Gustavo B. H. de Azevedo

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Professional Experience

2025 - Present	**Adjunct Professor**, School of Electrical and Computer Engineering at Oklahoma State University
2021 - Present	**Research Assistant Professor**, School of Mechanical and Aerospace Engineering / Oklahoma Aerospace Institute for Research and Education at Oklahoma State University
2018 - 2021	**Graduate Research Assistant**, Advanced Radar Research Center at the University of Oklahoma
2017	**Embedded Electronics Development Team Member**, Center for Inspection Technologies Research at the Pontifícia Universidade Católica do Rio de Janeiro
2008 - 2017	**Full-Stack Developer**, Tecgraf Institute at the Pontifícia Universidade Católica do Rio de Janeiro
2007 - 2008	**Teaching Assistant**, Instituto Brasileiro de Mercados e Capitáis

Education

University of Oklahoma (OU) *Norman, OK*

PhD Electrical & Computer Engineering *2020 - 2024*

- Advisor: Dr. David Schvartzman
- Dissertation: **On the Design of Unmanned Aerial Weather Measurement Systems for Wintry Precipitation Observations**

MSc Electrical & Computer Engineering *2018 - 2020*

- Advisor: Dr. Phillip Chilson
- Thesis: **Spatially-Temporally Resolved Sampling System for Carbon Dioxide Concentration in the Atmospheric Boundary Layer: A Low-cost UAS Approach**

Pontifícia Universidade Católica do Rio de Janeiro (PUC-RIO) *Rio de Janeiro, RJ*

BSc Computer Engineering *2013 - 2017*

- Honors thesis/undergrad research advisor: Dr. Alan Kubrusly
- Thesis: **In-System Programmer for Hall Effect Sensors for High-Resolution Geometric Sensor PIGs**

Instituto Brasileiro de Mercados e Capitáis (IBMEC-RJ) *Rio de Janeiro, RJ*

MSc Business Administration *2008 - 2010*

- Advisor: Dr. Valter Moreno
- Thesis: **Antecedents of Knowledge Acquisition in the Context of Business Simulations**

BSc Business Administration *2003 - 2007*

- Minor in Information Systems
- Honors thesis/undergrad research advisors: Dr. Denis Silveira
- Thesis: **A methodology to Teach Applied/Computational Logic for Humanities Students**

Teaching Experience

2025	**Automatic Control Systems**, Professor for cross-listed discipline for seniors in MAE and ECE	*OSU*
2025	**Introduction to Data Theory**, Guest Lecturer at the Aero Lab Class (CEAT - MAE)	*OSU*
2025	**Weather Observations, Warnings, and Forecast Enhancements with Uncrewed Systems**, Short course at the American Meteorological Society's Annual Meeting	*AMS*
2023 - 2024	**UAV Applications**, Guest Lecturer at the FAA STEM Summer Camp	*FAA*
2022	**Introduction to Cloud Model 1 Numerical Simulation**, Guest Lecturer at the Geophysical Fluid Dynamics Class (CEAT - MAE)	*OSU*
2022	**UAS 101**, Module Instructor Boeing STEM Summer Internship (UAS Research Institute)	*OSU*
2017	**LabVIEW Core 1 and 2**, National Instruments LabVIEW Student Ambassador	*PUC-RIO*

2015 - 2017	**Introduction to Electronics Workshop**, IEEE Student Branch Instructor	*PUC-RIO*
2007 - 2008	**Introduction to Algorithm Analysis**, Lecturing Teaching Assistant	*IBMEC-RJ*
2007 - 2008	**Object Oriented Programming (Java)**, Lecturing Teaching Assistant	*IBMEC-RJ*

Student Mentoring

2025.1	**Rakshit Allamraju**, Ph.D. Student – MAE, Oklahoma State University	*OSU*
2025.1	**Nathan Wisniewski**, Master's Student – MAE, Oklahoma State University	*OSU*
2025.1	**Rachel Thibodeau**, Undergraduate Student – MAE, Oklahoma State University	*OSU*
2024.2 - Present	**Eduardo Michel**, Master's Student – MAE, Oklahoma State University	*OSU*
2024.1 - Present	**Lily Yates**, Undergraduate Student – Lily started at MAE and after working with me through the Freshman Research Scholars Program she transferred to ECE and continues to do WxUAS work with me, Oklahoma State University	*OSU*
2023.2 - Present	**Carly Gotcher**, Carly started as an undergraduate and now continues as Master's Student – ECE, Oklahoma State University	*OSU*
2023.2 - 2024.2	**Saif Mostafa**, Master's Student – ECE, Oklahoma State University	*OSU*
2023.1	**Valeria Partida-Alvarez**, High School Student, Cristo Rey	*OSU*
2022.1 - 2022.2	**Enoch Tham**, High School Student, Oklahoma School of Statistics and Math	*OSU*
2022.1 - 2022.2	**Ty Garrison**, High School Student, Oklahoma School of Statistics and Math	*OSU*

Funded Research

2025 – 2028	**(Co-PI) NWS Operational Soundings with Uncrewed Vehicle Technologies for Resilient Integration: Phase II**, National Oceanic and Atmospheric Administration– Funding allocation: 25%	*$ 204,500*
2024 – 2029	**(Co-PI) Standardization for Autonomous Weather Reporting in sUAS and AAM**, National Institute of Standards and Technology – Funding allocation: 40%	*$5,500,000*
2024 – 2024	**(PI) UAS-Based Winter Weather Observation System**, National Aeronautics and Space Administration (OK-EPSCoR) – Funding allocation: 100%	*$ 26,368*
2023 – 2023	**(PI) UAS-based RFI Detection & Location**, Federal Aviation Administration – Funding allocation: 100%	*$ 224,958*
2023 – 2024	**(Co-PI) Development of a Low-Cost Instrument Landing System Calibration Platform**, Air Force Research Laboratory through Jump Aero Inc. – Funding allocation: 80%	*$ 272,052*
2023 – 2025	**(Co-PI) NWS Operational Soundings with Uncrewed Vehicle Technologies for Resilient Integration**, National Oceanic and Atmospheric Administration– Funding allocation: 30%	*$ 224,859*
2023 – 2023	**(Co-PI) Leading Edge Convection Heat Transfer Instrument for sUAS**, OSU – College of Engineering, Architecture, and Technology – Funding allocation: 25%	*$ 25,000*
2022 – 2022	**(PI) UAS-based Winter Weather Observation System for an Enhanced Forecast of Impactful Events**, NASA EPSCoR – Funding allocation: 100%	*$ 1,350*

Patents

2021	**Unmanned aerial system for sampling atmospheric data**, Inventors: Phillip B. Chilson; Antonio R. Segales Espinosa; William J. Doyle; Tyler M. Bell; Brian R. Greene; Joshua J. Martin; Elizabeth A. Pillar-Little; Gustavo B. H. de Azevedo	*US20210214079A1*

Publications

Journal Articles

2025 – B. Filipiak, D. B. Wolff, A. Spaulding, A. Tokay, C. N. Helms, A. M. Loftus, A. V. Chibisov, C. Schirtzinger, M. J. Boulanger, C. S. Pabla, L. Bliven, E. Kim, F. Junyent, V. Chandrasekar, H. Thant, B. M. Notaros, G. B. H. de Azevedo, and D. Cerrai. **Winter Precipitation Measurements in New England: Results from the Global Precipitation Measurement Ground Validation Campaign in Connecticut**. Earth System Science Data. *Under Review*. `https://essd.copernicus.org/preprints/essd-2025-162/`

2024 – G. B. H. de Azevedo, A. Avery, D. Schvartzman, S. Landolt, S. DiVito, B. Revard, and J. Jacob. **Considerations on UAS-Based In Situ Weather Sensing in Winter Precipitation Environments**. Sensors: Advanced UAV-Based Sensor Technologies (2nd Edition). `https://doi.org/10.3390/s25030790`

2022 – G. B. H. de Azevedo, B. Doyle, C. A. Fiebrich, and D. Schvartzman. **Low-Complexity Methods to Mitigate the Impact of Environmental Variables on Low-Cost UAS-Based Atmospheric Carbon Dioxide Measurements**. European Geosciences Union: Atmospheric Measurement Techniques. `https://doi.org/10.5194/amt-15-5599-2022`

2021 – E. A. Pillar-Little, B. R. Greene, F. M. Lappin, T. M. Bell, A. R. Segales, G. B. H. de Azevedo, B. Doyle, S. T. Kanneganti, D. D. Tripp, and P. B. Chilson. **Observations of the Thermodynamic and Kinematic State of the Atmospheric Boundary Layer Over the San Luis Valley, CO, Using the CopterSonde 2 Remotely Piloted Aircraft System in Support of the LAPSE-RATE Field Campaign**. Earth System Science Data. `https://doi.org/10.5194/essd-13-269-2021`

2019 – P. B. Chilson, T. M. Bell, K. A. Brewster, G. B. H. de Azevedo, F. H. Carr, K. Carson, C. A. Fiebrich, B. R. Greene, J. L. Grimsley, S. T. Kanneganti, J. Martin, A. Moore, R. D. Palmer, E. A. Pillar-Little, J. Salazar-Cerreno, A. R. Segales, M. Weber, M. Yeary, K. Droegemeier. **Moving Towards a Network of Autonomous UAS Atmospheric Profiling Stations for Observations in the Earth's Lower Atmosphere: The 3D Mesonet Concept**. Sensors. `https://doi.org/10.3390/s19122720`

Book Chapters

2021 – E. R. Martin, E. A. P. Little, and G. B. H. de Azevedo. **Assessing the Greenhouse Gas Carbon Dioxide in the Atmospheric Boundary Layer**. In Fundamentals of Capturing and Processing Drone Imagery and Data. CRC Press.

Conference Articles

2025 – E. Michel and G. B. H. de Azevedo. **WxUAS Design Choices: Initial Insights from an Intercomparison Study**. AIAA 2025 Region IV Student Conference.

2024 – G. B. H. de Azevedo, A. Avery, D. Schvartzman, S. Landolt, S. DiVito, B. Revard, and J. Jacob. **UAS-Based Low-Altitude Freezing Precipitation Observation System: Development Updates and Initial Field Deployment Results**. 24th Conference for Aviation, Range, and Aerospace Meteorology at the American Meteorology Society's Annual Meeting.

2024 – D. Cerrai, B. Filipiak, D. B. Wolff, A. Spaulding, A. Tokay, C. N. Helms, A. M. Loftus, A. V. Chibisov, C. Schirtzinger, M. J. Boulanger, C. S. Pabla, L. Bliven, E. Kim, F. Junyent, V. Chandrasekar, H. Thant, B. M. Notaros, and G. B. H. de Azevedo. **The 2021-2024 Winter Precipitation Ground Validation Field Campaign at The University of Connecticut**. IEEE International Geoscience and Remote Sensing Symposium.

2024 – B. Revard, T. Wilson, G. B. H de Azevedo, B. Elbing, and J. D. Jacob. **Urban Impacts on UAS Observations**. The 2024 Science and Technology Forum for the American Institute of Aeronautics and Astronautics.

2014 – V. Moreno, F. Cavazotte, and G. B. H. de Azevedo. **The Influence of Group Processes on Students' Motivation and Perception of Knowledge Acquisition in Business Games**. 8th European Conference on Games Based Learning.

2007 – D. S. da Silveira, E. M. Loiola, S. B. L. Ferreira, and G. B. H. de Azevedo. ***Uma Metodologia de Ensino de Lógica Aplicada em Cursos de Ciências Humanas.*** *Encontro de Ensino e Pesquisa em Administração e Contabilidade.*

Scientific Community Service

Expert Opinions

2024.2 - Present – **ASTM International - Weather Information Standard:** Lead of the Weather Information Performance Task Group in support of the ASTM F3673 Means of Compliance Sub-Working Group.

2022 - Present – **Federal Aviation Administration - Weather Community of Interest:** Subject Matter Expert at the UAS Special Weather Action Team

Reviewer

2025 – **European Geosciences Union: Earth System Science Data** - Journal Article - High-Resolution Atmospheric Boundary Layer Measurements

2025 – **AIAA: Journal of Air Transportation** - Journal Article - Visibility and Cloud Detection

2025 – **European Geosciences Union: EGUSphere** - Journal Article - Automated atmospheric profiling with Robotic Lift

2025 – **IEEE Radar Conference** - Several Conference Articles

2025 – **IEEE International Geoscience and Remote Sensing Symposium** - Several Conference Articles

2025 – **European Geosciences Union: Atmospheric Measurements Technology** - Journal Article - Novel Multi-Gas UAV-Based System article

2024 – **IEEE Radar Conference** - Conference Article - Airborne Radar Measurements for Winter Weather

2023 – **Nature: Scientific Data** - Data Article - Weather UAS data article

2023 – **European Geosciences Union: Atmospheric Measurements Technology** - Reviewer for novel Low-cost Particulate Matter Sensor article

Scientific Societies

2021 - 2025	**American Meteorological Society (AMS)**, Member of the Scientific and Technological Activities Committee on Aviation, Range, and Aerospace Meteorology (ARAM)
2025	**AMS - 25th ARAM Conference**, Session Co-Chair – From Weather Research to Operations and Back Again **AMS - 25th ARAM Conference**, Session Co-Chair – Understanding and Mitigating the Impacts of Clouds/Visibility, Icing, and Turbulence on Aviation Operations III
2024	**International Society for Atmospheric Research using Remotely Piloted Aircraft (ISARRA)**, Annual Conference Scientific Committee Lead **AMS - 24th ARAM Conference**, Session Co-Chair – Other Topics in ARAM **AMS - 24th ARAM Conference**, Session Co-Chair – Understanding and Mitigating the Impacts of Clouds/Visibility, Icing, and Turbulence on Aviation Operations II **OSU/CEAT - Graduate Research Symposium**, Judge
2023	**AMS - 23rd ARAM Conference**, Session Co-Chair – Emerging Sensors and Observing Capabilities **AMS - 23rd ARAM Conference**, Session Co-Chair – Understanding and Mitigating the Impacts of Clouds/Visibility, Icing, and Turbulence on Aviation Operations: Terminal Area Icing
2022	**OSU's UAS Weather Technology Forum**, Technical Program Co-Chair
2016 - 2017	**IEEE**, Chair of University Student Branch (Pontifícia Universidade Católica do Rio de Janeiro)

Scientific Communication

Invited Talks

2024 – *WxUAS Observations During the NASA GPM Multi Atmospheric-Instrument Intercomparison Study (MAI2S)*, at the **FAA Icing Tools Workshop**, Boulder, CO.

2023 – *Research and Development in Atmospheric Measurements using UAVs*, at the **FAA Icing Tools Workshop**, Boulder, CO.

Conference Presentations

2025 – *Problem-Based Learning Approaches for Cross-Disciplinary Teaching*, at the **Spring 2025 Meeting for the Friends & Partners in Aviation Weather**, Daytona Beach, FL.

2025 – *WxUAS Results for the NASA GPM Multi Atmospheric Instrument Intercomparison Study*, at the **AMS - 25th ARAM Conference**, New Orleans, LA.

2024 – *UAS-based Low-Altitude Freezing Precipitation Observation System: development updates and initial field deployment results.*, at the **AMS - 24th ARAM Conference**, Baltimore, MD.

2023 – *New advances in Atmospheric Measurements Using UAVs*, at the **Spring 2023 Meeting for the Friends & Partners in Aviation Weather**, Kansas City, MO.

2023 – *On the development and validation of a UAS-based winter weather observation system for an enhanced forecast of impactful events*, at the **AMS - 23rd ARAM Conference**, Denver, CO.

2022 – *Initial results of a distributed flight formation management framework for integration of heterogeneous weather UAS into a collaborative wireless sensor network*, at the **22nd Symposium on Meteorological Observation and Instrumentation at the American Meteorological Society's Annual Meeting**, Virtual.

2021 – *Spatially-Temporally Resolved Autonomous Sampling of Atmospheric Carbon Dioxide, Temperature, and Humidity: A Low-cost sUAS Approach*, at the **116th Range Commander's Council Meteorology Group**, Virtual.

2019 – *One Year Review of the Development of an Integrated CO2 Sensor Package for Rotary and Fixed Wing UAS*, at the **Annual Conference for the International Society for Atmospheric Research using Remotely-piloted Aircraft**, Lugo, Spain.