Damian Valles, Ph.D.

Associate Professor
Ingram School of Engineering
Texas State University

dvalles@txstate.edu
http://damian.wp.txstate.edu/
Phone: +1 (512) 245-5611

Education

University of Texas at El Paso (UTEP)
Ph.D., Electrical and Computer Engineering, 2011.
Title: "Development of Load Balancing Algorithm Based on Analysis of Multi-core Architecture on a Beowulf Cluster"
Advisors: David Williams and Patricia Nava.

University of Texas at El Paso (UTEP)
M.S., Computer Engineering, 2004.
Honors: Eta Kappa Nu

University of Texas at El Paso (UTEP)
B.S., Electrical Engineering, 2002.

Employment

2024 - Present, **Associate Professor**
Ingram School of Engineering, Texas State University
Electrical and Computer Engineering Program
Director of the High-Performance Engineering (HiPE) Group

2025 - Present, **Faculty Fellow**
Center for Analytics and Data Science (CADS), Texas State University
Executive Committee - ExpandAI Computing Lead.

2023 - Present, **Faculty Fellow**
Translational Health Research Center, Texas State University
The Community Health and Economic Resilience Research Center of Excellence (CHERR)

2017 - 2024, **Assistant Professor**
Ingram School of Engineering, Texas State University
Electrical and Computer Engineering Program

2017, **Part-Time Lecturer**
Computer Science, Wake Forest University
Teaching low-level core curriculum courses for the department

2014 - 2017, **HPC System Administrator**
Information Systems, Wake Forest University
System administrative support for the HPC cluster for the Reynolda campus and Medical School

2012 - 2013, **HPC Application Scientist**
Computer Science, Montana Tech of the Univ. of Montana (MTECH)
System administrative support for the HPC cluster, lecturer, and HPC performance research

2011-2012, **Research Engineer/Lecturer**
Electrical and Computer Engineering, UTEP
Research in GPU HPC Performance and teaching in the ECE Dept.

2007 - 2010, **PC/Linux System Administrator**
Electrical and Computer Engineering, UTEP
Management of licensing servers for all applications, email servers, network file system management, Apache backups, user accounts and print quota management

2006 - 2011, **Asst. Instructor/Teaching Asst./Research Asst.**
Electrical and Computer Engineering, UTEP
Developed syllabus, course website, and overall course structure, teach course material, labs, administration of all grades, and ABET reports.

2002 - 2006, **IT Engineer and Customer Service**
Inter Tech Reps, Inc.
Provided customer service and information for clients receiving Surface Mount Technology (SMT) equipment

2001, **Engineering Internship**
Measurement Division, El Paso Corporation (Now: Kinder Morgan)
Repaired and maintained electrical gas meters (EGM), generated EGM schematics, turbine repair, and re-calibration

Teaching

Electrical and Computer Engineering, Texas State University
Instructor, Embedded & Real-Time Computing, 2018
Instructor, Solid State Devices, 2018-2019
Instructor, CAE Simulations on HPC Systems, 2019, 2022
Instructor, Electronics I, 2019-2020
Instructor, ML for Engineering Applications, 2019-2023, 2025
Instructor, Intro. to ML for Engineering Applications, 2020-2023, 2025
Instructor, Microprocessors, 2020
Instructor, Digital Logic, 2021-2022, 2024-2025]
Instructor, Advanced Computer Architecture Arth., 2021
Instructor, Signals and Systems, 2022

Instructor, Digital Image Processing, 2023, 2025, [*Spring 2026*]
Instructor, Numerical and Scientific Data Analysis Using Python, 2023
Instructor, AI & Machine Learning for Engineers, 2025
Instructor, Advanced Digital System Design, [*Spring 2026*]

Computer Science, Wake Forest University
Instructor, Introduction to Computer Science, 2017
Collaborator, Independent Studies: HPC Hardware Analysis II, 2017
Co-Instructor, Special Topics: Algorithmic Techniques for Scalable Many-core Computing, 2016
Collaborator, Independent Studies: HPC Hardware Analysis I, 2016

Biology, Wake Forest University
Guest Lecturer, Biostatistics and Modeling in R, 2014

Computer Science, Montana Tech of Univ. of Montana (MTECH)
Instructor, Intro to Embedded Systems, 2012-2013

Electrical and Computer Engineering, UTEP
Co-Instructor, Digital Systems Design II, 2012
Instructor, Microprocessors Systems I, 2011
Asst. Instructor, Electronics II, 2011
Asst. Instructor, Microprocessors Systems I, 2012
Asst. Instructor, Signals and Systems, 2010
Teaching Asst., Electronics II, 2010
Asst. Instructor, Software Design II: Java, 2008-2009, 2011
Asst. Instructor, Digital System Design I, 2006, 2008-2009

Developed Courses

EE 4332: Introduction to Computer-Aided Engineering Simulation on HPC Systems
EE 5321: Computer-Aided Engineering Simulations on HPC Systems
EE 4331: Introduction to Machine Learning for Engineering Applications
EE 5331: Machine Learning for Engineering Applications.
EE 7331: AI & Machine Learning for Engineers.
EE 7301: Advanced Digital Logic Design.

Journal Papers

R. Sheley, P. U. Karkhanis, J. S. Tate, **D. V. Molina**, and M. Tehrani, "Tension–Tension Fatigue and Flammability Behavior of Fire-Resistant Carbon Fiber Composites for Fire Drone Applications," *SAMPE Journal*, vol. 61, no. 6, Nov. 2025, doi: 10.33599/sj.v61no6.04.

Shrestha D, **Valles D.** Reinforced NEAT Algorithms for Autonomous Rover Navigation in Multi-Room Dynamic Scenario. *Fire*. 2025; 8(2):41. https://doi.org/10.3390/fire8020041

Ishola A. A., **Valles D.** Enhancing Safety and Efficiency in Firefighting Operations via Deep Learning and Temperature Forecasting Modeling in Autonomous Units. *Sensors*. 2023; 23(10):4628. https://doi.org/10.3390/s23104628

Islam S. B., **Valles D.**, Hibbitts T. J., Ryberg W. A., Walkup D. K., Forstner M. R. J. Animal Species Recognition with Deep Convolutional Neural Networks from Ecological Camera Trap Images. *Animals*. 2023; 13(9):1526. doi: 10.3390/ani13091526

A. Sharotry, J. A. Jimenez, F. A. Méndez Mediavilla, D. Wierschem, R. M. Koldenhoven and **D. Valles**, "Manufacturing Operator Ergonomics: A Conceptual Digital Twin Approach to Detect Biomechanical Fatigue," in *IEEE Access*, doi: 10.1109/ACCESS.2022.3145984.

K. Thapa, S. McClellan, **D. Valles**. Supervised Machine Learning in Inter-Level, Ultra-Low Frequency Power Line Communications, *International Journal on Advances in Telecommunications*, ISSN: 1942-2601 vol. 14, no. 1 & 2, 2021, pp. 51:69, http://www.iariajournals.org/telecommunications/.

Saeed, F. S.; Bashit, A. A.; Viswanathan, V.; **Valles, D.** An Initial Machine Learning-Based Victim's Scream Detection Analysis for Burning Sites. *Appl. Sci.* 2021, 11, 8425. doi: 10.3390/app11188425

Brake, N. A., Sehin, O., Partain, J. W., **Valles, D.**, Marquez, A., Jimenez, J. A., Saltsman, G., and Davis, R. (2020, June), Cross-cultural Engineering Skill Development at an International Engineering Summer Boot Camp, *2020 ASEE Virtual Annual Conference* Content Access, doi: 10.18260/1-2–34357.

McClellan, S., **Valles, D.**, Koutitas, G. (2019). Dynamic Voltage Optimization Based on In-Band Sensors and Machine Learning. *Appl. Sci. 2019*, 9(14), 2902; doi: 10.3390/app9142902.

Valles, D., & McClellan, S. (2019). Using Machine Learning to Optimize Linux Networking. *Linux Journal, May 2019* (Issue 298), pp. 128-138.

US Patents

M. Resendiz and D. Valles, "Emotion portrayal database," U.S. Patent Application 2025/0118108 A1, Apr. 10, 2025.

Case Studies

E. Ellsworth, S. Rafiq, and **D. Valles**, "Saving lives while reducing first responder risks – with AI," Dell Technologies/NVIDIA/Texas State University, September 2023. [Online]. Available: https://www.workstationguides.com/briefs/texasstateuniversity/

D. Valles, "Democratizing access to data science boosts university's research," Dell Technologies/NVIDIA/Texas State University, September 2021. [Online]. Available: https://www.delltechnologies.com/asset/en-us/products/workstations/customer-stories-case-studies/texas-state-university-dell-dsw-case-study.pdf.

Abstract Proceedings

Alyssa Lopez, Victoria Garcia, **Damian Valles**, Merritt Drewery, 149 Developing and validating artificial intelligence models to predict cattle behavior, movement, and, emotion, *Journal of Animal Science*, Volume 103, Issue Supplement, 2 June 2025, Page 81, https://doi.org/10.1093/jas/skaf170.094

Conference Papers

A. Dutta, K. S. Islam, and **D. Valles**, "Edge-AI Framework for Air Quality Index (AQI) Forecasting with Quantized Deep Learning Models," *2026 IEEE 16th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, 2026. [Accepted]

M. S. M. I. Momin, **D. Valles** and E. Cho, "Forecasting Sea Water Level Using Deep Learning Models for Enhanced Coastal Flood Management and Mitigation," *2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, Yorktown Heights, NY, USA, 2025, pp. 0441-0449, doi: 10.1109/UEMCON67449.2025.11267760.

J. M. Esparragoza, A. Delgado, B. De la Cruz, and **D. Valles**, "Utilizing AI to Support Conversations in Individuals With ASD," *2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, Yorktown Heights, NY, USA, 2025, pp. 0459-0466, doi: 10.1109/UEMCON67449.2025.11267765.

A. Wagner, E. Aslan, D. Marimekala, and **D. Valles**, "Predicting Toxic Gas Levels in Structure Fires Using Machine Learning," *2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, Yorktown Heights, NY, USA, 2025, pp. 0683-0690, doi: 10.1109/UEMCON67449.2025.11267707.

M. Olsen, P. Sherpa, J. A. Pineda, J. W. Farrell and **D. Valles**, "The Use of Machine Learning to Model Player Readiness in Female Collegiate Volleyball Players," *2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference* (UEMCON), Yorktown Heights, NY, USA, 2025, pp. 0655-0660, doi: 10.1109/UEMCON67449.2025.11267642.

K. S. Ramarapu, M. Resendiz, M. M. De Carvalho and **D. Valles**, "Multi-Modal Emotion Temporal Environment Facial Classification to Help Children with ASD," *2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, Yorktown Heights, NY, USA, 2025, pp. 066-0666, doi: 10.1109/UEMCON67449.2025.11267562.

D. W. Bowler, A. M. Deinhardt, M. M. Carvalho, T. Liu, and **D. Valles**, "Simulation-Based Smart Home Architecture for Autism Support Using CSI-Based Movement Detection," *2025 IEEE 22nd International Conference on Mobile Ad-Hoc and Smart Systems (MASS)*, Chicago, IL, USA, 2025, pp. 705-710, doi: 10.1109/MASS66014.2025.00115.

Conference Papers

A. M. Deinhardt, D. W. Bowler, M. M. Carvalho, T. Liu, and **D. Valles**, "IoT for Autism: Analyzing Motor Behaviors in Virtual Environments Using Visual Data," *2025 IEEE 22nd International Conference on Mobile Ad-Hoc and Smart Systems (MASS)*, Chicago, IL, USA, 2025, pp. 628-633, doi: 10.1109/MASS66014.2025.00102.

B. U. Chowdhury, **D. Valles**, and MD R. E. Ul Shougat, "Low-Cost Sensor Fusion Framework for Organic Substance Classification and Quality Control Using Classification Methods," *2025 IEEE International Conference on Future Machine Learning and Data Science (FMLDS2025)*, Los Angeles, USA, 2025. [In Press]

E. B. Kaya, S. Aslan, **D. Valles**, S. Iscan, and A. Dutta, "Motor Fault Diagnosis Across Variable Power Using Deep Learning," *2025 IEEE International Conference on Computer, Information, and Telecommunication Systems (CITS)*, Colmar, France, 2025, pp. 1-7, doi: 10.1109/CITS65975.2025.11099471.

M. Schulze, S. Aslan, H. Stern, and **D. Valles**, "Image Restoration With Variational Dynamic Memory Net, U-Net And LNNS," *2025 IEEE International Conference on Computer, Information, and Telecommunication Systems (CITS)*, Colmar, France, 2025, pp. 1-8, doi: 10.1109/CITS65975.2025.11099192.

P. Deb, S. Aslan, and **D. Valles**, "FPGA-based Matrix Multiplication Accelerator," *2025 IEEE International Conference on Computer, Information, and Telecommunication Systems (CITS)*, Colmar, France, 2025, pp. 1-6, doi: 10.1109/CITS65975.2025.1109918.

K. Talley, K. Muci, **D. Valles**, F. Guitierrez, and J. Tate, "Sowing the SEEDs (Scholars of Excellence in Engineering Design): Starting the SEED NSF S-STEM Program at Texas State University," *2025 ASEE Annual Conference & Exposition,*, Montreal, Quebec, Canada, 2025, doi: 10.18260/1-2–55827.

J. B. Li, J. W. Farrell and **D. Valles**, "Data Augmentation for Classifying Multiple Sclerosis Severity through Inertial Measurement Unit-Based Gait Analysis," *2024 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Lisbon, Portugal, 2024, pp. 6443-6450, doi: 10.1109/BIBM62325.2024.10822219.

A. Yang, E. R. Smith, **D. Valles**, S. Aslan, "HoloLens AR-Based Handwashing Tool for Children with Autism Spectrum Disorder," *2024 IEEE Future Networks World Forum (FNWF)*, Dubai, United Arab Emirates, 2024, pp. 952-958, doi: 10.1109/FNWF63303.2024.11028805.

A. A. Malik, A. M. Zaki, N. C. Tran, I. Liang, T. Liu, and **D. Valles**, "Virtual Reality on Assessing the Motor Skills of Individuals With Autism Spectrum Disorder," *2024 IEEE 15th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, Yorktown Heights, NY, USA, 2024, pp. 548-555, doi: 10.1109/UEMCON62879.2024.10754723.

Conference Papers

H. Nonaka and **D. Valles**, "Fully Auto-Regressive Multi-Modal Large Language Model for Contextual Emotion Recognition," *2024 IEEE 15th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, Yorktown Heights, NY, USA, 2024, pp. 0291-0299, doi: 10.1109/UEMCON62879.2024.10754673.

M. Nachega, S. A. Yahaya, I. Wallace, T. Liu, **D. Valles**, R. Koldenhoven, and Y. Li, "Enhancing Early Diagnosis of Autism With Machine Learning Algorithms Using Postural Control Features," *2024 IEEE 15th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, Yorktown Heights, NY, USA, 2024, pp. 593-598, doi: 10.1109/UEMCON62879.2024.10754700.

S. A. Khan and **D. Valles**, "Deepfake Detection Using Transfer Learning," *2024 IEEE 15th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, Yorktown Heights, NY, USA, 2024, pp. 556-562, doi: 10.1109/UEMCON62879.2024.10754706.

Little, Alexander, Yanlin Xiang, Haowei Yang, Zhijie Sasha Dong, and **Damian Valles**. "Pandemic Wave-based Influence Analysis of Social Media Information." *In 2024 IISE Annual Conference and Expo. IISE*, 2024.

E. R. Smith, A. T. Grahm, J. E. McCawley, and **D. Valles**, "Ultrasonic Frequency Anomaly Localization with Machine and Deep Learning," *2024 IEEE World AI IoT Congress (AIIoT)*, Seattle, WA, USA, 2024, pp. 29-37, doi: 10.1109/AIIoT61789.2024.10579011.

F. Farzana and **D. Valles**, "Enhancing Pedestrian Safety: Predicting Movements with Deep Learning Models," *2024 IEEE World AI IoT Congress (AIIoT)*, Seattle, WA, USA, 2024, pp. 8-15, doi: 10.1109/AIIoT61789.2024.10579012.

S. A. Rafiq, E. S. Ellsworth, **D. Valles**, et al., "Design of Autonomous Rover for Firefighter Rescue: Integrating Deep Learning with ROS2," *2024 IEEE World AI IoT Congress (AIIoT)*, Seattle, WA, USA, 2024, pp. 421-428, doi: 10.1109/AIIoT61789.2024.10578950.

S. Hossain and **D. Valles**, "Traffic Safety through Machine Learning: A Study of Crash Severity Factors," *2024 IEEE World AI IoT Congress (AIIoT)*, Seattle, WA, USA, 2024, pp. 0016-0023, doi: 10.1109/AIIoT61789.2024.10579015.

G. Jackson and **D. Valles**, "Dataset Enlargement with Generative Adversarial Neural Networks," *2024 IEEE World AI IoT Congress (AIIoT)*, Seattle, WA, USA, 2024, pp. 0045-0051, doi: 10.1109/AIIoT61789.2024.10578969.

D. Shrestha and **D. Valles**, "Evolving Autonomous Navigation: A NEAT Approach for Firefighting Rover Operations in Dynamic Environments," *2024 IEEE International Conference on Electro Information Technology (eIT)*, Eau Claire, WI, USA, 2024, pp. 247-255, doi: 10.1109/eIT60633.2024.10609942.

Conference Papers

Tran, N. C., & Liang, I. X., & Liu, T. A. U. A., & **Valles, D.** (2024, June), Board 300: Impact of Virtual Reality on Motor-Skill Performance in Children with Autism Spectrum Disorder Paper presented at *2024 ASEE Annual Conference & Exposition*, Portland, Oregon. https://peer.asee.org/46878

E. Smith, R. Koldenhoven, **D. Valles**, et al.,"Development of an Augmented Reality Handwashing Tool for Children With Autism Spectrum Disorder," *2024 14th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2024, pp. 0249-0256, doi: 10.1109/CCWC60891.2024.10427963.

N. Pawar, S. Gujar, H. Dhonde, and **D. Valles**, "Early Prediction of Characteristic Compressive Strength of Concrete Based on Mix Proportions Using Modified Dimensional Analysis," *2024 14th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2024, pp. 0043-0052, doi: 10.1109/CCWC60891.2024.10427830.

C. J. Woodman, A. Ridlon, C. J. Evelyn, A. Martinez and **D. Valles**, "Integrating machine learning and infrared smart cameras into critically endangered bird production," *2023 IEEE 14th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, New York, NY, USA, 2023, pp. 0523-0527, doi: 10.1109/UEMCON59035.2023.10316121.

D. Valles et al., "Data Collection and Real-Time Facial Emotion Recognition in iOS Apps With CNN-Based Models," *2023 IEEE World AI IoT Congress (AIIoT)*, Seattle, WA, USA, 2023, pp. 0669-0677, doi: 10.1109/AIIoT58121.2023.10174520.

M. Nooruddin, and **D. Valles**, "An Advanced IoT Framework for Long Range Connectivity and Secure Data Transmission Leveraging LoRa and ASCON Encryption," *2023 IEEE World AI IoT Congress (AIIoT)*, Seattle, WA, USA, 2023, pp. 0583-0589, doi: 10.1109/AIIoT58121.2023.10174401 [Best Paper].

E. Alonso, D. Alonso, and **D. Valles**, "Classification Challenges and Analysis of Traffic Patterns for Highly Congested Areas in Central Texas," *2023 13th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2023, pp. 0382-0388, doi: 10.1109/CCWC57344.2023.10099316.

D. Grimes and **D. Valles**, "Performance Analysis of TensorFlow2 Object Detection API Models for Engineering Site Surveillance Applications," *2023 13th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2023, pp. 0547-0552, doi: 10.1109/CCWC57344.2023.10099270.

S. Saha and **D. Valles**, "Forecast Analysis of Visibility for Airport Operations With Deep Learning Techniques," *2023 13th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2023, pp. 553-558, doi: 10.1109/CCWC57344.2023.10099100.

Conference Papers

S. Somvanshi, E. Zhu, K. Ikehata, **D. Valles**, and T. Jin, "Wind Speed Forecasting for Designing Sustainable Wastewater Treatment Plants," *2023 13th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2023, pp. 0844-0850, doi: 10.1109/CCWC57344.2023.10099313.

S. N. B. Tushar, S. Sarker, W. Stapleton, and **D. Valles**, "Peanut maturity classification by features extracted from selected hyperspectral components," *2022 IEEE Global Humanitarian Technology Conference (GHTC)*, Santa Clara, CA, USA, 2022, pp. 176-183, doi: 10.1109/GHTC55712.2022.9911049.

M. Rahman, A. Haque, D. Pujara, J. Mayorga, H. Kang, and **D. Valles**, "Automation of Luminescence Quantitation for High-Throughput Plant Phenotyping Using Image Processing and U-Net Segmentation," *26th International Conference on Image Pro-, cessing Computer Vision, & Pattern Recognition (IPCV'22)*.

A. Ishola, and **D. Valles**, "Using Machine Learning and Regression Analysis to Classify and Predict Danger Levels in Burning Sites," *2022 IEEE World AI IoT Congress* (AIIoT), 2022, pp. 453-459, doi: 10.1109/AIIoT54504.2022.9817232.

M. S. Sefat, M. Shahjahan, M. Rahman, and **D. Valles**, "Ensemble Training With Classifiers Selection Mechanism," *2021 IEEE 12th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, 2021, pp. 0131-0136, doi: 10.1109/UEMCON53757.2021.9666676 [Best Paper].

T. Paveglio and **D. Valles**, "Second Sight: MobileNet v1 Integration in Dynamic and Time Critical Scenarios," *12th IEEE Annual Information Technology, Electronics & Mobile Communication Conference (IEMCON'21)*, 2021, pp. 0378-0384, doi: 10.1109/IEMCON53756.2021.9623152.

H. Alam and **D. Valles**, "Debris Object Detection Caused by Vehicle Accidents Using UAV and Deep Learning Techniques," *12th IEEE Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON'21)*, 2021, pp. 1034-1039, doi: 10.1109/IEMCON53756.2021.9623110.

D. Valles and R. Matin, "An Audio Processing with Ensemble Learning Approach for Speech-Emotion Recognition for Children With ASD," *2021 IEEE World AI IoT Congress 2021 (AIIoT)*, 2021, pp. 0055-0061, doi: 10.1109/AIIoT52608.2021.9454174.

U. K. K. Pillai and **D. Valles**, "An Initial Deep CNN Design Approach for Identification of Vehicle Color and Type for Amber and Silver Alerts," *2021 11th Annual Computing and Communication Workshop and Conference (CCWC)*, NV, USA, 2021, pp. 0903-0908, doi: 10.1109/CCWC51732.2021.9375917.

M. Hernandez, **D. Valles**, et al., "An Initial Julia Simulation Approach to Material Handling Operations from Motion Captured Data," *2020 IEEE Information Technology, Electronics, and Mobile Communication Conference (IEMCON)*. Vancouver, BC, 2020, pp. 0718-0722, doi: 10.1109/IEMCON51383.2020.9284829.

Conference Papers

S. Islam, **D. Valles**, "Performance Analysis and Evaluation of LSTM and GRU Architectures for Houston Toad and Crawfish Frog Call Detection," *2020 IEEE Ubiquitous Computing, Electronics, and Mobile Communication Conference (UEMCON).* New York City, NY, 2020, pp. 0106-0111, doi: 10.1109/UEMCON51285.2020.9298170.

P. Sharma, **D. Valles**, "Backbone Neural Network Design of Single Shot Detector from RGB-D Images for Object Detection," *2020 IEEE Ubiquitous Computing, Electronics, and Mobile Communication Conference (UEMCON).* New York City, NY, 2020, pp. 0112-0117, doi: 10.1109/UEMCON51285.2020.9298175.

T. Caroll, G. Hernandez, G. Koutitas, D. Wierschem, F. Mendez, **D. Valles**, S. Aslan, R. Koldenhoven, and J. Jimenez, "Comparison of Inverse Kinematics Algorithms for Digital Twin Industry 4.0 Applications," *2020 IEEE International Conference on Systems, Man, and Cybernetics (IEEE-SMC 2020)*, Toronto, ON, 2020, pp. 3319-3326, doi: 10.1109/SMC42975.2020.9283253.

U. K. K. Pillai, **D. Valles**, "Vehicle Type and Color Classification and Detection for Amber and Silver Alert Emergencies Using Machine Learning," *2020 IEEE International IoT, Electronics, and Mechatronics Conference (IEMTRONICS).* Vancouver, BC, Canada, 2020, pp. 1-5, doi:10.1109/IEMTRONICS51293.2020.9216368.

A. Sharotry, J. Jimenez, D. Wierschem, F. Mendez, G. Koutitas, **D. Valles**, S. Aslan, R.M. Koldenhoven, "A Digital Twin Framework for Real-time Analysis and Feedback of Repetitive Work in Manual Material Handling Industry," *2020 Winter Simulation Conference (WSC)*, Orlando, FL, USA, 2020, pp. 2637-2648, doi: 10.1109/WSC48552.2020.9384043.

S. B. Islam, **D. Valles**, and M. Forstner, "Identification of Wild Species in Texas from Camera-trap Images using Deep Neural Network for Conservation Monitoring," *2020 IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC).* Orem, UT, USA, 2020, pp. 1-6, doi: 10.1109/IETC47856.2020.9249141.

G. Hernandez, **D. Valles**, D. Wierschem, R.M. Koldenhoven, G. Koutitas, F. Mendez, S. Aslan, J. Jimenez"Machine Learning Techniques for Motion Analysis of Fatigue from Manual Material Handling Operations Using 3D Motion Capture Data," *2020 10th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2020, pp. 0300-0305, doi:10.1109/CCWC47524.2020.9031222

S. B. Islam, **D. Valles**, "Identification of Wild Species in Texas from Camera-trap Images Using Deep Neural Network for Conservation Monitoring," *2020 10th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2020, pp. 0537-0542, doi:10.1109/CCWC47524.2020.9031190

Conference Papers

S. Islam, **D. Valles**, "Houston Toad and Other Chorusing Amphibian Species Call Detection Using Deep Learning Architectures," *2020 10th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2020, pp. 0511-0516, doi:10.1109/CCWC47524.2020.9031223

D. Johnson, **D. Valles**, "A Non-Linear GPU Performance Modeling Approach and Consolidated Linear Hardware Model Performance Evaluation of the LEAP Cluster," *2020 10th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2020, pp. 0517-0523, doi:10.1109/CCWC47524.2020.9031282

F. Jaradat, **D. Valles**, "A Victims Detection Approach for Burning Building Sites Using Convolutional Neural Networks," *2020 10th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2020, pp. 0280-0286, doi:10.1109/CCWC47524.2020.9031275

P. Sharma,**D. Valles**, "Deep Convolutional Neural Network Design Approach for 3D Object Detection for Robotic Grasping," *2020 10th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, 2020, pp. 0311-0316, doi:10.1109/CCWC47524.2020.9031186

M. I. Haque, **D. Valles**, "Facial Expression Recognition Using DCNN and Development of an iOS App for Children with ASD to Enhance Communication Abilities," *The 10th IEEE Ubiquitous Computing, Electronics, and Mobile Communication Conference (IEEE-UEMCON'19)*, New York City, NY, USA, 2019, pp. 0476-0482. doi:10.1109/UEMCON47517.2019.8993051

A. A. Bashit, **D. Valles**, "MFCC based Houston Toad call Detection using LSTM," *2019 IEEE International Symposium on Measurement and Control in Robotics (IEEE-ISMCR)*. Houston, TX, USA, 2019, pp. D3-3-1-D3-3-6. doi:10.1109/ISMCR47492.2019.8955667

D. A. Johnson, **D. Valles**, "A Linear Approach to Network Performance Modeling and a Consolidation of Linear Performance Models of the LEAP Cluster," *2019 World Congress in Computer Science, Computer Engineering, & Applied Computing – The 17th International Conference on Scientific Computing (CSCE-CSC'19)*, ISBN: 1-60132-494-4, pp. 132-135, Las Vegas, NV, 2019.

B. DasGupta, **D. Valles**, S. McClellan, "Estimating TCP RTT with LSTM Neural Networks," *2019 World Congress in Computer Science, Computer Engineering, & Applied Computing – The 21st International Conference on Artificial Intelligence (CSCE-ICAI'19)*, ISBN: 1-60132-501-0, pp. 192-198, Las Vegas, NV, 2019.

Conference Papers

M. I. Haque, **D. Valles**, "Facial Expression Recognition from Different Angles Using DCNN for Autistic Children to Recognize Emotional Patterns," *5th Annual Conference on Computational Science & Computational Intelligence – Symposium on Signal & Image Processing, Computer Vision & Pattern Recognition (CSCI-ISPC'18).* doi: 10.1109/CSCI.2018.00090, pp. 446-449, Las Vegas, NV, 2018.

B. DasGupta, **D. Valles**, S. McClellan, "A Comparison of MLA Techniques for Classification of Network Bandwidth Loss," *5th Annual Conference on Computational Science & Computational Intelligence – Symposium on Mobile Computing, Wireless Networks, & Security (CSCI-ISMC'18).* doi: 10.1109/CSCI.2018.00154, pp. 771-775, Las Vegas, NV, 2018.

F. Jaradat, **D. Valles**, "A Human Detection Approach for Burning Building Sites Using Deep Learning Techniques," *5th Annual Conference on Computational Science & Computational Intelligence – Symposium on Computational Intelligence (CSCI-ISCI'18).* doi:10.1109/CSCI.2018.00276, pp 1434-1435, Las Vegas, NV, 2018.

A. Pinales, **D. Valles**, "AESV Integration of IMU and Implementation of Interleaved Data Acquisition and Transmission Method," *5th Annual Conference on Computational Science & Computational Intelligence – Symposium on Smart Cities and Smart Mobility (CSCI-ISSC'18).* doi: 10.1109/CSCI.2018.00110, pp. 541-544, Las Vegas, NV, 2018.

A. A. Bashit, **D. Valles**, "Solar Powered Raspberry Pi-based Cellular Modem Integrated Real-time Houston Toad Calls Detection System Design using Neural Network Trained Model," *5th Annual Conference on Computational Science & Computational Intelligence – Symposium on Internet of Things & Internet of Everything (CSCI-ISOT'18).* doi: 10.1109/CSCI.2018.00197, pp. 1024-1027, Las Vegas, NV, 2018.

D. Johnson, **D. Valles**, "An Initial Scale-Factor Linear Polynomial Regression Model Approach for Hardware Performance on an HPC Compute-Node," *9th IEEE Annual Information Technology, Electronics & Mobile Communication Conference (IEMCON'18).* doi:10.1109/IEMCON.2018.8614937, pp. 661-666, Vancouver, Canada, 2018.

B. DasGupta, **D. Valles**, S. McClellan, "A K-Means Algorithm Approach for Classifying Wireless Signal Loss Using RTT and Bandwidth," *9th IEEE Annual Information Technology, Electronics & Mobile Communication Conference (IEMCON'18).* doi: 10.1109/IEMCON.2018.8615015, pp. 160-165, Vancouver, Canada, 2018. [Best Paper Award].

Conference Papers

A. Pinales, **D. Valles**, "Autonomous Embedded System Vehicle Design on Environmental, Mapping and Human Detection Data Acquisition for Firefighting Situations," *9th IEEE Annual Information Technology, Electronics & Mobile Communication Conference (IEMCON'18).* doi:10.1109/IEMCON.2018.8615022, pp. 194-198, Vancouver, Canada, 2018.

M. I. Haque, **D. Valles**, "A Facial Expression Recognition Approach using DCNN for Autistic Children to Identify Emotions," *9th IEEE Annual Information Technology, Electronics & Mobile Communication Conference (IEMCON'18).* doi:10.1109/IEMCON.2018.8614802, pp. 546-551, Vancouver, Canada, 2018.

A. A. Bashit, **D. Valles**, "A Mel-Filterbank and MFCC-based Neural Network Approach to Train the Houston Toad Call Detection System Design," *9th IEEE Annual Information Technology, Electronics & Mobile Communication Conference (IEMCON'18).* doi: 10.1109/IEMCON.2018.8615076, pp. 438-443, Vancouver, Canada, 2018.

F. Jaradat, **D. Valles**, "An Exponential Smoothing Embedded System Approach to Dangerous Temperature Detection for Firefighter Safety," *16th Int'l Conf on Embedded Systems, Cyber-physical Systems, and Applications (ESCS'18)*, ISBN: 1-60132-475-8, pp. 41-44, Las Vegas, NV, 2018.

A. A. Bashit, **D. Valles**, "An Embedded Approach for Controlling Automatic Water Pump and Monitoring Real-Time Remote Data on Desktop, Android, and Web-based Application," *16th Int'l Conf on Embedded Systems, Cyber-physical System, and Applications (ESCS'18)*, ISBN: 1-60132-475-8 pp. 33-36, Las Vegas, NV, 2018.

N. Azami, **D. Valles**, "An Electrical Vehicle Charging Station Monitoring Embedded Design," *16th Int'l Conf on Embedded Systems, Cyber-physical Systems, and Applications (ESCS'18)*, ISBN: 1-60132-475-8, pp. 58-61, Las Vegas, NV, 2018.

M. I. U. Haque, **D. Valles**, "Design of a Sensor-Based Adaptive Smart Home System Using ARM Cortex-M3," *16th Int'l Conf on Embedded Systems, Cyber-physical Systems, and Applications (ESCS'18)*, ISBN: 1-60132-475-8, pp. 22-25, Las Vegas, NV, 2018.

M.U. Jewel, B. DasGupta, **D. Valles**, "Gas and Air Quality Detection, Monitoring, and Alerting Using Embedded System for Nanofabrication Facility," *16th Int'l Conf on Embedded Systems, Cyber-physical Systems, and Applications (ESCS'18)*, ISBN: 1-60132-475-8, pp. 45-48, Las Vegas, NV, 2018.

Conference Papers

B. DasGupta, **D. Valles**, "IP Packet Loss and RTT Calculation Simulation Using Low-Cost Embedded Real-Time Systems," *16th Int'l Conf on Embedded Systems, Cyber-physical Systems, and Applications (ESCS'18)*, ISBN: 1-60132-475-8, pp. 54-57, Las Vegas, NV, 2018.

Freedman, R.J., **Valles, D.**, "A Communication Benchmark Tailored to Intel Broadwell Nodes and Tuned to the DEAC Cluster," *8th IEEE Annual Computing and Communication Workshop and Conference (CCWC'18)*, UNLV, Las Vegas, Nevada, 2018.

Valles, D., Apple, M.E., Andrews, C., "Visual Simulations Correlate Plant Functional Trait Distribution with Elevation and Temperature in the Cairngorm Mountains of Scotland," *International Symposium on Computation Biology (CSCI-ISCB'17)*, Las Vegas, Nevada, 2017.

Valles, D., Apple, M.E., Dick, J., Andrews, C., Gutiérrez-Girón, A., Pauli, H., "Modeling Plant Functional Traits and Elevation in the Cairngorm Mountains of Scotland," *International Conference on Modeling, Simulation and Visualization Methods (MSV'15)*, Las Vegas, Nevada, 2015.

Valles, D., "A Numerical Modeling MATLAB Approach to Memory Behavior on a Multi-core Architecture on a Beowulf Cluster Single-Node," *International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'13)*, Las Vegas, Nevada, 2013.

Valles, D., Williams D., Nava P., "Scheduler Modifications for Improvement of Performance on a Beowulf Cluster Single Node," *International Conference on Computer Applications in Industry and Engineering (CAINE'12)*, New Orleans, Louisiana, 2012.

Valles, D., Williams D., Nava P., "Load Balancing Approach Based on Limitations and Bottlenecks of Multi-core Architecture on a Beowulf Cluster Compute-Node," *International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'12)*, Las Vegas, Nevada, 2012

Valles, D., Williams D., Nava P., "Development of Load Balancing Algorithm Based on Analysis of Multi-core Architecture on a Beowulf Cluster," (2011) **Doctoral Dissertation Work**, *ETD Collection for University of Texas, El Paso.* AAI3490305

Valles, D., Williams D., Nava P., "Performance and Timing Measurements in a Beowulf Cluster Compute-Node," *International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'09)*, Las Vegas, Nevada, 2009

Valles, Damian, "Hardware Design and Integration of Prototype Components for a Modularly Configurable Attached Processor (MCAP)" (2004). **Master's Thesis Work**, *ETD Collection for University of Texas, El Paso*. AAIEP10612

Poster Presentations

John Esparragoza, Armando Delgado Jr., Dr. Berenice de la Cruz, and **Dr. Damian Valles**, "Utilizing AI to Support Conversation in Individuals with ASD," in the *2025 Great Minds in STEM (GMiS) Conference*, San Diego, CA, USA, 2025.

A. Wagner, E. Aslan, D. Marimekala, and **D. Valles**, "Modeling and Predicting Dangerous Toxin Level Throughout Residential Fires Using AI," *2025 Research, Inquiry, and Creative Expression (RICE) Showcase*, Texas State University, San Marcos, Texas, 2025.

J. Esparragoza, A. Delgado, B. de la Cruz, and **D. Valles**, "Utilizing AI to Support Conversation in Individuals with ASD," *2025 Research, Inquiry, and Creative Expression (RICE) Showcase*, Texas State University, San Marcos, Texas, 2025.

M. Olsen, P. Sherpa, J. Pineda, J. W. Farrell III, and **D. Valles**, "The Use of Machine Learning to Model Player Readiness in Female Collegiate Volleyball Players," *2025 Research, Inquiry, and Creative Expression (RICE) Showcase*, Texas State University, San Marcos, Texas, 2025.

M. Su, T. Hillan, M. Bachtel, M. Resendiz, and **D. Valles**, "Recognition of emotions in the facial region including the ASD Perspective," *2025 Research, Inquiry, and Creative Expression (RICE) Showcase*, Texas State University, San Marcos, Texas, 2025.

R. Sheley, P. Karkhanis, **D. Valles**, and J. Tate, "Tension-Tension Fatigue of High-Temperature Thermoset Composites in Fire Drone Application," *2025 Society for the Advancement of Material and Process Engineering (SAMPE) Conference and Exhibition*, Indianapolis, Indiana, 2025. [**1st Place**]

D. Valles, M. Resendiz, K. S. Ramarapu, "Environment Emotion 'Vibe' Recognition Deep Learning Approach for Children with Autism Spectrum Disorder," *The 1st TXST Data and AI Day (4th TXST Analytics Showcase)*, Texas State University, San Marcos, TX, 2025.

D. Valles, M. Resendiz, K. S. Ramarapu, "Environment Emotion 'Vibe' Recognition Deep Learning Approach for Children with Autism Spectrum Disorder," *The 2025 Health Scholar Showcase*, Texas State University, San Marcos, TX, 2025.

E. Jimenez, A. Lopez, **D. Valles**, and M. Drewery, "Developing Artificial Intelligence Models for Predicting Cattle Movement, Behavior, and Emotion," *The 2025 TXST STEM Conference*, Texas State University, San Marcos, TX, 2025.

Poster Presentations

B. Gonzalez, J. Grubenhoff, K. Castaneda Guerra, Pawan Dradhan, H. Chen, and **D. Valles**, "Mechanical Design and Fabrication of a Mobile Autonomous Robot for Cattle Observation," *The 2025 TXST STEM Conference*, Texas State University, San Marcos, TX, 2025.

J. Close, **D. Valles**, and H. Chen, "Electrical Integration of Autonomous Agricultural Bot," *The 2025 TXST STEM Conference*, Texas State University, San Marcos, TX, 2025.

A. L. Hernandez, M. Resendiz, **D. Valles**, T. Liu, R. K. Rolfe, Y. Li, S. Aslan, J. Farrell, "Which Emotions do Neurodiverse and Neurotypical Individuals Identify Similarly?" *2024 Research, Inquiry, and Creative Expression (RICE) Showcase*, Texas State University, San Marcos, Texas, 2024.

H. Nonaka and **D. Valles**, "Fully Auto-Regressive Multi-modal LLM for Contextual Emotion Recognition," *2024 Research, Inquiry, and Creative Expression (RICE) Showcase*, Texas State University, San Marcos, Texas, 2024.

K. Stevenson and **D. Valles**, "Smart City Firefighting Autonomous Data Collection," *2024 Research, Inquiry, and Creative Expression (RICE) Showcase*, Texas State University, San Marcos, Texas, 2024.

A. Lopez, **D. Valles**, and M. Drewery, "Monitoring Cattle Behavior and Health Using Artificial Intelligence and Thermography," *The 2024 TXST STEM Conference*, Texas State University, San Marcos, TX, 2024.

G. Jackson, and **D. Valles**, "Dataset Enlargement with Generative Adversarial Neural Network," *The 2024 TXST STEM Conference*, Texas State University, San Marcos, TX, 2024.

D. Hall, and **D. Valles**, "Emotion Recognition and Communication Assistance: A Machine Learning App for Children with Autism," *The 2024 TXST STEM Conference*, Texas State University, San Marcos, TX, 2024.

Liu, T., Wallace, I., Cressman, H., Koldenhoven, R., Li, Y., & **Valles, D.** (2024). Enhancing early diagnosis of autism spectrum disorder with machine learning algorithms using postural control features. Paper presented at the conference of the *International Society of Research and Advocacy for Developmental Coordination Disorder (ISRA-DCD)—15th Biannual Conference and International Motor Development Research Consortium (I-MDRC)*. Abstract published in Journal of Motor Learning and Development, S36. Ghent, Belgium. DOI: https://doi.org/10.1123/jmld.2024-0049

D. Valles, "Autonomous Innovation: Revolutionizing Urban Firefighting with Data and Artificial Intelligence," *The 2024 Health Scholar Showcase*, Texas State University, San Marcos, TX, 2024.

Poster Presentations

Hernandez, A. L., Resendiz, M. D., **Valles, D.**, et. al (2023, Oct). Is there gender bias in emotion identification? *2023 SACNAS National Diversity in STEM (NDiSTEM) Conference*, Portland, OR, USA, 2023.

Liu, T., Mohammed, H., & **Valles, D**. (2023, May). Virtual reality effectiveness on motor assessment in children with autism. In JOURNAL OF SPORT & EXERCISE PSYCHOLOGY (Vol. 45, pp. S19-S19). 1607 N MARKET ST, PO BOX 5076, CHAMPAIGN, IL 61820-2200 USA: HUMAN KINETICS PUBL INC.

J. McCawley, G. Taverna, and **D. Valles**, "*Emotion Recognition using Audio Input for Voice and Environmental Sounds*," The 2nd Annual Texas State University Data Analytics Showcase, San Marcos, TX, 2023.

S. Rafiq, E. Ellsworth, and **D. Valles**, "*Smart City Firefighting Autonomous Data Collection*," The 2nd Annual Texas State University Data Analytics Showcase, San Marcos, TX, 2023.

G. Jackson, D. Hall, and **D. Valles**, "*Face Emotion Recognition DL Development and App Adaptability*," The 2nd Annual Texas State University Data Analytics Showcase, San Marcos, TX, 2023.

A. L. Hernandez, S. Valenzuela, A. E. Quiñonez Camacho, L. A. Umali, R. Newcomb, **D. Valles**, M. Resendiz, "*Inclusion of Diverse Participants in Development of Emotion Portrayal Database*," The 2023 TXST STEM Conference, Texas State University, San Marcos, TX, 2023.

T. Stapleton, R. Fuentes, S. R. Jeter, R. Rolfe, D. Knudson, **D. Valles**, and F. Mendez, "*Development of an Artificial Intelligence System to Prevent Overexertion Injuries at the Workplace*," American Statistical Association Conference on Statistical Practice 2022, New Orleans, LA, 2021. [*1st Place Excellence in the Student Poster Competition*]

D. Valles, M. Resendiz, "*A Facial Expression Recognition Application Using Machine Learning for Children with ASD to Help Identify Emotions*," The 2022 Health Scholar Showcase, Texas State University, San Marcos, TX.

Stewart, A., Resendiz, M., **Valles, D.**, Haque, I., and Matin, R., (2020, November). 11638: Emotions and Emoticons: Facial Expression Recognition App for Individuals with Autism Spectrum Disorder (ASD). Proposal accepted at the *Annual Convention of the American Speech-Language-Hearing Association*, San Diego, CA.

Uma K. K. Pillai, **D. Valles**, "*Vehicle Type and Colors Detection for Amber and Silver Alert Emergencies Using Machine Learning*," 2020 Women in Science and Engineering (WiSE) Annual Conference, Texas State University, San Marcos, TX.

Poster Presentations

Dixizi Liu, Z. Dong, **D. Valles**, "*Exploring the Contagion Effect of Social Media on Mass Shootings*," 2020 Women in Science and Engineering (WiSE) Annual Conference, Texas State University, San Marcos, TX.

D. Valles, M. Resendiz, M.I.U. Haque, "*A Facial Expression Recognition Application Using Machine Learning for Children with ASD to Help Identify Emotions*", The 2019 Health Scholar Showcase, Texas State University, San Marcos, TX, 2019.

M. Apple, **D. Valles**, "*The RAPT Model Predicts Resilience and Vulnerability of Boreal Plant Species to Climate Change in the Cairngorm Mountains of Scotland*," The 2018 AGU Fall Meeting, Washington, DC, 2018

Farah Jaradat, **D. Valles**, "*A Human Detection Approach for Burning Building Site Using Deep Learning Techniques*," The 5th Annual Conference on Computational Science & Computational Intelligence – Symposium on Computational Intelligence (CSCI-ISCI'18), Las Vegas, NV, 2018

David A.S. Johnson, **D. Valles**, "*Performance Modeling High-End Servers Using Benchmark Analysis*," TECHCON 2018, Austin, TX, 2018

David A.S. Johnson, **D. Valles**, "*Modeling of High Performance Computing Servers using Analysis of Benchmarks*," The 2018 SACNAS - The National Diversity in STEM Conference, San Antonio, TX, 2018

A. Pinales, **D. Valles**, "*Autonomous Embedded System Design on Environmental, Mapping and Human Detection Data Acquisition for Firefighting Situations*," The 2018 SACNAS - The National Diversity in STEM Conference, San Antonio, TX, 2018

David A.S. Johnson, **D. Valles**, "*Modelling of High Performance Computing Servers using Analysis of Benchmarks*," 2018 Women in Science and Engineering (WiSE) Annual Conference, Texas State University, San Marcos, TX, 2018

R. Freedman, **D. Valles**, "*A Modeling Approach to Hardware Analysis of the Heterogeneous DEAC Cluster*," The International Symposium on Parallel and Distributed Computing and Computational Science, Las Vegas, NV, 2016

Valles D., Apple, M.E., Dick, J., Andrews, C., Gutiérrez-Girón, A., Pauli, H., "*Visualization of Plant Functional Traits Along a Gradient of Elevation in the Cairngorm Mountains of Scotland*," 2016 MtnClim Conference, Leavenworth, WA

D. Valles, A. Carlson, "*Distributed Environment for Academic Computing High Performance Computing - DEAC HPC Cluster*," TechXploration, 2016/2017, Winston-Salem, NC, 2016

J. Francom, **D. Valles**, "*Modeling Linguistic Variation Using Machine Learning, R and the WFU DEAC Cluster*," TechXploration, Winston-Salem, NC, 2015

D. Valles, P. Nava, D. Williams, J. Pierlissi, R. von Borries, "*Distributed Computing Lab: University of Texas at El Paso - Department of Electrical and Computer Engineering ECE*," Supercomputing 2008, Austin, TX, 2008

Projects

EE Senior Project Design, **Fire Bot - LoRa, Triangulation, Reinforcement, and 3D LiDAR**, apply Long-Range with ANSON security communications with scream triangulation support, improved LiDAR for navigation, and reinforcement of design and interface, *Faculty Advisor & Sponsor*, Texas State University 2023-2024

EE Senior Project Design, **Fire Bot Autonomous Integration**, development of a fully autonomous rover system including depth-camera, LiDAR, interface, and GPU DL execution to locate humans and collect environmental data, *Faculty Advisor*, Texas State University 2022-2023

EE Senior Project Design, **HoloLens**, development of remote control of the autonomous rover system through Augmented Reality and visual environmental data to the AR set, *Faculty Sponsor*, Texas State University 2022-2023

IE-EE Capstone Project, **Sky Dashing** Graphical User-Interface design for drone flight plans and real-time weather data integration. *Faculty Collaborator*, Texas State University, Summer-Fall 2021

IE Capstone Project, **Predicting Flight Block Time Using ML Techniques Learning**, Collaboration with Sabre to develop ML models to accurately predict block tie for flights between two cities. *Faculty Collaborator*, Texas State University 2021

EE Senior Project Design, **Smart City Autonomous Fire**, development of a fully autonomous system that can be utilized by firefighters in dangerous situations to locate humans and collect environmental data, *Faculty Advisor*, Texas State University 2019-2020

EE Senior Project Design, **Chef Bots**, identifying the toppings for a burger, classifying the freshness of each topping, and having the cobot chef reach for each topping, *Faculty Advisor*, Texas State University 2019

IE Capstone Project, **On-Time Performance Modeling Using Machine Learning**, On-time performance prediction is important to all stakeholders in commercial aviation. *Faculty Collaborator*, Texas State University 2019

EE Senior Project Design, **Smart Cities Car Garage**, providing a smart garage design approach by focusing on the security, environmental, and health concerns of the user, *Faculty Advisor*, Texas State University 2018-2019

EE Senior Project Design, **Keysight IoT Courseware**, Expand and improve the learning material for the Keysight courseware, which will, in turn, promote interest in the field of IoT technology, *Faculty Advisor*, Texas State University 2017-2018

Wake's 3D Visualization Station, **Computation Biophysics 3D Viz Mobile Station**, A 3D visualization station on wheels that is used to project Molecular Dynamic structures that are utilized for research and class, 2014

MTECH's 3D High-Q Visualization Station, **Computer Science 3D Viz Mobile Station**, A 3D visualization station on wheels that is used to project LIDAR and Mine Cave paths, 2013.

Engineers Without Borders, **Road Construction in San Juan El Espino, Atiquizaya, El Salvador**, The MTECH Chapter is in charge of the draft, design, and construction of the road solution, 2012-2014.

EM31 Conductance Reader, **Arduino Microcontroller as a Reading and Storing Solution**, An Arduino microcontroller was used and programmed to capture the serial data from the EM31's communication board and store to SD-Card, 2012-2013.

EPV Group - Texas Tech Medical School El Paso Campus, **Cluster System and Oracle Installation**, Setup and installation of a cluster system with Red Hat Enterprise Linux for EPV Group for Oracle databases, RAC, cluster applications, 2012.

Digital Integrated Systems CMOS Design, **Dynamic Random Access Memory (DRAM)**, Simulated and designed a 128x8 DRAM model, find fastest and slowest read paths while accomplishing the smallest Energy-Delay Product efficiency, 2007.

Senior Project Design, **RF Transmission as an Alternative Heart Pacing System**, Prototype of a heart pacing system which transmits and receives RF pulse signals from a pulse generator through bodily tissue, 2002.

Panels

Laying the Foundation: Insights from Directors of Funded Training Programs at the **The Industry-Synced Pathways for Innovation, Research, and Employment (INSPIRE)**, Translational Health Research Center Virtual ECHO Series Panel, 2025

Smart Cities in the Era of 5G and Beyond – An example Panel at the **IEEE Future Networks – World Forum 2024**, Dubai, UAE, 2024

Smart Mobility Panel: What is Happening with Advanced Air Mobility? at the **Digital 360 Summit**, Austin, TX, 2024

Certification and Challenges for Autonomy in Safety-critical Systems, with a Bias Towards Autonomy in Space - Industry Panel at the **43rd IEEE Real-Time Systems Symposium (RTSS)**, Houston, Texas, 2022

The Future of Smart Ecosystem Empowered by IoT Collaborative Technologies Industry Panel at the **IEEE Global Communications Conference (GLOBECOM) 2022**, Rio de Janeiro, Brazil, 2022

Agriculture in the Age of Advanced Technology Panel at the **IEEE Future Networks – World Forum 2022**, Montreal, Canada, 2022

Smart Factory & Industry 4.0 Panel at the **Digital 360 Summit**, San Marcos, TX, 2021

International cooperation through science. The experience of 100,000 Strong in the Americas at **REYES Program**, Virtual, Old Dominion University & Embassy of Mexico, 2021

Smart Factory & Industry 4.0 Panel at the **Digital 360 Summit**, Virtual San Marcos, TX, 2020

Analytics Panel Discussion at the **TEI (Technology Enhanced Infrastructure) Summit**, Star Park, San Marcos, TX, 2019

First-Year Experience for the **Scholarship and Teaching Excellence Program (STEP)**, Texas State University, San Marcos, TX, 2019

Seminar / Invited Talks

Round Table - Workshop: Unveiling the Interdisciplinary Smart City AI Lab—Integrating Smart, Sensor, Cyber, and Optimal, for Industrial Innovation, The future of interdisciplinary industrial AI - *Accelerating discovery through academia-industry partnerships and discussions*, Keynote, Texas State University STAR Park, Fall 2025.

CT OpenSource AI Connect by IBM and Quinnipiac University - *Transparency & Trust in Academic AI Research*, Speaker, Webinar, Fall 2025.

Research Redefined: Integrating AI into Research Practice in Healthcare - *AI Tools for Autism Research and Research Overall*, Speaker, Webinar, Fall 2025

TXST College of Health Professions Training Program, *Keys to Proposal Resubmission*, Texas State University, Round Rock, TX, Fall 2025.

ECHO Texas State: Frontline Innovation for Resilient and Effective Firefighter Technology, *How Can Robotics, Drones, and AI Transform Fire Response?*, TXST Translational Health Research Center, Web series, Spring 2025.

Physics Colloquium, Invited Talk – *Neural Operators for Physics-Informed AI in Ultrawide Bandgap (UWBG) Semiconductor Research*, Dept. of Physics at TXST, San Marcos, Spring 2025.

Seminar / Invited Talks

Industry 4.0 – Strategies for Success!, Seminar at CETYS University System in collaboration with American College of Thessaloniki, *Financial Frontiers: The Economic Impact of AI-Enhanced Emergency Response Systems,* Virtual Event, Fall 2024.

TXST College of Health Professions Training Program , *Keys to Proposal Resubmission*, Texas State University, Round Rock, TX, Fall 2024.

2024 Artificial Intelligence in Finance Conference (AIIFC), *Financial Frontiers: The Economic Impact of AI-Enhanced Emergency Response Systems*, San Marcos, TX, Spring 2024.

Industry 4.0 – Strategies for Success!, Seminar at CETYS University System in collaboration with American College of Thessaloniki, *Financial Frontiers: The Economic Impact of AI-Enhanced Emergency Response Systems,* Virtual Event, Spring 2024.

TXST Innovation Lab at SXSW 2024, *Smart Firefighting - leveraging autonomous technology of rover design, drone design, and AI to safeguard firefighters and expedite rescues*, Austin, TX, 2024.

Industry 4.0 – Strategies for Success!, Seminar at CETYS University System in collaboration with American College of Thessaloniki, *AI for Fire Response & What Worries Each Stakeholder,* Virtual Event, Fall 2023.

Keynote Speaker, *AI for Fire Response & Educational Expectations*, Artificial Intelligence, Digital 360 Summit, San Marcos, TX, Fall 2023.

The 2nd Texas State Analytics Showcase, *Machine Learning, IoT, Autonomous Driving, and AR to Respond to Fire Emergencies*, Texas State University, San Marcos, TX, Spring 2023.

Statistics Seminar, *Development of Emotion Recognition with ML Techniques and Challenges*, Mathematics Department, Texas State University, San Marcos, TX, Spring 2023.

Industry 4.0 – Strategies for Success!, Seminar at CETYS University System in collaboration with American College of Thessaloniki, *Machine Learning, IoT, Autonomous Driving, and AR to Respond to Fire Emergencies,* Virtual Event, Spring 2023.

IEEE 8th World Forum Internet of Things – *IoT and Technologies to Respond to Fire Emergencies*, Vertical Topic: Computing and Processing, Yokohama, Japan, Fall 2022.

Seminar / Invited Talks

Industry 4.0 – Strategies for Success!, Seminar at CETYS University System in collaboration with American College of Thessaloniki, *Machine Learning, IoT, Autonomous Driving, and AR to Respond to Fire Emergencies,* Virtual Event, Fall 2022.

TXST College of Science and Engineering's SyDATA Symposium 2022, *Development of Emotion Recognition with ML/DL Techniques and New Challenges*, Texas State University, San Marcos, TX, Fall 2022.

IEEE Austin ComSoc & SP and EMBS & Computer Chapters, *Development of Emotion Recognition with ML Techniques and Challenges*, Virtual, Austin, TX, Fall 2022.

Industry 4.0 – Strategies for Success!, Seminar at CETYS University System in collaboration with American College of Thessaloniki, *Using Industry 4.0 Digital Twins and Deep Learning to Model Human Labor in Smart Material Handling Systems,* Virtual Event, Summer 2022.

IE – Probabilistic Operations Research Course, *Computation and IoT Considerations for Smart Autonomous Embedded Firefighting Systems*, Texas State University, San Marcos, TX, Spring 2022.

NASA's eXtended Reality (XR) Technical Interchange Meeting (TIM), *Digital Twin for Material Handling Operators in Industry 4.0*, Virtual Event, Spring 2022.

TXST Innovation Lab at SXSW 2022, *A Multimodal Emotion Recognition Solution for Children with ASD - Nurturing Neurodiversity APP*, Austin, TX, 2022

Industry 4.0 – Strategies for Success!, Seminar at CETYS University System in collaboration with American College of Thessaloniki, *Using Industry 4.0 Digital Twins to Model Human Labor in Smart Material Handling Systems*, Virtual Event, 2022

IEEE 7th World Forum Internet of Things – *Computation and IoT Considerations for Smart Autonomous Embedded Firefighting Systems*, Topic 3: Computing and Information Processing, New Orleans, Louisiana, 2021

IISE Annual Conference Presentation - *A Deep Learning Time-Series Forecasting of Disaster Relief Donations for FoodBanks*, Virtual Event, Spring 2021.

Industry 4.0 – Strategies for Success!, Seminar at CETYS University System in collaboration with American College of Thessaloniki, *Using Industry 4.0 Digital Twins to Model Human Labor in Smart Material Handling Systems*, Virtual Event, 2021.

Seminar / Invited Talks

CE - Introduction to Smart Infrastructure Course, *Impact of Data Analytics, HPC, Big Data & Machine Learning in Engineering*, Texas State University, San Marcos, TX, 2020

IEEE 6th World Forum Internet of Things – *Smarter Implementations of Operating Systems with Application Specific Modules with Trained Models*, Topic 3: Computing and Information Processing, New Orleans, Louisiana, 2020 [Cancelled due to COVID-19]

Data Analytics Club – McCoy College of Business – *Introduction to Machine Learning: Your 2-Hour History, Concepts, & Hands-On*, Texas State University, San Marcos, TX, 2019

Central Texas Electronics Association (CTEA) – Electronics Design, Manufacturing & Test Symposiums, *HPC, Machine Learning, and, other Engineering Problems to Consider*, Austin, TX, 2018

IEEE ComSoc/SP and Computer/EMBS Chapter Meeting, *HPC, Machine Learning, and other Engineering Problems to Consider*, Austin, TX, 2018

Rocky Mountain College - Operating Systems Course, *Impact of HPC, Coding and Machine Learning in a Career*, 2018

IE - Probabilistic Operations Research Course, *Impact of HPC, Big Data & Machine Learning in Engineering*, Texas State University, San Marcos, TX, 2017

Discrete Mathematics Seminar, *HPC, Machine Learning, and Other Engineering Computational Problems*, Texas State University, San Marcos, TX, 2017

Cisco's HPC Boot Camp, *High Performance Computing: Design, Components & Benchmarking Overview*, 2017

Cisco Live!, *High Performance Computing at Wake Forest University* Las Vegas, NV, 2017

Cisco's HPC Webinar Series, *High Performance Computing: Research Impact in Academia*, 2017

Cisco's HPC Webinar Series, *HPC Management at Wake Forest University and Academia*, 2017

Cisco's HPC Boot Camp, *Intro to High Performance Computing In Academia and It's Ideologies*, Cisco, Boulder, CO, 2016

Computer Science Brown Bag Seminar Talk, *High Performance Computing at Wake: The DEAC-Cluster, HPC implementations and How Scientists Use HPC to See the Future*, Wake Forest Univ, Winston-Salem, NC, 2014

ECE Graduate Seminar Talk, *Performance Analysis for the HPC Virgo 2.0 Cluster and Its Kernel Updates*, UTEP, El Paso, TX, 2011

Workshops

Workshop Development & Instruction, **NSF ExpandAI CADS HPC Workshop** *Workshop introduces utilization of the LEAP2 HPC cluster, job management, Python environment, Multiprocess & Multithreaded execution, and GPU utilization*, Texas State University, San Marcos, TX, 2025.

Workshop Instruction, **Modeling, Data Science, and AI with Applications to Agriculture - Workshop #2: Applications of Data Science and AI**, *Deep learning and AI with applications to computer vision and Robotics*, San Marcos, TX, 2025

Workshop Development & Instruction, **NSF ExpandAI CADS HPC Workshop** *Workshop introduces utilization of the LEAP2 HPC cluster, job management, Python environment, Multiprocess & Multithreaded execution, and GPU utilization*, Texas State University, San Marcos, TX, 2024.

Workshop Contribution, **International Mountain Conference (IMC)** *Mountain Biodiversity and Ecosystems Under Global Change*, Innsbruck, Austria, 2019.

Professional Development

Texas Semiconductor Summit 2025, Explore the future of semiconductor technology in Texas and beyond. Oct. 29-30, 2025

Guest Editor: MDPI-Sensors, Special Issue: Novel Technologies and Applications for Internet of Things. 1/24/2025 - present

The Next Wave of GenAI: Domain-Specific LLMs. Intel Corp., Nov. 9, 2023. Webcast

Generative AI at the Edge Workshop. Qualcomm, Nov. 8, 2023. Webcast

AI for Scientific Discovery - A Workshop. National Academies Science Engineering Medicine (NASEM), Oct. 12-13, 2023. Webcast

Cisco's HPC Webinar Series, *High Performance Computing: Research Impact in Academia*, 2017

Cisco's HPC Webinar Series, *HPC Management at Wake Forest University and Academia*, 2017

Professional Development

Cisco's HPC Boot Camp, *Intro to High Performance Computing In Academia and It's Ideologies*, Cisco, Boulder, CO, 2016

Computer Science Brown Bag Seminar Talk, *High Performance Computing at Wake: The DEAC-Cluster, HPC implementations and How Scientists Use HPC to See the Future*, Wake Forest Univ, Winston-Salem, NC, 2014

ECE Graduate Seminar Talk, *Performance Analysis for the HPC Virgo 2.0 Cluster and Its Kernel Updates*, UTEP, El Paso, TX, 2011

2020 INFORMS Business Analytics Virtual Conference, "The Ethics of Analytics - Executive Perception of Machine Learning for Marketing Decisions," "10 Things You Need for AI-Enabled Knowledge Discovery," "Why AI/Data Science Projects Fail – How to Avoid Project Pitfalls," "Transitioning to the Digital Factory at Lockheed Martin Aeronautics," Webcast, 2020.

Intel's Parallel Suite Series, "Find and Debug Threading and Memory Errors at the Source," "Tips & Tricks to Analyze IoT Application Performance in Minutes (not Hours)" Webcast, 2020.

AAHHE / National Academy Conference, "Integrating Equity and Intentional Culture in STEMM Education", San Marcos, TX, 2019.

Blue Waters - National Center of Supercomputing Applications (NCSA), "Petascale Computing Insitute 2019", Texas Advanced Computing Center (TACC), Austin, TX, 2019.

Texas State Externship, New Braunfels Utility (NBU), New Braunfels, TX, 2019.

XSEDE, "Distributed Computing With Python," Webcast, 2019.

Intel's HPC & ML Web Series, "Computer Vision & Deep Learning," "OpenMP 5.0," "Hybrid Cloud: Best Practices for HPC Performance on Premise and On-Cloud," "Efficient HPC Communications," and "Get Deep Learning Framework Performance on Intel Architecture," Webcast, 2019.

Grant Writing Program, Selected by the COSE to *The Fundamental, of Effective Grantsmanship: What You Need to Know Before You Write*, STAR Park, San Marcos, Texas, 2018.

Introduction to OpenACC Course, "OpenACC Basics," "GPU Programming with OpenACC," and "Optimizing and Best Practices for OpenACC," Webcast, 2018.

TACCSTER 2018, "TACC Symposium for Texas Researchers," Pickle Research Campus, University of Texas, Austin, TX, 2018.

Professional Development

Machine Learning using Tensorflow, "Machine Learning on Blue Waters Using Tensorflow with the Image Feature Detection Problem," Webcast, 2018.

Fundamentals of Engineering Education Research, "Determine how to achieve the type of engineering education research recognized as scholarly work," San Marcos, Texas, 2017.

Introduction to OpenACC Course, "OpenACC Basics," "GPU Programming with OpenACC," and "Optimizing and Best Practices for OpenACC," Webcast, 2017.

IEEE Innovation Summit in Health and Technology, "Forum of experts defining clinical needs and collaboration on technology solutions for present and future healthcare challenges," Texas Advanced Computing Center (TACC), Austin, TX, 2017

Summer Supercomputing Institute, "Developing parallel applications, performance optimization and debugging, data analysis, and scientific visualization," Texas Advanced Computing Center (TACC), Austin, TX, 2016

Texas Advanced Computing Center (TACC) Seminars, "Intro to Scientific Visualization," "Parallel Computing with OpenMP," "Workshop in Basic MPI Programming," and "Hadoop/Spark", Webcast, 2016

NVIDIA OpenACC Course, "Introduction to OpenACC on GPUs," Webcast, 2015

Intermediate Parallel Computing, "Parallel Programming and Cluster Computing Education," Center for Computation and Technology (CCT), Louisiana State University, 2013

Virtual School of Computational Science and Engineering, "Scaling to Petascale Summer School Workshop," Center for Computation and Technology (CCT), Louisiana State University, 2009

Virtual School of Computational Science and Engineering, "Many-core Processors for Science and Engineering Applications," National Center for Supercomputing Applications (NCSA), The University of Illinois at Urbana-Champaign, 2009

Supercomputing (SC) Conference, Education Program 2007, 2009, 2012-2013

Grants & Contracts

National Science Foundation (NSF) - CREST - Co-PI, *CREST Phase I Center for Ultrawide Bandgap Semiconductor Device Materials*, Sep. 1, 2025 - Aug. 31, 2030, Amount: $7,500,000.00

Army Research Office – Co-PI, *Integration of Diamond with Ultrawide Bandgap Oxides: Growth, Characterization, and Modeling with Artificial Intelligence*, April 1, 2025- March 31, 2029, Amount: $1,000,000.00

TXST FY25 Research Enhancement Program (REP) – Co-PI, *Development of Pulsed Laser Annealing for Enhanced Doping and Phase Purity in Synthetic Diamonds for Advanced Electronic and Energy Applications*, February 1, 2025- May 31, 2026, Amount: $16,000.00

National Science Foundation (NSF) - Research Experience for Undergraduates (REU) - PI, *REU Site: Undergraduate Research Experiences in Artificial Intelligence, Data Analytics, and Mixed Reality for Smart and Connected Health*, April 1, 2025 - March 31, 2028, Amount: $371,758.00

TXST Center for Innovation and Entrepreneurship (CIE) – New Ventures - PI/CEO, *Firefly Robotics – Fireproofing autonomous robots and drones for fire emergencies*, September 1, 2024 - August 31, 2025, Amount: $20,000.00

Sertainty/TXST-CIEDAR - PI, *Sertainty UXP Technology Implementation in the Context of IoT and LoRaWAN Gateway Constructs*, June 1, 2024 - May 31, 2025, Amount: $30,000.00

Texas Department of Transportation (TxDOT) - SME, *Advanced Air Mobility (AMM)*, January 1, 2024 - March 31, 2025, Amount: $400,000.00

National Science Foundation (NSF) - S-STEM - Co-PI, *Scholars of Excellence in Engineering Design (SEED)*, January 1, 2024 - December 31, 2029, Amount: $2,499,310.00

National Science Foundation (NSF) - AI Research Institutes - Co-PI, *Expanding AI Curriculum and Infrastructure at Texas State University to Advance Interdisciplinary Research and Grow a Diverse AI Workforce*, January 1, 2024 - December 31, 2025, Amount: $400,000.00

United States Department of Agriculture (USDA) - National Institute of Food and Agriculture (NIFA) - Co-PD, *AnimalCareBot: Bridging the Gap between Emerging Technologies for Livestock Production and Education in Agricultural Sciences*, September 15, 2023 - September 14, 2027, Amount: $399,720.00

FY23 Translational Health Research Center - PI, *Smart City Firefighting: Autonomous Data Collection and Machine Learning for Improved Response*, September 1, 2023 - August 31, 2024, Amount: $102,049.00

Grants & Contracts

National Science Foundation (NSF) - I-Corps - Co-PI, *Nurture Neurodiversity – Development of an app that aids people with ASD in having socially appropriate interactions by identifying the emotion of their conversational partner*, September 1, 2022 - January 31, 2023, Amount: $50,000.00

Dell Technologies – PI, MOU, *Human Detection Using IR, and Scream DL Classifiers and Prototype Development of Autonomous Vehicle Units for Smart Firefighting*, May 2022 – August 2022, Amount: $24,976.00

National Science Foundation (NSF) - Small Business Technology Transfer (STTR) Phase I - Co-PI, *Real-Time Mineral Data Collection and Identification Module with Stratajam, LLC*, April 15, 2022 - September 3, 2022, Amount: $256,000.00

Texas Higher Education Coordinating Board – Supporting Personnel, *The Accelerating Credentials of Purpose and Value for the Texas Innovation Corridor (TIC) Consortium Grant with Sam Houston State University*, January 15, 2022 - October 31, 2022, Amount: $1,445,000.00

National Science Foundation (NSF) - Research Experience for Undergraduates (REU) - PI, *Undergraduate Research Experiences in Machine Learning, Analytics, and Augmented Reality for Smart and Connected Health*, January 15, 2022 - December 31, 2024, Amount: $350,429.00

FY22 Research Enhancement Program - Co-PI, *Emotion Validation Database*, January 1, 2022 - May 31, 2023, Amount: $10,894.00

Dell Technologies – PI, GIK-MOU, *DSW Hardware Benchmarking Performance Analysis Study Using Machine Learning Models*, January 2021 – December 2021, Amount: $72,600.00

Jacobs JETS – Co-PI, *Engineering & Technical Support for AstroMaterials Curation*, January 1, 2021- Dec. 31, 2022, Amount: $200,700.00

AMD - Co-PI, *Small-scale GPU option in-kind equipment, and Penguin-on-Demand Cloud resources grant from AMD to support TXST multidisciplinary Public Health Research Center from CS/ISoE/Health and the future Data Science Center towards COVID-19 and health research* Aug. 2020 - Aug. 2021, Amount: $440,000.00

Jacobs - PI, *Development, and dissemination to undergraduate students of the core Flight System (cFS)* January 31, 2020 - Aug. 31, 2020, Amount: $14,500.00

FY20 Research Enhancement Program - Co-PI, *Development of An Artificial Intelligence System to Prevent Overexertion Injuries at the Workplace*, January 1, 2020 - May 31, 2021, Amount: $14,938.00

Grants & Contracts

Toyota Material Handling North America (TMHNA) - Co-PI, *Using Industry 4.0 Digital Twins to Model Human Labor in Smart Material Handling*, August 14, 2019 - July 31, 2020, Amount: $197,411.00

Exxon Mobil - 100K Strong in the Americas Innovation Fund – Senior Personnel, *Building Bridges for New Innovators in Engineering (BBNIE) with the Universidad Politécnica de Guanajuato, Texas International Education Consortium, & Lamar Unviersity*, May 14 – November 31, 2019, Amount: $1,000.00

Texas Parks & Wildlife Department Grant – Co-PI, *Houston Toad recovery: A comprehensive monitoring, evaluation, and support program for head-start success*, October 13, 2016 – August 31, 2019, Amount: $125,881.00

NEC Corporation of America - Co-PI, *Joint Study for a Data-Intensive Analysis of the NEC In-Vehicle Passenger Detect*, Texas State University, October 1, 2017 - December 15, 2018, Amount: $9,200.00

Semiconductor Research Corporation Education Alliance (SRCEA) Undergraduate Research Opportunities (URO) Grant - Co-PI, *Attracting and retaining students at the undergraduate level in science and engineering disciplines relevant to technology-based industries and increasing the progression of these students to graduate school*, Texas State University, September 1, 2017 - August 31, 2019, Amount: $35,000.00

Summer Technology Exploration Grants (STEP) for Enhancing Teaching, Learning, Research, Scholarly and Creative Work Grant - Co-PI, *Student- directed composition assessment using web-based text analysis in RStudio's Shiny*, Wake Forest University, June 1, 2015 - April 5, 2016, Amount: $500.00

Service

Ingram School:

TT Faculty Mentoring, Dr. Anandi Dutta, Spring 2025 - present

IT Oversight Committee, Committee Chair, Fall 2024 - present

Personnel Committee, Committee member, Fall 2024 - present

EE Ph.D. Program Development, Team member, Fall 2024 - present

EE Ph.D. Admission Committee, Committee member, Fall 2024 - present

Electrical Engineering Program Expansion - Collin College, Team, Spring 2024

Electrical Engineering Ph.D. Feasibility Study, Lead, Spring 2023

Service

Ingram School:

Electrical and Computer Engineering Ph.D. Program Proposal,
Writing Team, Summer 2023

Search Committee, Member,
Assistant Professor of Instruction in Electrical Engineering,
Fall 2025 - present
Assistant Professor of Instruction in Electrical Engineering position,
Spring 2025 - Summer 2025
Assistant/Associate Professor of Practice in Electrical Engineering position,
Spring 2025 - Summer 2025
Electrical Engineering Associate Professor position,
Fall 2023 - Spring 2024
Electrical & Computer Engineering Tenure-track position,
Summer 2023 - Fall 2023
Mechanical Engineering - Thermo Fluids Tenure-track position,
Fall 2022 - Spring 2023
Electrical Engineering - Networks and Communication Tenure-track position,
Fall 2022 - Spring 2023
Electrical & Computer Engineering Tenure-track position,
Fall 2021 - Spring 2022

Research Selection Committee,
Research focus throughout ISoE programs,
Fall 2023 - Spring 2024, Member
Fall 2022 - Spring 2023, Chair
Fall 2021 - Spring 2022, Chair

Recruiting, Graduation, Career Fair Events Committee, Member,
FY21 - Bobcat days & other ISoE events,
Fall 2021 - Spring 2022

Teaching Peer Review,
EE4390, Fall 2020
ENGR3315, Spring 2021
MFGE4378, Spring 2024
CE4362, Fall 2024
ME3331, Spring 2025

Society of Hispanic Professional Engineers (SHPE) Student Chapter,
Faculty Advisor, Fall 2019 - Fall 2024

Commencements
Spring 2018, 2019, 2021, 2025
Summer 2025
Fall 2020, 2021, 2025

Bobcat Days,
Assigned to the 4th Session, Spring 2018.
Assigned to the 1st Session, Fall 2018.

Retention/Graduation Committee, 2017-2018.

Service

College Level:

Member of the **Graduate School EE Application Ad-Hoc Committee**, 2017-2018.

Search Committee, Member,
Mathematics Faculty Search T/TT - Data Science/ML/AI,
Fall 2025 - Spring 2026
CoSE Faculty Search T/TT - Data Science/AI/Deep Learning,
Fall 2024 - Spring 2025

Cross-College Teaching Peer Review,
ESS5328 - Principles of Endurance Training, Fall 2024
Dr. John Farrell III, Dept. of Health & Human Performance

H-LSAMP Scholars Program Faculty Mentoring,
Student: *Jillian Grebenhoff*, Fall 2025 - present
Student: *Saad Rafiq*, Fall 2022 - Fall 2024
Student: *Joni McCawley*, Fall 2022 - Spring 2023
Student: *Gabriella Taverna*, Fall 2022 - Spring 2023
Student: *Oscar Resendiz*, Fall 2021 - Spring 2022
Student: *Jaxon Castillo*, Spring 2021
Student: *Miguel Hernandez*, Spring 2020
Student: *David Johnson*, Spring 2018 - Fall 2019
Student: *Daniel Valle*, Spring 2018

CoSE Postdoctoral Development Working Group, Member
Spring 2023 - Spring 2025

ASPIRE Fellowship, Faculty Mentorship
Student: *Gavin Jackson*, Fall 2022
Student: *Darien Smith*, Fall 2022

CoSE Teaching Workshop, Faculty Mentor
Orientation of teaching resources and dynamics for new incoming teaching and tenure Faculty in Engineering, Fall 2022

CoSE Recruitment, EE Graduate Recruitment
CMD-IT/ACM RICHARD TAPIA Conference, Dallas, TX, Fall 2025

CoSE 60th Anniversary Committee, Member
Fall 2025 - Present

Service University Level:

1st TXST Data and AI Day (CADS),
Poster Judge and Executive Committee meeting, Spring 2025

Principal Investigators (PI) Council, Member,
Fall 2023 - Spring 2025

Presidential Commission: Run to R1, Member,
Fall 2022 - Summer 2023

Thesis Committees as Chair:

Mr. Md Sakif Uddin Khan, *TBD* [from Dr. Heping Chen], Fall 2025 - present

Mr. Md Masrur Hossain Rakin, *Strain-Bandgap Modeling for Diamon Using Physics-Informed Neural Network (PINN)*, Fall 2025 - present

Mr. Erich Ellsworth, *Robotic Navigation in Burning Buildings via Reinforcement Learning with Thermal Safety Constraints*, Fall 2025 - present

Ms. Zaheen Afroz Simin, *Secure Bidirectional Communication in IoT-Driven Utility Networks Using Sertainty UXP and LoRaWAN*, Summer 2024 - Summer 2025

Mr. Shafiqul Alam Khan, *UAV Navigation for Urban Firefighting Using Deep Reinforcement Learning*, Fall 2023 - Summer 2025

Ms. Kaavya Ramarapu, *Environmental Emotion Recognition for Children with ASD*, Spring 2023 - Spring 2025

Mr. Mohammad Nooruddin, *Secured and Versatile IoT Connectivity: A Novel LoRa-based Approach with Enhanced Encryption, Key Exchange, Real-time Data Visualization, and Dynamic Storage Integration*, [from Dr. W. Stapleton], Fall 2022 - Summer 2023

Mr. Alexander Little
Topic: Social Media Misinformation Spread During the Pandemic
[from Dr. Sasha Dong], Summer 2021 - Spring 2023

Mr. Adenrele Ishola
Topic: Using machine learning to classify danger levels and prediction techniques to forecast temperature changes with height in burning sites, Spring 2020 - Fall 2022

Ms. Homayra Alam
Topic: Accident Debris Detection with UAV Using Deep Learning and Estimate Debris Perimeter, Spring 2020 - Fall 2021

Thesis Committees as Chair:

Ms. Tamima Rashid
Topic: Emotion Recognition Using Body Gesture and Body Posture with Machine Learning and Deep Learning Architectures, Spring 2020 - Fall 2021

Mrs. Fairuz S. Saeed
Topic: Victim Detection and Localization from Anomalous Audio Events like Scream in Burning Sites Using Machine Learning, Spring 2020 - Fall 2021

Mr. Mahbubur Rahman
Topic: Quantify Resistance Luminescence Traits in High Throughput Plant Phenotyping by Computer Vision and Image Processing, Spring 2020 - Fall 2021

Mrs. Uma Kamatchi, *Vehicle Types and Colors Detection for Amber and Silver Alert Emergencies Using Machine Learning*, Spring 2020 - Spring 2021

Mrs. Sazida Binta Islam, *Identification of Wild Species in Texas from Camera-Trap Images using Deep Neural Network for Conservation Monitoring*, Spring 2019 - Fall 2020

Mrs. Shafinaz Islam, *Houston Toad and Other Chorusing Amphibian Species Call Detection Using Deep Neural Network Architectures*, Fall 2018 - Fall 2020

Mr. Purvesh Sharma, *Deep Convolutional Neural Network Design Approach for 3D-Object Detection for Robotic Grasping*, Fall 2018 - Fall 2020

Mr. Rezwan Matin, *A Speech Emotion Recognition Solution for Children with Autism Spectrum Disorder to Help Identify Human Emotions*, Fall 2018 - Fall 2020

Mr. Geovanni Hernandez, *Using RNN-Based Solution for Motion Analysis of Fatigue Using 3D Motion Capture Data*, Fall 2018 - Spring 2021

Mr. Abdullah Al Bashit, *A Comprehensive Solar Powered Real-Time Remote Monitoring and Identification of Houston Toad Call Automatic Recording Device System Design*, Spring 2018 - Summer 2019

Mrs. Farah Jaradat, *Machine Learning Techniques for Fire Safety Decisions*, Spring 2018 - Fall 2019

Mr. Md Inzamam UI Haque, *A Facial Expression Recognition Application Using Deep Convolution Neural Network for Children with Autism Spectrum Disorder to Help Identify Emotions*, Spring 2018 - Summer 2019

Thesis Committees as Member:

Mrs. Umme Farhana, "*Adaptive RL Framework for Target Wake Time Scheduling to Improve QoS in IEEE 802.11ax Networks*," Advisor: Marcelo Carvalho, Fall 2025 - Present

Mr. Md Shah Mominul Islam Momin, *Identifying Roadway Network Vulnerabilities Due To Coastal Flooding*, Advisor: Dr. Eusang Cho, Fall 2025 - Present

Mr. Kazi Sifatul Islam, *Uncertainty-Aware Decentralized Reinforcement Learning with Upper Confidence Bound (UCB) Exploration for Multi-Agent Sim-to-Real Path Planning*, Advisor: Dr. Anandi Dutta, Fall 2025 - Present

Mr. Robert Perry, *AI Retrieval-Augmented Generation (RAG) System With Engineering Document Information Extraction for Employee Development*, Advisor: Dr. Semih Aslan, Fall 2025 - Fall 2025

Mrs. Priyanka Bandi, *Design of FIR filter using Hybrid Vedic Multiplier and Hybrid Adder*, Advisor: Dr. Semih Aslan, Spring 2025 - Summer 2025

Ms. Vikashini Kanagaraj, *Optimized FIR Filter Design and Verification Using Machine Learning*, Advisor: Dr. Semih Aslan, Fall 2024 - Summer 2025

Mr. Enes Bugra Kaya, *Motor Fault Diagnosis Across Variable Power Using Deep Learning*, Advisor: Dr. Semih Aslan, Fall 2024 - Spring 2025

Mr. Tanvir Ahmed, *Development of a Wearable Sensor Unit for Animal Health Monitoring and Behavior Prediction*, Advisor: Dr. Heping Chen, Fall 2024 - Summer 2025

Ms. Shravani Priyanka Kuntala, *Implementation of Logic Circuits Using a Hybrid Model with Low-Power Technique*, Advisor: Dr. Semih Aslan, Fall 2024 - Spring 2025

Mr. Md Saif Rahman, *Comparative Study of Clustering Algorithms for Device Grouping in Wi-Fi HaLow Networks*, Advisor: Dr. Marcelo Menezes de Carvalho, Fall 2024 - Summer 2025

Mr. Aaron Gonzalez, *Modeling Robotic Wire Arc Additive Manufacturing Process Using Machine Learning*, Advisor: Dr. Heping Chen, Fall 2023 - Fall 2024

Mr. Kristopher Perales, *Deep Learning Facial Recognition Intelligent Key System* Advisor: Dr. Semih Aslan, Fall 2023 - present

Thesis Committees as Member:

Mr. Polash Deb, *Accelerating Matrix Multiplication on FPGA: A Pipeline Method Using Factor Canonical Sign Digit Technique*, Advisor: Dr. Semih Aslan, Fall 2023 - Fall 2024

Ms. Parisa Tabassum, *Styding the Impact of Imaging Artifacts on CNN-base Brain Cancer Detection*, Advisor: Dr. Mylene Queiroz de Farias, Fall 2023 - Spring 2024

Mrs. Faria Farzana, *Providing Continuity of Care for Chronic Diseases After Natural Disasters: A Resource Allocation Model for Public Health Preparedness in Texas*, Advisor: Dr. Eduardo Perez, Fall 2023 - Summer 2024

Mr. SM Tawhid Mahud, *Integrating Digital Twin Technology During the Concept Development Phase of the Product Development Process*, Advisor: Dr. Karim Muci-Kuchler, Fall 2023 - Spring 2025

Mr. Tarik Ahsan Pranto, *Deep Learning-Based Long-Term Wind Power Generation Forecasting*, Advisor: Dr. Semih Aslan, Fall 2023 - Spring 2024

Mr. Inioluwa Obisaki, *A Robust and Power Efficient Software Encryption Method for IoT Framework Communication Using ZigBee Protocol via XBees*, Advisor: Dr. Semih Aslan [from Dr. W. Stapleton], Fall 2022 - Summer 2023

Mr. Nikhil Pawar, *Geo-informed Deep Learning for Spatial Downscaling of Solute Transport in Heterogeneous Porous Media*, Advisor: Dr. Salah Faroughi, Spring 2023 - Fall 2023

Mr. James Starks, *Field-Programmable Gate Array-Based Accelerator for Sparse Banded Matrices*, Advisor: Dr. Semih Aslan, Fall 2022 - Fall 2023

Ms. Kelly Stephenson, *Autonomous Collision Avoidance System for Small Satellites in Low-Earth Orbit Using Object Detection, Tracking, and Offline Path Planning to Mitigate Orbital Space*, Advisor: Dr. Semih Aslan, Fall 2022 - Summer 2024

Mr. Sabhasachi Saha, *A Data-Driven Framework for Planning the Expansion of the Trauma Healthcare Network in Texas*, Advisor: Dr. Eduardo Perez, Fall 2022 - Summer 2023

Mr. Bishal Thapa, *Contrasting IIoT Data Security Solutions*, Advisor: Dr. Stan McClellan, Fall 2022 - Summer 2023

Mr. Bishal Sharma, *Intelligent Cipher Transfer Object for IoT Data Security*, Advisor: Dr. Stan McClellan, Fall 2022 - Summer 2023

Mr. Sree Nirmillo Biswash Tushar, *Exploring Feasibility of Social Distancing Measurement from Autonomous Vehicle*, Advisor: Dr. William Stapleton, Spring 2021 - Spring 2022

Thesis Committees as Member:

Mr. Rahil Kazi, *Implementing Discrete cosine Transform (DCT), Wavelet and Fractal Image Compression (FIC) techniques on Field Programmable Gate Array (FPGA)*, Advisor: Dr. Semih Aslan [from Dr. Stapleton], Fall 2020 - Spring 2023

Ms. Soma Sarker, *High Accuracy Pipe Keyway Angle Identification Using CNN*, Advisor: Dr. H. Fred Chen, Fall 2020 - Fall 2021

Mr. Kausthub Narayan, *Robotic Grasping Planning Using 3D Recognition in Warehouse Automation*, Advisor: Dr. H. Fred Chen, Fall 2020 - Present

Mr. SM Tawhid Mahud, *Integrating Digital Twin Technology During the Concept Development Phase of the Product Development Process*, Advisor: Dr. Karim Muci-Kuchler, Fall 2023 - Spring 2025

Mr. Tarik Ahsan Pranto, *Deep Learning-Based Long-Term Wind Power Generation Forecasting*, Advisor: Dr. Semih Aslan, Fall 2023 - Spring 2024

Mr. Vittal Siddaiah, *Efficient and Scalable Deep Learning Based Face and Object Recognition System*, Advisor: Dr. Semih Aslan, Spring 2020 - Spring 2023

Mr. Abhimanyu Sharotry, *A Digital Twin Framework of a Material Handling Operator in Industry 4.0 Environments* . Advisor: Dr. Jesus Jimenez, Fall 2019 - Fall 2020

Mr. Otto Randolph, *Smart Renewable Energy Allocation and Consumption in an Off-Grid Vertical Farming System.* Advisor: Dr. Bahram Asiabanpour, Fall 2019 - Summer 2020

Mr. Ahmed Yaseer, *Process Planning for Robotic Wire Arc Additive Manufacturing (WAAM) Using Machine Learning.* Advisor: Dr. H. Fred Chen, Fall 2019 - Spring 2021

Mrs. Akku Merium Mathew, *Python-Based Pose and Skin Color Improved Face Recognition System* . Advisor: Dr. Semih Aslan, Fall 2019 - Fall 2020

Mr. Vivin Samuel Christopher, *Design of MOCAP Framework and Dataset for Manual Material Handling Environment.* Advisor: Dr. Jesus Jimenez, Summer 2019 - Fall 2019

Mrs. Debasmita Aich, *Python Based FPGA Verification System* Advisor: Dr. Semih Aslan, Fall 2018 - Summer 2021

Mr. Bikramjit Dasgupta, *Wireless Bandwidth Loss Classification Using Kernel Level Machine Learning*, Advisor: Dr. Stan McClellan, Spring 2018 - Fall 2019

Mr. Md Syadus Sefat, *Design and Performance Analysis of Hardware Accelerator for Deep Neural Network in Heterogeneous Platform*, Advisor: Dr. Semih Aslan, Fall 2017 - Summer 2018

Mr. Varun Kumar S, *Computing Indoor Environment Vector Map for Augmented Reality Applications*, Advisor: Dr. George Koutitas, Fall 2017 - Fall 2018

Dissertation Committees as Chair:

Mr. Junwoo Jang, *TBD*, Program: Electrical Engineering, Spring 2026 - present

Mrs. Zaheen Afroz Simin, *TBD*, Program: Electrical Engineering, Fall 2025 - present

Dissertation Committees as Member:

Mr. Rahul Sheley, *Physics-Informed Machine Learning for the Design and Development of Low-Thermal-Expansion Nano Resins in Stereolithography (SLA) for Space Applications*, Program: Materials Science, Engineering, and Commercialization (MSEC), Advisor: Dr. Jitendra Tate, Fall 2025 - present

Mr. Mohammad Nooruddin, *End-to-End Optimization Techniques for Irregular and Heterogeneous AI Workloads*, Department: Computer Science, Advisor: Dr. Apan Qasem, Fall 2025 - Present.

Mr. Shriyank Somvanshi, *Tabular Deep Learning for Automated Vehicle Crash Severity Prediction: Advancing Safe Mobility on Infrastructure-Limited Roadways*, Program: Materials Science, Engineering, and Commercialization (MSEC), Advisor: Dr. Subasish Das, Fall 2025 - present

Mr. Bradford Everman, *Improving the Cost Efficiency of Large-scale Cloud Systems via Workload Analysis*, Department: Computer Science, Advisor: Dr. Ziliang Zong, Spring 2021 - Spring 2022

Mr. Lee Hinkle, *Deep Neural Network Representations of Physiological Time-Series Sensor Data for Improved Recognition Performance*, Department: Computer Science, Advisor: Dr. Vangelis Metsis, Spring 2021 - Spring 2023

Project Committees as Member:

Mr. Dupri Grimes, *SitePro Object Detection Model*, Advisor: Dr. Stan McClellan, Fall 2022 - Summer 2023

Undergraduate Research & Mentorship Students

Mr. Kevin C. Guerra, Mr. Nathan Charles, and Mr. Utsav Adhikari, *USDA - A mobile robot with sensors for animal tracking*, Fall 2025 - present.

Co-Advising **Ms. Alyssa Lopez**, Honor's Thesis, *Developing and Validating Artificial Intelligence Models to Predict Cattle Behavior, Movement, and Emotion* Advisor: Dr. Merritt Drewery, Summer 2024 - Fall 2024

Ms. Olivia Laurel, Mr. Kevin C. Guerra, and Mr. Jamal A. Close, *USDA - A mobile robot with sensors for animal tracking*, Fall 2024 - Spring 2025.

Ms. Rose Ochoa, Mr. Kevin C. Guerra, and Mr. Jamal A. Close, *USDA -A mobile robot with sensors for animal tracking*, Spring 2024.

Ms. Alyssa Lopez, LEADING Fellow, *Monitoring Cattle Behavior and Health Using Artificial Intelligence and Thermography*, USDA NIFA NextGen, PI: Dr. Merritt Drewery, Fall 2023 - Spring 2024

Mr. Daniyar Boztayev and Mr. Saad Rafiq (H-LSAMP Scholar), *ROS2 Support and Development of Drone Prototype for Smart IoT Firefighting*, Fall 2023 - Summer 2024

Ms. Gabriella Taverna, H-LSAMP Scholar, *Machine & Deep Learning Environment Emotion Recognition Literature Review and Design Approach*, Fall 2022 - Spring 2023

Ms. Joni McCawley, H-LSAMP Scholar, *Machine Learning Speech-Emotion Recognition Analysis*, Fall 2022 - Spring 2023

Mr. Erich Ellsworth and Mr. Saad Rafiq (H-LSAMP Scholar), *ROS2 SD Support and Development of Drone Prototype for Smart IoT Firefighting*, Fall 2022 - Spring 2023

Mr. Darien Smith, ASPIRE Fellow, *Body gesture emotion detection literature and software survey*, Fall 2022

Mr. Gavin Jackson, ASPIRE Fellow, *TensorFlow CNN Model Update and Zoom Dataset Curation*, Fall 2022 - present

Mr. Dylan Hall, *Face Emotion Recognition App 2022 Update for Mac Devices*, Fall 2022 - present

Mr. McKay De La Vegas, *DSW Dell Benchmark Project using Machine Learning Models*, Summer 2021

Mr. Oscar Resendiz, H-LSAMP Scholar, *DSW Dell Benchmark Project using Machine Learning Models*, Spring 2021

Mr. Miguel Hernandez, H-LSAMP Scholar, *Visualization Application: Motion Capture animation of captured data using Julia*, Spring 2020

Mr. Thomas Paveglio, Honors Thesis, *Weapon Detection with Body-cams using CNNs*, Spring 2020, Spring 2021

Mr. David Johnson, H-LSAMP Scholar, SRC-URO Fellow
Project: Benchmark and Performance Modeling Analysis of High-End Servers and HPC Nodes, Spring 2018 - Fall 2019

Mr. Daniel Valle, *Proof-of-Concept Fire Distribution Simulation Using C++*
H-LSAMP Scholar, Spring 2018

Mr. Armando J. Pinales, SRC-URO Summer Fellow (2018), *Dynamic Smart Embedded Design Concept*, Summer 2018 - Spring 2019

Press

Magazine Article - AI Cattle Care: The AnimalCareBot Monitors Freeman Center Herds, Hillviews Magazine. Release: October 3, 2025.

Article - Texas State University awarded $7.5 million NSF grant to launch CREST Center for Ultrawide Bandgap Semiconductor Device Materials, Texas State University, Research and Innovation. Release: Aug. 13th, 2025.

Article - Texas A&M University-San Antonio. Harris, E. Summer research program focuses on interdisciplinary AI research in healthcare. https://news.tamusa.edu/2025/02/Summer-Research-Program-Focuses-on-Interdisciplinary-AI-Research-in-Healthcare.html. Feb. 14th, 2025

Article - Texas State, Harnessing AI, Texas State University, Hillviews Magazine. Release: Dec. 18th, 2024.

Article - The CIEDAR Consortium and the Ingram School of Engineering, NBC KXAN - EIN Presswire. Release: Oct. 11th, 2023.

Article - Texas State, Translational Health Research Center names 2023-24 faculty fellows, Texas State University, Research and Innovation.
Release: Sept. 20th, 2023.

Case Study - DELL and NVIDIA Workstation Brief Use Case on the Smart Firefighting rover prototype, Summer 2023.

Digital 360 Summit's Digital Roundtable, Webcast, August 16th, Fall 2023.

Press

Article - IEEE Austin Texas Section Hosts the IEEE ComSoc Wireless Communications and Networking Conference (IEEE WCNC 2022), by Damian Valles, Texas State University, WCNC Social Media Chair, and Amit Patel, North Jersey Section ComSoc Chair, USA. November 2022, ISSN 2374-1082.

Article - Texas State, Stratajam land NSF grant to reduce mineral exploration costs, Texas State University, Research and Innovation. Release: Aug. 10th, 2022.

Article - NSF grant establishes REU site for undergrad research into smart, connected communities, health, Texas State University, Research and Innovation. Release: Feb. 22nd, 2022.

Article - Dell, Texas State partner on high-speed computing case study, Texas State University, Research and Innovation. Release: Sep. 30th, 2021.

Case Study - Democratizing access to data science boosts university's research, Dell Technologies/NVIDIA, Release: Sep. 24th, 2021.

Big Ideas Virtual Week: Harnessing Big Data, Texas State University, University Advancement, Release: Oct. 1st, 2020.

Article - Engineering students support research remotely and adapt to remote learning, Texas State University, Student Achievements. Release: May 4th, 2020.

Article - Researchers at Texas State Use Machine Learning to Help Children with Autism Identify Facial Expressions, Autism20.com. Release: May 10th, 2019.

Article - AUTISM: AI HELPS CHILDREN TO IDENTIFY FACIAL EXPRESSIONS, MedicalView.com, Release: May 6th, 2019.

Article - Texas State, Harnessing AI, Texas State University, Hillviews Magazine. Release: Dec. 18th, 2024.

Article - The CIEDAR Consortium and the Ingram School of Engineering, NBC KXAN - EIN Presswire. Release: Oct. 11th, 2023.

Article - Texas State, Translational Health Research Center names 2023-24 faculty fellows, Texas State University, Research and Innovation. Release: Sept. 20th, 2023.

Case Study - DELL and NVIDIA Workstation Brief Use Case on the Smart Firefighting rover prototype, Summer 2023.

Reviewer

NSF Review Panel - REU
Time: Fall 2025 - Spring 2026

IEEE International Conference on Future Machine Learning and Data Science (FMLDS2025), Time: June - August 2025

NSF Review Panel - REU
Time: Fall 2024

MDPI Journal - Entropy
Time: Spring 2024 - Present

Springer - The Journal of Supercomputing
Time: Fall 2022 - Present

MDPI Journal - Applied Science
Time: Summer 2022 - Present

IEEE Dallas Circuits and Systems Conference (DCAS)
Time: April 2022

MDPI Journal - Sensors
Time: Fall 2021 - Present

MDPI Journal - Brain Sciences
Time: Fall 2021 - Present

IEEE Transactions on Sustainable Computing
Time: Summer 2021 - Present

IEEE Transactions on Parallel and Distributed Systems
Time: Spring 2021 - Present

IEEE International IoT, Electronics and Mechatronics Conference (IEMTRONICS), Time: Aug. 2020

PLOS ONE - Open Access Journal
Time: Spring 2020 - Present

IEEE Transactions on Cybernetics
Time: Spring 2020 - Present

IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC), Time: March 2020

IEEE Open Access Journal
Time: Fall 2019 - Present

American Society for Engineering Education (ASEE)
Time: Fall 2017 - Spring 2024

Technical Committees

Birds of a Feather (BoF) Committee Member, *Supercomputing (SC) 2026 Technical Program*, Chicago, Illinois, USA.

Technical Program Committee Member, *The 16th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communications Conference (UEMCON 2026)*, New York City, New York, USA.

Program Committee Member, *XVII Congreso Mexicano de Inteligencia Artificial 2025 (17th AI Mexican Congress 2025)*, Mexico City, Mexico.

Panel Committee Member, *Supercomputing (SC) 2025 Technical Program* St. Louis, Missouri, USA.

Program Committee Member, *IEEE International Conference on Bioinformatics and Biomedicine (BIBM) 2024*, Lisbon, Portugal.

Technical Program Committee Member, *The 15th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communications Conference (UEMCON 2024)*, New York City, New York, USA.

Technical Program Committee Member, *The 15th IEEE Annual Information Technology, Electronics, & Mobile Communications Conference (IEMCON 2024)*, University of California-Berkeley, California, USA.

Technical Program Committee Member, *IEEE 5th World AI IoT Congress 2024* Seattle Convention Center, Seattle, Washington, USA.

Technical Program Committee Member, *The 14th IEEE Annual Computing and Communications Workshop and Conference (CCWC 2024)*, University of Nevada Las Vegas, Las Vegas, Nevada, USA.

Technical Program Committee Member, *The 14th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communications Conference (UEMCON 2023)*, Columbia University, New York City, New York, USA.

Technical Program Committee Member, *IEEE World AI IoT Congress 2023* University of Washington, Seattle, Washington, USA.

Technical Program Committee Member, *The 13th IEEE Annual Computing and Communications Workshop and Conference (CCWC 2023)*, Session 3 Chair: Artificial Intelligence and Machine Learning, Virtual, University of Nevada Las Vegas, Las Vegas, Nevada, USA.

Technical Committees

Technical Program Committee Member, *The 13th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communications Conference (UEMCON 2022)*, Columbia University, New York City, New York, USA.

Technical Program Committee Member, *The 13th IEEE Annual Information Technology, Electronics, & Mobile Communications Conference (IEMCON 2022)*, University of British Columbia, Vancouver, Canada.

Technical Program Committee Member, *IEEE World AI IoT Congress 2022* Seattle, Washington, USA.

Technical Program Committee Member, *The 12th IEEE Annual Computing and Communications Workshop and Conference (CCWC 2022)*, University of Nevada Las Vegas, Las Vegas, Nevada, USA.

Technical Program Committee Member, *The 12th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communications Conference (UEMCON 2021)*, Columbia University, New York City, New York, USA.

Technical Program Committee Member, *The 15th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communications Conference (UEMCON 2024)*, New York City, New York, USA.

Technical Program Committee Member, *The 15th IEEE Annual Information Technology, Electronics, & Mobile Communications Conference (IEMCON 2024)*, University of California-Berkeley, California, USA.

Technical Program Committee Member, *IEEE 5th World AI IoT Congress 2024* Seattle Convention Center, Seattle, Washington, USA.

Technical Program Committee Member, *The 11th IEEE Annual Computing and Communications Workshop and Conference (CCWC 2021)*, TRACK: Machine Learning, Big Data, Data Analytics, IoT, Artificial Intelligence, and Image Processing. University of Nevada Las Vegas, Las Vegas, Nevada, USA.

Technical Program Committee Member, *The 11th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communications Conference (UEMCON 2020)*, TRACK–7: Computer Algorithms, Theory, and Parallel Computing. Virtual New York City, New York, USA.

Technical Program Committee Member, *The 11th IEEE Annual Information Technology, Electronics, & Mobile Communications Conference (IEMCON 2020)*, TRACK–7: Computer Algorithms & Theory, Parallel Computing, Computer Architecture, and Design. Virtual, Vancouver, Canada.

Technical Program Committee Member, *The 10th IEEE Annual Computing and Communications Workshop and Conference (CCWC 2020)*, TRACK: Machine Learning, Big Data, Data Analytics, IoT, Artificial Intelligence, and Image Processing. University of Nevada Las Vegas, Las Vegas, Nevada, USA.

Technical Program Committee Member, *The 10th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communications Conference (UEMCON 2019)*, TRACK–7: Computer Algorithms, Theory, and Parallel Computing. Columbia University, New York City, New York, USA.

Technical Program Committee Member, *The 10th IEEE Annual Information Technology, Electronics, & Mobile Communications Conference (IEMCON 2019)*, TRACK–7: Computer Algorithms & Theory, Parallel Computing, Computer Architecture, and Design. University of British Columbia, Vancouver, Canada.

Professional Service

2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON) "Session 14: Artificial Intelligence and Machine Learning," and "Session 20: Embedded Systems, AI and IoT", Session Chair, IBM Louis V. Gerstner, Jr. Center for Learning, Armonk, NY, 2025.

2024 IEEE 15th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON) "Machine Learning," Session Chair, IBM T. J. Watson Research Center, Yorktown Heights, NY, 2024.

The 5th IEEE World AI IoT Congress (AIIoT) Conference "SESSION 4: Artificial Intelligence and Machine Learning," "SESSION 9: Applications of IoT; Security, Trust and Privacy," and "SESSION 12: Artificial Intelligence and Machine Learning," Session Chair, Seattle Convention Center, Seattle, WA, 2024.

The 14th IEEE Annual Computing & Communication Workshop and Conference, "SESSION 10: Artificial Intelligence and Machine Learning," "SESSION 13: Computer Graphics, Simulation; Parallel Algorithms and Pattern Recognition," and "SESSION 17: Artificial Intelligence and Machine Learning," Session Chair, UNLV, Las Vegas, NV, 2024.

SC23 Mentor-Protege Program, Mentorship opportunity to HPC undergraduates students, Supercomputing, Denver, CO, USA, 2023.

GRADS MentorSHPE Groups, Faculty facilitator - Collecting data and keeping a lab notebook, Fall 2022.

2022 IEEE Wireless Communications and Networking Conference (WCNC 2022) Conference, Social Media Chair, Organizing Committee, Austin, TX, 2022.

Professional Service

The 10th IEEE Annual Computing and Communication Workshop & Conference, "SESSION 3: Mobile and Wireless Computing," "SESSION 18: Big Data, Data Management and Analytics," Session Chair, UNLV, Las Vegas, NV, 2020.

SC19 Mentor-Protege Program, Mentorship opportunity to HPC undergraduates students, Supercomputing, Denver, Colorado, 2019.

The 10th IEEE Annual Ubiquitous Computing, Electronics, & Mobile Communication Conference "SESSION 20: Artificial Intelligence, Machine Learning and Evolutionary Algorithms," "SESSION 26: Telecommunication Systems and Network Security," Session Chair, Columbia University, New York, 2019.

Texas Smart Cities Summit - Austin CityUP Consortium, Demo and presentation of the smart city concept senior design projects sponsored by IEEE. Austin, Texas, 2019.

IEEE CTS Meeting Volunteer, Volunteering and helping hosting IEEE CTS meeting at Texas State University, 2018-2019.

The 5th Annual Conference on Computational Science and Computational Intelligence "SESSION 19C-ISCW-ISMC: Symposium on Cyber Warfare, Cyber Defense, & Cyber Security (CSCI-ISCW) + Symposium on Mobile Computing, Wireless Networks, & Security (CSCI-ISMC)," and "SESSION 22C-ISSC: Symposium on Smart Cities & Smart Mobility (CSCI-ISSC)," Session Chair, Las Vegas, NV, 2018.

SC18 Mentor-Protege Program, Mentorship opportunity to HPC undergraduates students, Supercomputing, Dallas, Texas, 2018.

SIGHPC Booth, Volunteer work at the SIGHPC booth to provide information about the organization, renew/new memberships, Supercomputing, Dallas, Texas, 2018.

The 16th Int'l Conf on Embedded Systems, Cyber-physical Systems, and Applications "SESSION 3-ESCS," and "SESSION 8-ICAI/ESCS"

The 8th IEEE Annual Computing and Communication Workshop and Conference "SESSION 23: Big Data Analytics," Session Chair, UNLV, Las Vegas, NV, 2018

The 4th Annual Conference on Computational Science and Computational Intelligence "SESSION 4A-ISCB: Symposium in Computational Biology (CSCI-ISCB)," Session Chair, Las Vegas, NV, 2017

IEEE Region 5 Student Paper Competition, "The Region 5 Student Papers Competition: oral presentation and a written paper related to technical, engineering, management, or societal aspects," Regional Chair, Austin, TX, 2017-2018

Excites Summer Program, "DCL Computer Assembly Module sponsored by the Engineering Programs Office (EPO)," UTEP, El Paso, TX, 2007-2010.

Chapin High School, "Prep Engineering and Science Course," El Paso, TX, 2010, 2012.

Languages and Skills

Spanish (native), English (advanced), French (beginner)
Python, MATLAB, LaTeX, C/C++, MPI, OpenMP, CUDA, OpenACC, PyTorch, BASH-scripting, R, Shiny, Java, Puppet, GIT, SVN, CFEngine, Keras, TensorFlow

Awards and Scholarships

IEEE UEMCON'25 Best Presenter Award, "Multi-Modal Emotion Temporal Environment Facial Classification to Help Children with ASD" in the *Next Generation Artificial Intelligence* session track, IBM Louis V. Gerstner, Jr. Center for Learning, New York.

IEEE UEMCON'25 Best Presenter Award, "Forecasting Sea Water Level Using Deep Learning Models for Enhanced Coastal Flood Management and Mitigation" in the *AI and Deep Learning* session track, IBM Louis V. Gerstner, Jr. Center for Learning, New York.

SAMPE 2025 Best Poster 1st Place Award, "Fension-Tension Fatigue of High-Temperature Thermoset Composites in Fire Drone Application," *2025 Society for the Advancement of Material and Process Engineering (SAMPE) Conference and Exhibition*, Indianapolis, Indiana, 2025.

IEEE UEMCON'24 Best Presenter Award, "Fully Auto-Regressive Multi-Model Large Language Model for Contextual Emotion Recognition" in the *Big Data, Data Management and AI* session track, Yorktown Heights, NY, 2024.

IEEE AIIoT'24 Best Presenter Award, "Design of Autonomous Rover for Firefighter Rescue: Integrating Deep Learning With ROS2" in the *Neural Networks; Robotics and Machine Vision* session track, Seattle, WA, 2024.

IEEE AIIoT'24 Best Presenter Award, "Dataset Enlargement with Generative Adversarial Neural Networks" in the *Artificial Intelligence and Machine Learning* session track, Seattle, WA, 2024.

IEEE CCWC'24 Best Presenter Award, "Development of an Augmented Reality Handwashing Tool for Children With Autism Spectrum Disorder" in the *Big Data, Data Management and Analytics; AI* session track, Las Vegas, NV, 2024.

IEEE AIIoT'23 Best Paper Award
Conference Paper, Virtual, University of Washington, Seattle, WA, 2023

Awards and Scholarships

ASA Conference on Statistical Practice 2022 Best Poster Award, *"Development of an Artificial Intelligence System to Prevent Overexertion Injuries at the Workplace,"*, Conference Poster, New Orleans, LA, USA, 2022

IEEE UEMCON'21 Best Paper Award
Conference Paper, Virtual, New York, NY, USA, 2021

IEEE AIIoT'21 Best Presenter Award, "An Audio Processing Approach Using Ensemble Learning for Speech-Emotion Recognition for Children with ASD" in the *Artificial Intelligence and Machine Learning* session, Seatlle, WA, 2021.

IEEE CCWC'20 Best Presenter Award, "A Victims Detection Approach for Burning Building Sites Using Convolutional Neural Networks" in the *Artificial Intelligence, Machine Learning, and Embedded Systems* session, UNLV, Las Vegas, NV, 2020.

IEEE CCWC'20 Best Presenter Award, "Identification of Wild Species in Texas from Camera-trap Images Using Deep Neural Network for Conservation Monitoring" in the *Artificial Intelligence and Machine Learning* session, UNLV, Las Vegas, NV, 2020.

IEEE IEMCON'18 Best Paper Award
Conference Paper, University of British Colombia, Vancouver, Canada, 2018

Oustanding Achievement Award in research contributions to the Field of Cyber-Physical Systems, *The 2018 World Congress in Computer Science, Computer Engineering, and Applied Computing (CSCE'18)*, Las Vegas, NV, 2018

IEEE CCWC'18 Best Paper Award
Conference Paper, University of Nevada Las Vegas, Las Vegas, NV, 2018

Texas Instruments Foundation Scholarship
Electrical and Computer Engineering Dept., UTEP, 2007-2008

Distributed Computing Lab (DCL) Research Stipend Award
Electrical and Computer Engineering Dept., UTEP, 2003-2004

Eta Kappa Nu Honors, Electrical and Computer Engineering Dept., UTEP, 2004

Professional Societies

Member of IEEE (Institute of Electrical and Electronics Engineers)
Member of ACM (Association for Computing Machinery)
Member of SIGHPC (Special Interest Group on High Performance Computing)
Member of SHPE (Society of Hispanic Professional Engineers)