2024.10676027. 📄

C9. J. Ritu[+], E. Barnes[+], R. Martell, A. V. Dine, and **J. Peeples**, "Histogram Layer Time Delay Neural Network For Passive Sonar Classification," in *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, 2023. doi: 10.1109/WASPAA58266.2023.10248102 . 📄 📶

C8. A. Mohan[+] and **J. Peeples**, "Quantitative Analysis of Primary Attribution Explainable Artificial Intelligence Methods for Remote Sensing Image Classification," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, 2023, pp. 950-953, doi: 10.1109/IGARSS52108.2023.10281981. 📄

C7. **J. Peeples**, A. Zare, J. Dale, and J. Keller, "Histogram Layers for Synthetic Aperture Sonar Imagery," in *IEEE International Conference on Machine Learning and Applications (ICMLA)*, Nassau, Bahamas, 2022, pp. 176-182, doi: 10.1109/ICMLA55696.2022.00032. 📄

C6. **J. Peeples**, C. McCurley, S. Walker, D. Stewart, and A. Zare, "Learnable Adaptive Cosine Estimator (LACE) for Image Classification," in *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2022, pp. 3479-3489, doi: 10.1109/WACV51458.2022.00381. 📄

C5. D. Prioleau, K. Alikhademi, A. Roberts, **J. Peeples**, A. Zare, and J.E. Gilbert, "Use of Divisive Clustering for Reducing Bias in Training Data," in *International Conference on Machine Learning and Data Mining (MLDM)*, 2021, pp. 115-131. P-ISSN 1864-9734, E-ISSN 2699-5220, ISBN 978-3-942952-81-1. 📄

C4. S. Walker, **J. Peeples**, J. Dale, A. Zare, and J. Keller, "Explainable Systematic Analysis for Synthetic Aperture Sonar Imagery," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, 2021, pp. 2835-2838. doi: 10.1109/igarss47720.2021.9554901. 📄

C3. **J. Peeples**, M. Cook, D. Suen, A. Zare, and J. Keller, "Comparison of Possibilistic Fuzzy Local Information C-Means and Possiblisitic K-Nearest Neighbors for Synthetic Aperture Sonar Segmentation," in *Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXIV*, vol. 11012. International Society for Optics and Photonics (SPIE), 2019, p. 110120T. doi: 10.1117/12.2519484. 📄

C2. A. Starke, J. McNair, R. Trevizan, A. Bretas, **J. Peeples**, and A. Zare, "Toward Resilient Smart Grid Communications using Distributed SDN with ML-Based Anomaly Detection," in *International Conference on Wired & Wireless Internet Communications*. Springer, 2018, pp. 83-94. doi: 10.1007/978-3-030-02931-9_7. 📄

C1. **J. Peeples**, D. Suen, A. Zare, and J. Keller, "Possibilistic Fuzzy Local Information C-means with Automated Feature selection for Seafloor Segmentation," in *Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXIII*, vol. 10628. International Society for Optics and Photonics (SPIE), 2018, p. 1062812. doi: 10.1117/12.2305178. 📄

Sponsored Research

TOTAL AMOUNT AWARDED IN FUNDED PROJECTS: $974,553 **FACULTY PORTION**: $874,553

Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping *$268,673*
SPONSOR: TEXAS A&M UNIVERSITY AGRILIFE RESEARCH *Oct 2022 - Present*
- Role: Principal Investigator
- Peeples Portion: $268,673

Histogram Layers for Improved Target Classification *$381,400*
SPONSOR: MASSACHUSETTS INSTITUTE OF TECHNOLOGY LINCOLN LABORATORY *Oct 2022 - Present*
- Role: Principal Investigator
- Peeples Portion: $381,400

3D Scene Understanding Capabilities for Remote Sensing Imagery Analysis *$50,000*
SPONSOR: TEXAS A&M UNIVERSITY SYSTEM NATIONAL LABORATORIES OFFICE *Jan 2025 - Dec 2025*
- Role: Principal Investigator
- Peeples Portion: $50,000

Realizing the Full Potential of Respiratory Health Evaluation by Leveraging Machine Learning Models *$150,000*
SPONSOR: UNITED STATES AIR FORCE RESEARCH LABORATORY *Nov 2023 - February 2025*
- Role: Co-Principal Investigator
- Peeples Portion: $50,000

Anomaly Detection in Synthetic Aperture Radar Imagery *$124, 460*
SPONSOR: SANDIA NATIONAL LABORATORIES *Oct 2023 - September 2025*
- Role: Principal Investigator
- Peeples Portion: $124,460

Awards, Fellowships, and Honors

GRAND TOTAL: $527,410 **UNDERGRADUATE AND GRADUATE TOTAL**: $525,910 **FACULTY TOTAL**: $1,500

University of Alabama at Birmingham (UAB); University of Florida (UF); Texas A&M University (TAMU)

2025-Pres	**Honors Aggie Core Values Faculty Fellow**, TAMU Honors Academy	
2022	**Exploration Mini-Grant**, TAMU System National Laboratories Office	*$1,500*
2021-22	**Attributes of a Gator Engineer Award for Leadership**, UF Herbert Wertheim College of Engineering	
2021-22	**Graduate Excellence Award for Service**, UF Department of Electrical and Computer Engineering	
2021	**Inductee**, Edward Alexander Bouchet Graduate Honor Society	
2020-21	**Dr. Joseph S. Rosko Award**, UF Department of Electrical and Computer Engineering	*$ 3,750*
2018-2022	**Graduate Research Fellowship (NSFGRFP)**, National Science Foundation	*$ 144,000*
2018-2021	**NSF External Top-up Award**, UF Graduate School	*$ 26,250*
2018-2022	**Southern Regional Education Board Institute Travel Award**, UF Graduate School	*$ 6,000*

2017-2022	**McKnight Doctoral Fellowship**, Florida Education Fund	*$ 85,000*
2017-2022	**Preeminence Award**, UF Graduate School	*$ 218,130*
2017	**Iva and Norman Tucker Fellowship**, UF Transportation Institute	*$ 4,000*
2017	**Board of Education Summer Fellowship**, UF Office of Graduate Diversity Initiatives	*$ 8,780*
2017	**Green Blazer of Excellence**, UAB Blazer Male Excellence Network	
2017	**President's List (Spring)**, UAB	
2016-17	**Dupuis Leadership Scholarship**, UAB School of Engineering	*$ 1,500*
2016-17	**Cleo and Clara Thomas Academic Scholarship for Excellence**, UAB	*$ 1,000*
2016	**Commitment to Excellence in Tutoring**, UAB Vulcan Material Academic Success Center	
2016	**Dean's List (Spring)**, UAB	
2016	**President's List (Fall)**, UAB	
2016	**Honor Scholar**, UAB Multicultural Scholars Program	
2015	**Dean's List (Spring and Fall)**, UAB	
2015	**Scholar of the Year**, UAB Multicultural Scholars Program	
2014	**Dean's List (Spring)**, UAB	
2013-17	**Vulcan Materials Scholarship**, UAB	*$ 4,000*
2013-17	**Comprehensive Minority Faculty and Student Development Program Scholarship**, UAB	*$ 4,000*
2013-17	**Collegiate Honors Scholarship**, UAB	*$ 16,000*
2013-14	**Scholarship**, The Birmingham Chapter of the American Association of Blacks in Energy	*$ 3,500*

Presentations

TOTAL PRESENTATIONS: 38 **INVITED TALKS**: 23 **ORAL PRESENTATIONS**: 9 **POSTER PRESENTATIONS**: 6

INVITED TALKS

IT23. "Adaptive Texture Learning and Scene Reconstruction for Remote Sensing," in *Los Alamos National Laboratory Infernal Seminar Series*, Los Alamos, NM, July 2025.

IT22. "Benchmarking Suite for Synthetic Aperture Radar Imagery Anomaly Detection (SARIAD) Algorithms," in *TerraSense Guest Presentation*, Kelowna, BC, Virtual, May 2025.

IT21. "Automated Precision Phenotyping Greenhouse Data Analysis Pipeline," in *2025 AI in Agriculture and Natural Resources Conference*, Starkville, MS, April 2025.

IT20. "Spatial Transformer Network You Only Look Once (STN-YOLO) for Improved Object Detection," in *North American Plant Phenotyping Network*, Virtual, February 2025.

IT19. "Spatial Transformer YOLO and Lacunarity Pooling Layers for Improved Agricultural Image Analysis," in *USDA-NIFA Smart Agriculture Workshop*, College Station, TX, December 2024.

IT18. "Artificial Intelligence/Machine Learning Research: From Theory to Applications," in *Texas A&M University System Louis Stokes Alliance for Minority Participation Bridge to Doctorate Wrap-up Meeting*, Prarie View, TX, December 2024.

IT17. "Automated Precision Phenotyping Greenhouse Data Analysis Pipeline," in *2024 Pheno Advanced Cyberinfrastructure Coordination Ecosystem (ACCESS) Workshop on Research Computing and Plant Phenotyping*, Lincoln, NE, October 2024.

IT16. "Deep Learning and Neural Networks," Guest Lecture for *CLEN 289: Essentials of AI: AI Literacy*, College Station, TX, September 2024.

IT15. "Learnable Adaptive Cosine Estimator (LACE) for Image Classification," in *Sandia National Laboratories ML/DL Forum*, Albuquerque, NM, June 2024.

IT14. "Histogram Layers for Improved Target Classification," in *Massachusetts Institute of Technology Lincoln Laboratory Group 37 Seminar*, Lexington, MA, May 2024.

IT13. "Histogram Layers for Statistical Image Texture Feature Learning," in *Texas A&M University Computer Science and Engineering Seminar*, College Station, TX, April 2024.

IT12. "Statistical Texture Feature Learning for Image Analysis," in *Sandia National Laboratories ML/DL Forum*, Albuquerque, NM, December 2022.

IT11. "Learnable Adaptive Cosine Estimator (LACE) for Image Classification," in *Los Alamos National Laboratory Seminar*, Los Alamos, NM, November 2022.

IT10. "Spatial and Texture Analysis of Root System Distribution with Earth Mover's Distance (STARSEED)," in *Texas A&M University Department of Plant Pathology and Microbiology Seminar*, College Station, TX, October 2022.

IT9. "Statistical Texture Feature Learning for Image Analysis," in *Texas A&M University Electrical and Computer Engineering Computer Engineering and Systems Group Seminar*, College Station, TX, September 2022. ▶

IT8. "Connecting the Past and Present: Histogram Layers for Texture Analysis," in *Syngenta Computer Vision and Deep Learning Technical Seminar*, Gainesville, FL, Virtual, June 2022.

IT7. "Connecting the Past and Present: Histogram Layers for Texture Analysis," in *Massachusetts Institute of Technology Lincoln Laboratory Seminar Series*, Lexington, MA, Virtual, March 2022.

IT6. "Histogram Layers for Texture Analysis," in *North American Plant Phenotyping Network (NAPPN) AI/ML Workshop*, Athens, GA, February 2022.

IT5. "Connecting the Past and Present: Histogram Layers for Texture Analysis," in *Texas A&M University Department of Electrical and Computer Engineering Seminar Series*, College Station, TX, Virtual, February 2022.

IT4. "Connecting the Past and Present: Histogram Layers for Image Texture Analysis," in *Los Alamos National Laboratory Seminar*, Los Alamos, NM, Virtual, February 2022.

IT3. "Artificial Intelligence for Texture Analysis," in *University of Florida Thompson Earth Systems Institute Scientist in Every Florida School*, Gainesville, FL, Virtual, May 2021.

IT2. "Connecting the Past and Present: Histogram Layers for Texture Analysis," in *Boston University Department of Electrical and Computer Engineering Seminar Series*, Boston, MA, Virtual, April 2021. ▶

IT1. "Design Your Engineering Career," in *University of Alabama at Birmingham Engineering Young Alumni Series*, Birmingham, AL, Virtual, July 2020.

ORAL PRESENTATIONS

OP9. "Benchmarking Suite for Synthetic Aperture Radar Imagery Anomaly Detection (SARIAD) Algorithms," in *Algorithms for Synthetic Aperture Radar Imagery XXXII*, International Society for Optics and Photonics (SPIE), Orlando, FL, April 2025. ▶

OP8. "Histogram Layers for Synthetic Aperture Sonar Imagery," in *IEEE International Conference on Machine Learning and Applications (ICMLA)*, Nassau, Bahamas, December 2022.

OP7. "Learnable Adaptive Cosine Estimator (LACE) for Image Classification," in *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, Waikoloa, HI, Virtual, January 2022. ▶

OP6. "Explainable Systematic Analysis for Synthetic Aperture Sonar Imagery," in *IEEE International Geoscience and Remote Sensing Symposium*, Brussels, Belgium, Virtual, July 2021. ▶

OP5. "Jointly Optimized Spatial Histogram U-NET Architecture (JOSHUA) for Adipose Tissue Identification in Histological Images of Lyophilized Silk Sponge Implants," in *University of Florida Biomaterials Day*, Gainesville, FL, Virtual, March 2021.

OP4. "Comparison of Possibilistic Fuzzy Local Information C-Means and Possiblisitic K-Nearest Neighbors for Synthetic Aperture Sonar Segmentation," in *Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXIV*, International Society for Optics and Photonics (SPIE), Baltimore, MD, May 2019. ▶

OP3. "Histogram Layer: A Novel Approach to Feature Engineering," in *McKnight Doctoral Mid-Year Research and Writing Conference*, Tampa, FL, February 2019.

OP2. "Possibilistic Fuzzy Local Information C-means with Automated Feature selection for Seafloor Segmentation," in *Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXIII*, International Society for Optics and Photonics (SPIE), Orlando, FL, April 2018.

OP1. "Synthetic Aperture SONAR Soft Segmentation using Possibilistic Fuzzy Local Information C-Means" in *University of Florida Water Institute Symposium*, Gainesville, FL, February 2018.

PP6. "Texture-Aware Knowledge Distillation for Efficient Passive and Active Sonar Analysis," in *Naval Applications of Machine Learning*, San Diego, CA, March 2026.

PP5. "Advanced Vision and Learning Lab: Pioneering a Data-Driven Future," in *Texas Academy of Medicine, Engineering, Science & Technology (TAMEST) Protégé Poster Challenge*, Austin, TX, February 2024.

PP4. "Spatial Histogram Layers in Convolutional Neural Network Models for Adipose Segmentation in Histological Silk Implant Images," in *Biomedical Engineering Society Annual Meeting*, Orlando, FL, October 2021.

PP3. "Connecting the Past and Present: Histogram Layers for Texture Analysis," in *Notre Dame Future Faculty Workshop*, South Bend, IL, May 2021.

PP2. "Using the Engineering Force: BHAMSolo Senior Design Project," in *University of Alabama at Birmingham Spring Expo*, Birmingham, AL, April 2017.

PP1. "LIVE ON: Lane, Sign, and Vehicle Detection in Various Environments," in *Emerging Researchers National (ERN) Conference in STEM*, Washington, D.C., March 2017.

Teaching Experience

COURSES TAUGHT AT TEXAS A&M UNIVERSITY

ECEN 681 Computer Engineering Seminar *College Station, TX*
INSTRUCTOR OF RECORD *Fall 2025, Spring 2026*
- Graduate Course
- Coordinate speaker invitations and scheduling for departmental seminar series
- Evaluate and grade weekly student seminar reports

ECEN 289/250 Machine Learning for Electrical Engineers *College Station, TX*
INSTRUCTOR OF RECORD *Spring 2023, Spring 2026*
- Undergraduate Course
- Collaborated on final project with member from TAMU ECEN External Advisory and Development Council
- Serve as Course Coordinator for department

HONR 102 Honors Seminar in Loyalty, Integrity, and Selfless Service *College Station, TX*
INSTRUCTOR OF RECORD *Spring 2026*
- Undergraduate Course
- Lead guiding structured discussions and scholarly reflection on core readings and contemporary issues related to core values of Respect, Excellence, and Leadership

HONR 101 Honors Seminar in Respect, Excellence, and Leadership *College Station, TX*
INSTRUCTOR OF RECORD *Fall 2025*
- Undergraduate Course
- Lead guiding structured discussions and scholarly reflection on core readings and contemporary issues related to core values of Respect, Excellence, and Leadership

ECEN 303 Random Signals and Systems *College Station, TX*
INSTRUCTOR OF RECORD *Spring 2025*
- Undergraduate Course
- Provided students with coding assignments to implement theory into practice

ECEN 758 Data Mining and Analysis *College Station, TX*
INSTRUCTOR OF RECORD *Fall 2023, Fall 2024, Fall 2025*
- Graduate Course
- Hosted guest lectures from industry and national laboratories
- Offered as distance learning course in Fall 2024 (100 students in person with 10 online) and 2025 (65 students in person with 20 online)

Courses Taught Online Only

W.E.B. Du Bois Scholars Institute's Accelerated Learning Academy STEM Program
Instructor, AI and Computer Science (Virtual)

Princeton, NJ
March 2023 - May 2023, July 2025

- Prepared, initiated, and conducted online interactive Saturday workshops and lecture/open discussion based Sunday workshops on societal impacts within AI

Teaching Opportunities at University of Florida

EEL 5840/4930 Fundamentals of Machine Learning
Supervised Teacher

Gainesville, FL
Fall 2019

- Updated lecture notes and held weekly office hours
- Assisted in the preparation and grading of assignments and exams

Successful Transition and Enhanced Preparation for Undergraduates Program (Year II)
Course Co-Instructor, Introduction to Coding and Programming

Gainesville, FL
Summer 2019

- Led lectures to introduce core concepts for programming and Python to incoming engineering students
- Developed course syllabus, assignments, and project

Successful Transition and Enhanced Preparation for Undergraduates Program (Year I)
Course Co-Instructor, Machine Learning

Gainesville, FL
Summer 2018

- Led lectures to introduce machine learning and remote sensing to incoming engineering students
- Coordinated activities of class with program director and trained teaching assistants in preparation of course

Teaching Opportunities at University of Alabama at Birmingham

University of Alabama at Birmingham Vulcan Material Academic Success Center
Supplemental Instruction Leader, Calculus based Physics II

Birmingham, AL
Spring 2015

- Created an intensive learning environment for undergraduate students by hosting two weekly SI sessions (75 minutes per session)
- Constructed weekly worksheets and mock exams to prepare students for class

University of Alabama at Birmingham Vulcan Material Academic Success Center
Tutor, Electrical circuits, Mathematics, and Physics

Birmingham, AL
Aug 2014 - April 2017

- Assisted students in difficult subjects by working through conceptual and quantitative problems
- Led approximately 10 one-hour sessions per week with undergraduates
- Participated in training sessions to become an Associate in the Tutoring Profession (ATP) certified Associate Tutor

Advising and Mentoring

Advising and Mentoring at Texas A&M University

Ph.D. Students: 5 current

2025-pres **Ibarra, A.**, Graduate Research Assistant, Texas A&M University
Notes: supported through *Anomaly Detection in Synthetic Aperture Radar Imagery* and supported through startup funds, secured internships with Georgia Tech Research Institute and Los Alamos National Laboratory, also funded with GEM Fellowship

2025-pres **Salehi, S.**, Graduate Research Assistant, Texas A&M University
Notes: supported through *3D Scene Understanding Capabilities for Remote Sensing Imagery Analysis* and supported through startup funds, passed Qualifying Exam

2025-pres **Orvati Nia, F.**, Graduate Research Assistant, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*, passed Qualifying Exam

2024-pres **Mohammadi, A.**, Graduate Research Assistant, Texas A&M University
Notes: supported through *Histogram Layers for Improved Target Classification*, passed Qualifying and Preliminary Exams, advanced to candidacy

2023-pres **Ritu, J.**, Graduate Research Assistant, Texas A&M University
Notes: supported through *Histogram Layers for Improved Target Classification*, passed Qualifying and Preliminary Exams, advanced to candidacy

Master's Students: 8 Current, 11 Former (7 Graduated)

2026-pres **Rajiv, A.**, Directed Studies, Texas A&M University

2026-pres **Shekar, D.**, Graduate Student Technician, Texas A&M University
Notes: supported through startup funds

2026-pres **Aenugula, T.**, Graduate Student Technician, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*

2025-pres **Oladepo, N.**, Graduate Student Technician, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*

2025-pres **Biradar, A.**, Graduate Student Technician, Texas A&M University
Notes: supported through startup funds and *Anomaly Detection in Synthetic Aperture Radar Imagery*

2025-pres **Gauderman, J.**, Graduate Student Technician, Texas A&M University
Notes: supported through startup funds, secured internship with CNH Raven

2024-pres **Garcia, L.**, Graduate Research Assistant, Texas A&M University
Notes: supported through startup funds and *Realizing the Full Potential of Respiratory Health Evaluation by Leveraging Machine Learning Models*, also funded with GEM Fellowship

2024-pres **Al Kharsa, S.**, Master's Thesis, Texas A&M University
Notes: Software Engineer at nVenue

2024-2025 **Agashe, A.**, Graduate Student Technician and Teaching Assistant, Texas A&M University
Notes: supported through *Histogram Layers for Improved Target Classification* Thesis: "Learnable Adaptive Cosine Estimator for Self-Supervised Environmental Sound Classification", **Graduated Fall 2025**

2024-2025 **Ibarra, A.**, Graduate Student Technician and Research Assistant, Texas A&M University
Notes: supported through *Anomaly Detection in Synthetic Aperture Radar Imagery*, secured internship with Oceaneering International Inc., continued as PhD student at TAMU, **Graduated Spring 2025**

2024-2025 **Thorwe, P.**, Graduate Research Assistant, Texas A&M University
Notes: supported through startup funds

2024-2025 **Khater, O.**, Graduate Student Technician, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*

2024 **Chandar, S.**, Graduate Student Technician, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*, Position as Design Verification Engineer at MIPS, **Graduated Fall 2024**

2024 **Nair, S.**, Graduate Student Technician, Texas A&M University
Notes: supported through start up funds, Position as Machine Learning Engineer at RS Americas, **Graduated Fall 2024**

2024 **Naikare, P.**, Graduate Student Technician, Texas A&M University
Notes: supported through start up funds

2024 **Kelhe, T.**, Graduate Student Technician, Texas A&M University
Notes: supported through *Histogram Layers for Improved Target Classification*

2024 **Vysyaraju, U.**, Graduate Student Technician, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*

2023-2024 **Mohan, A.,** Graduate Student Technician, Texas A&M University
Notes: supported through start up funds and *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*, Position as Visiting Fellow at Duke University, Thesis: "Lacunarity Pooling Layer for Image Texture Analysis", **Graduated Fall 2024**

2023-2024 **Zambre, Y.,** Graduate Research Assistant, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*, Position as Software Automation Engineering at Google Vendor, Thesis: "Spatial Transformer Network You Only Look Once (STN-YOLO) for Improved Object Detection", **Graduated Spring 2024**

Undergraduate Students: 1 Current, 17 Former

2025-pres **Adeleke, B.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through startup funds and *Realizing the Full Potential of Respiratory Health Evaluation by Leveraging Machine Learning Models*

2024-2025 **Morse, M.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*

2024-2025 **Chauvin, L.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through *Anomaly Detection in Synthetic Aperture Radar Imagery*, secured internship with Lawrence Livermore National Laboratory

2025 **Kassaye, A.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*

2025 **Abdur-Razzaaq, N.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through start up funds and *3D Scene Understanding Capabilities for Remote Sensing Imagery Analysis*

2025 **Edewor, G.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through *Anomaly Detection in Synthetic Aperture Radar Imagery*

2024-2025 **Jameson, C.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through start up funds and *3D Scene Understanding Capabilities for Remote Sensing Imagery Analysis*

2024-2025 **Biradar, A.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through startup funds and *Realizing the Full Potential of Respiratory Health Evaluation by Leveraging Machine Learning Models*, continued as Master's student at TAMU

2024-2025 **Gauderman, J.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through *Realizing the Full Potential of Respiratory Health Evaluation by Leveraging Machine Learning Models*, secured internship with Sandia National Laboratories, continued as Master's student at TAMU

2024-2025 **McNatt, G.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through *Anomaly Detection in Synthetic Aperture Radar Imagery*

2024-2025 **McClary, J.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through *Histogram Layers for Improved Target Classification*

2024 **Gupta, S.,** Undergraduate Student Technician, Texas A&M University
Notes: supported through *Anomaly Detection in Synthetic Aperture Radar Imagery*

2024 **Ezewudo, K.,** Undergraduate Student, Texas A&M University
Notes: supervised research, participant in TAMU Undergraduate Summer Research REU Program (S-REU)

2023-2024 **Champagne, J.,** Undergraduate Student, Texas A&M University
Notes: supervised Honors Research, secured internship with Sandia National Laboratories

2023-2024	**Rajkitkul, E.**, Undergraduate Student Technician, Texas A&M University

2023-2024   **Rajkitkul, E.**, Undergraduate Student Technician, Texas A&M University
Notes: supported through *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*

2023-2024   **Al Kharsa, S.**, Undergraduate Student Technician, Texas A&M University
Notes: supported through start up funds and *Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping*, continued as Master's student at TAMU

2023   **Masabarakiza, I.**, Undergraduate Student Technician, Texas A&M University
Notes: supported through *Histogram Layers for Improved Target Classification*

2022-2023   **Barnes, E.**, Undergraduate Research Assistant, Texas A&M University
Notes: supported through *Histogram Layers for Improved Target Classification*

Mentoring at University of Florida

2021-22   **Rupireddy, V.**, UAB Young Alumni Mentee (Master's student), University of Alabama Birmingham

2021-22   **Sajja, S.**, UAB Young Alumni Mentee (Master's student), University of Alabama Birmingham

2020-21   **Wilkerson, P.**, UAB Young Alumni Mentee, University of Alabama Birmingham,
Achievements: internship for Spring 2021 with TriAltus Bioscience, graduated Spring 2021, hired as Suture Manufacturing Engineer at Arthrex

2019-21   **Walker, S.**, Undergraduate Research Assistant, University of Florida,
Achievements: Selected for University Research Scholar Program, published two manuscripts, graduated Spring 2021, accepted into UC San Diego as a Master's student studying Computer Science with a focus in AI

2019-20   **Zhao, H.**, Undergraduate Research Assistant, University of Florida,
Achievements: Graduated Fall 2020, hired as Software Engineer at Capital One

2019   **Tran, T.**, Graduate Research Assistant (Master's student), University of Florida,
Achievements: Graduated Fall 2020, hired as Program Manager at Microsoft

2019   **Kim, T.**, Student Science Training Program (High School student), University of Florida,
Achievements: won Best Paper Award, accepted into Columbia University Fu Foundation School of Engineering and Applied Science

Leadership, Outreach, & Professional Development

Professional Service and Outreach

Former Students and External Relations Committee, TAMU ECE Department   *College Station, TX*
Member   *Sept 2025 - Present*
- Contribute to departmental alumni and external relations strategy through outreach, engagement initiatives, and relationship building with ECE graduates
- Led coordination of alumni panel for Alumni Collaboration Team (ACT) event

Faculty Advisory Council, TAMU ECE Department   *College Station, TX*
Member   *Sept 2024 - Present*
- Represent faculty perspectives and advise the department head on matters including faculty mentoring, professional development, and graduate recruitment

AI, ChatGPT, and Teaching (ACT) Task Force, College of Engineering   *College Station, TX*
Member   *Jan 2023 - March 2023*
- Focus on topics at the intersection of AI and higher education, with a particular emphasis on ChatGPT
- Raise awareness among faculty members of AI tools and their capabilities
- Provide tactical advice on how to design assessment mechanisms that take advantage of AI

Envisioning 2050 in the Southeast: AI-Driven Innovations in Agriculture   *Auburn, AL*
Poster Judge   *March 2022*
- Evaluated posters for the General and Cotton Incorporated Innovation Challenge sections
- Completed rubrics for each poster and provided feedback to participants

University of Florida Aspire STEMM Equity Achievement Change Executive Committee *Gainesville, FL*

GRADUATE STUDENT REPRESENTATIVE *July 2021 - April 2022*

- Assist with American Association for the Advancement of Science (AAAS) and the Association of Public and Land-grant Universities (APLU) effort to effect sustainable change to promote diversity, equity, and inclusion in science, technology, engineering, mathematics, and medicine (STEMM)
- Review project outputs such as surveys, audacious goals, and action plan
- Meet monthly to give feedback and perspective on ongoing work within the larger institutional context

IEEE Geoscience and Remote Sensing Society (GRSS) Boston Hackathon (Virtual) *Boston, MA*

JUDGE *July 2021 - August 2021*

- Documented scores and maintained communication with the IEEE GRSS Boston Chair
- Used expertise to provide constructive feedback and assessment of contest entries

University of Florida Bouchet Spring Symposium *Gainesville, FL*

CO-ORGANIZER *March 2021 - April 2021*

- Coordinated with team to organize theme and events for symposium
- Served on "Beyond a Scholar" panel to share research experience and journey
- Co-hosted research presentation session (Lightning Talks)

University of Alabama at Birmingham School of Engineering Young Alumni Mentorship Program *Birmingham, AL*

MENTOR *July 2020 - April 2022*

- Provided academic guidance, career advice and personal development to current UAB student(s)
- Maintained regular contact with mentee through two monthly, virtual meetings
- Documented interactions with mentee and provide feedback to Program Manager and Alumni Advisory Board

University of Florida Board of Education Summer Fellowship Program *Gainesville, FL*

PEER ADVISOR *July 2020 - Aug 2020*

- Served as mentor for incoming underrepresented graduate students
- Assisted in planning and leading program events with other Peer Advisors and Program Coordinator
- Led group of seven engineering students and documented their progress through weekly reports

University of Florida Student Science Training Program (SSTP) *Gainesville, FL*

MENTOR *June 2019 - July 2019*

- Developed research project for high school student participant
- Assisted and provided feedback for program deliverables (paper, poster, and presentation)
- Served as primary mentor for the participant which culminated in the student earning the SSTP Best Paper Award

McKnight Doctoral Mid-Year Research and Writing Conference *Tampa, FL*

COMPUTER SCIENCE PANEL CHAIR *June 2018 - Feb 2019*

- Recruited panelists to present their research during discipline-specific session
- Moderated discussion and feedback on presentations from expert discussants
- Collected and documented feedback on the session from panelists and audience to share with conference team

LEADERSHIP EXPERIENCE

African/African American/African Diaspora in Electrical and Computer Engineering *Gainesville, FL*

PRESIDENT *Aug 2020 - April 2022*

- Led organization that provides community and support for Black undergraduate and graduate students in the department
- Facilitated monthly executive board meetings and allocate duties among officers

Machine Learning and Sensing Laboratory *Gainesville, FL*

SOCIAL MEDIA MANAGER *Aug 2020 - Aug 2021*

- Maintained and created content for the lab's Twitter and Facebook accounts to raise awareness of research and outreach activities

Machine Learning and Sensing Laboratory *Gainesville, FL*

OUTREACH COORDINATOR *Aug 2019 - July 2020*

- Created and organized opportunities to share the lab's research with others in the community (i.e., laboratory tours)

Electrical and Computer Engineering Graduate Student Organization   *Gainesville, FL*
SECRETARY   *April 2019 - April 2020*
- Recorded meeting notes and oversaw calendar of events
- Maintained listserv and reserved spaces for all activities of the organization

Gator McKnights Unite   *Gainesville, FL*
PRESIDENT   *April 2018 - April 2019*
- Led graduate student organization responsible for providing personal and professional development opportunities for African American and Latinx graduate students
- Organized monthly executive board meetings and regulate the general functioning of the executive board and organization

Electrical and Computer Engineering Graduate Student Organization   *Gainesville, FL*
FACULTY AND STAFF LIASON   *Jan 2018 - April 2018*
- Chaired social events to promote community in the ECE department (*e.g.*, faculty/staff mixer)

Machine Learning and Sensing Laboratory   *Gainesville, FL*
DEPARTMENTAL REPRESENTATIVE   *Aug 2017 - June 2019*
- Served as liaison between the department and lab by actively participating in departmental events

University of Alabama at Birmingham Institute of Electrical and Electronics Engineers   *Birmingham, AL*
VICE CHAIR   *June 2016 - April 2017*
- Assisted the Chapter Chair in following up on assigned committee responsibilities
- Performed all functions of the Chapter Chair in their absence or upon request

University of Alabama at Birmingham School of Engineering   *Birmingham, AL*
LEADERSHIP SCHOLAR   *June 2016 - April 2017*
- Led tours of the engineering building for prospective students
- Actively participated in several events throughout the year such as recruitment, award ceremonies, and meetings

University of Alabama at Birmingham Multicultural Scholars Program   *Birmingham, AL*
PRESIDENT   *Aug 2014 - April 2017*
- Coordinated activities of the executive committee, which included oversight of the duties of executive committee members
- Served as the liaison between the executive body and program director
- Assisted students in identifying funding opportunities as co-Chair of the scholarship committee

University of Alabama at Birmingham Blazer Male Excellence Network   *Birmingham, AL*
MENTOR   *Aug 2014 - April 2017*
- Served as a role model, counselor, and motivator for incoming freshmen Black male students
- Collaborated with other mentors for social and volunteer activities of organization

PROFESSIONAL DEVELOPMENT AND WORKSHOPS

2022-23   **TAMU ADVANCE Scholars Program**, selected for program for early-career tenure-track faculty to develop a network that promotes work-life balance through support and guidance from peers, mentors, colleagues, and higher education leaders.

2021   **SEC Emerging Scholars Program**, selected for virtual workshop to provide professional development and networking opportunities for current doctoral students and a limited number of postdoctoral researchers considering careers in higher education.

2021   **Rochester Institute of Technology (RIT) Future Faculty Career Exploration Program**, selected to participate in rigorous three-day virtual program designed for African American, Latino American, and Native American scholars and artists to experience a "behind the scenes" glimpse into life as a faculty member at RIT.

2021   **Notre Dame Future Faculty Workshop**, invited to on-campus program to share research through poster presentation and engaged in panel discussions regarding academic hiring process.

2021   **Auburn University Preparing Future Faculty Workshop**, participated in interactive, virtual sessions to provided more insight into seeking academic positions.

2021	**EGS6056 Engineering Supervised Teaching**, supplemented graduate students teaching activities to learn practical skills to become effective instructors.
2021	**EGS6933 Engineering Faculty Development**, detailed preparation for careers in academia through exploration and experiential learning.
2020	**NextProf Nexus Workshop**, provided participants the opportunity to explore and prepare for a faculty position. The program is part of a nationwide effort to strengthen and diversify the next generation of academic leaders in engineering.
2020	**McKnight Webinar Series: Best Practices for Obtaining Faculty/Postdoc Positions**, presented comprehensive process of applying for faculty and postdoctoral vacancies as well as provide feedback on application materials.
2019-20	**Assistant Grant Writer**, responsible for editing, reviewing, and organizing documents for National Science Foundation AI Institute proposal (not awarded)

CONFERENCE AND JOURNAL PEER REVIEW

Data Science in Science
Artificial Intelligence in Agriculture Conference
IEEE Transactions on Circuits and Systems for Video Technology
Council for Agricultural Science and Technology
Engineering Applications of Artificial Intelligence
IEEE/CVF Computer Vision and Pattern Recognition Vision in Agriculture Workshop
IEEE Transactions on Fuzzy Systems
Computers and Electronics in Agriculture
IEEE Transactions on Artificial Intelligence
IEEE Journal of Oceanic Engineering
The Plant Phenome Journal
IEEE Geoscience and Remote Sensing Letters

PROFESSIONAL MEMBERSHIPS

2018-Pres.	Association for Computing Machinery (ACM)
2017-Pres.	National Society of Black Engineers (NSBE)
2017-Pres.	Order of the Engineer
2016-Pres.	Institute of Electrical and Electronics Engineers (IEEE)
2015-Pres.	National Society of Leadership and Success (NSLS)