Jonathan Swindell

Waco, TX | jonathaneswindell@gmail.com | cv.jonathanswindell.com | jonathan-swindell
Google Scholar | JonathanSwindell

Education

Baylor University, **Doctor of Philosophy (Ph.D.)** in Electrical and Computer Engineering — May 2027

- GPA: 3.94
- **Dissertation Topic:** Generative AI for Measurement Extrapolation and Modeling for RF Power Amplifiers
- **Relevant Coursework:** Information Theory, Deep Learning, Multi-Dimensional Signal Analysis, RF Electronics Design, Computational Intelligence

University of Alabama in Huntsville, **Bachelor of Science (B.S.)** in Computer Engineering — May 2023

- GPA: 3.85
- **Honors College Thesis:** An Implementation of Real-Time Wearable Monitoring of the Lower-Leg Edema Using Bioimpedance
- **Relevant Coursework:** Advanced Embedded Systems, Operating Systems, Applied Linear Algebra, Software Design and Engineering, Fundamentals of Signals and Systems, Discrete Structures, Differential Equations
- **Minor:** Mathematics

Research and Professional Experience

Baylor University - Waco, TX — Aug 2023 - Present
Graduate Research Assistant

- Research in AI-driven RF power amplifier modeling, reconfigurable phased-array transmission systems, and spectrum sharing algorithms in collaboration with the National Science Foundation, the United States Army Research Laboratory, and Keysight Technologies, resulting in over 10 conference papers, 3 journal articles, and multiple patent applications.
- Independently develops and leads a sign language processing research agenda; wrote the funded $26,000 IMB Innovation Fund proposal as Co-PI.
- Mentored 3 graduate and 3 undergraduate researchers; mentees' work includes a first-author AMTA 2026 paper.

Apple - Los Angeles Metropolitan Area — Summer 2025
Sensor Algorithm Intern

- Developed a novel sensing algorithm that reduced false positives by 30% on user study data
- Modeled product-specific timer variation in Python, resulting in the down selection of firmware builds, which reduced the max percent of samples out of spec across standard device states by 47%
- Researched timer variation impact on sensing algorithm performance by injecting simulated jitter into user study data from a previous product to simulate state machine changes due to jitter using C/C++ and communicated results to cross-functional teams

Army Research Laboratory - Washington DC Metropolitan Area — Summer 2024
RF Signal Processing & Modeling Intern

- Designed hardware testing setup for reconfigurable directional modulation using in-situ measurement
- Investigated phase coherence between multiple receive channels in Zynq UltraScale+ RFSoC ZCU208 for use in directional modulation
- Developed and implemented an automated calibration algorithm to correct errors in measured power on Zynq UltraScale+ RFSoC ZCU208

Enjoy Tours - Izmir, Türkiye — Summer 2023
Global Intern

- Programmed a customer-facing marketing website to drive customer traffic using JavaScript, Mapbox, and Webflow (https://www.mapthebible.com)
- Organized 4-star and 5-star hotels in Izmir Türkiye for International Tour Groups by cost, quality, and location to streamline bookings and reduce business expenses
- Developed market expansion plans for future tours in Eastern Türkiye

University of Alabama in Huntsville Cybersecurity Research Center - Huntsville, AL — 2022 - 2023
Research Assistant II

- Designed Software Architecture for Red Team tools for the Modbus Protocol using C# and .NET in an AGILE development methodology
- Automated Virtual Machine environment setup for a Supervisory Control and Data Acquisition (SCADA) model using Vagrant

Alabama Biosciences Research Institute, Inc - Athens, AL — 2021 - 2023
Cofounder

- Published Assessment of Prehospital Monitor/Defibrillators for Clostridioides difficile Contamination
- Planned experiments and wrote corresponding protocols for our Institutional Review Board (IRB)
- Built and maintained our organization's website, storage, and email systems

Mercury Systems - Athens, AL — 2021 - 2023
Software Engineering Co-op

- Programmed customer software demos to promote our products and give examples of Mercury's API using C and C++ programming languages
- Inspected hardware schematics and implemented C interfaces for FPGA hardware and firmware
- Corrected software errors in C reported in Jira task management systems

Journal Publications

5. (Submitted) CulturalRiddles: A Multicultural Benchmark of Riddles — Oct 2026
My Chiffon Nguyen, Tianyi Hu, Vinod Anbalagan, …, **Jonathan E. Swindell**, …
Transactions of the Association for Computational Linguistics (TACL), 161 authors

4. In-Situ Measurements in Reconfigurable Phased-Array Transmitters — Aug 2026
Charles Baylis, **Jonathan E. Swindell**, Austin Egbert, Adam C. Goad, Robert J. Marks II
Electronics (Invited Paper, Special Issue) (10.3390/electronics15173818)

3. Bring Your Own Code: A Simulation Framework to Harness Optimization, AI, and Automation Techniques for Microwave Design — Oct 2025
Adam C. Goad, **Jonathan E. Swindell**, Jason Boh, Matthew Ozalas, Austin Egbert, Daren McClearnon, Charles Baylis, Casey Latham, Robert J. Marks II
IEEE Microwave Magazine (10.1109/MMM.2025.3617448)

2. Multidimensional Load-Pull Extrapolation of Unknown Devices using Generative Adversarial Networks Sep 2025

Jonathan Edwin Swindell, Austin Egbert, Adam C. Goad, Charles Baylis, Robert J. Marks II

IEEE Transactions on Microwave Theory and Techniques (10.1109/TMTT.2025.3600312)

1. Assessment of Prehospital Monitor/Defibrillators for Clostridioides difficile Contamination Jan 2021

Cody Vaughn Gibson, **Jonathan Edwin Swindell**, George Donald Collier

Prehospital and Disaster Medicine (10.1017/S1049023X21000376)

Conference Publications

12. (Accepted) Low-Cost Turntable Designed for RF Phased Array Antenna Active Element Pattern Measurement Nov 2026

Rebekah Edwards, Taylor Martini, **Jonathan E. Swindell**, David W. Cox, Adam C. Goad, Austin Egbert, Charles Baylis, Robert J. Marks II

48th Annual Meeting and Symposium of the Antenna Measurement Techniques Association (AMTA), Austin, TX, USA (10.48550/arXiv.2604.20718)

11. (Accepted) Fast, Low-Cost Passive Load-Pull Measurements Using AI Load-Pull Extrapolation and Switched Impedance Network Oct 2026

Jonathan E. Swindell, Oliver Jarvis, Austin Egbert, Adam C. Goad, David W. Cox, Charles Baylis, Robert J. Marks II

2026 European Microwave Conference (EuMC), London, UK

10. (Accepted) Non-Invasive Active Element Pattern Measurement for Fully Digital Phased Arrays Oct 2026

Jonathan E. Swindell, Rebekah Edwards, David W. Cox, Oliver Jarvis, Taylor Martini, Adam C. Goad, Austin Egbert, Charles Baylis, Robert J. Marks II

2026 IEEE International Symposium on Phased Array Systems and Technology, Boston, MA, USA

9. Implementation of a Directional Modulation Testbed for Reconfigurable Transmitters for Spatially Agile MIMO Systems Jul 2026

Jonathan E. Swindell, David W. Cox, Rebekah Edwards, Emma Lever, Adam C. Goad, Austin Egbert, Charles Baylis, Robert J. Marks II

2026 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Detroit, MI, USA (10.48550/arXiv.2602.12452)

8. Adaptive and Reconfigurable Hardware Implementation Strategy for ISAC Apr 2026

Charles Baylis, Austin Egbert, **Jonathan E. Swindell**, Rebekah Edwards, David W. Cox, Adam C. Goad, Robert J. Marks II

2026 IEEE Wireless and Microwave Technology Conference (WAMICON), Clearwater Beach, FL, USA

7. In-Situ Current Measurements of Wideband Signals for Radar Arrays Apr 2025

David W. Cox, Adam C. Goad, **Jonathan E. Swindell**, Austin Egbert, Charles Baylis, Robert J. Marks II

2025 IEEE Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS) (10.1109/WMCS63512.2025.11104906)

6. Measurement Validation of AI-Powered Multidimensional Nonlinear Load-Pull Extrapolation Apr 2025
Jonathan E. Swindell, Adam C. Goad, Austin Egbert, Casey Latham, Matthew Ozalas, Andy Howard, Daren McClearnon, Charles Baylis, Robert J. Marks II
2025 IEEE Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS) (10.1109/WMCS63512.2025.11104856)

5. Multidimensional Load-Pull Extrapolation using Generative Adversarial Networks Jan 2025
Jonathan E. Swindell, Adam C. Goad, Austin Egbert, Charles Baylis, Robert J. Marks II
2025 IEEE MTT-S Latin America Microwave Conference (LAMC) (10.1109/LAMC63321.2025.10880540)

4. Application of Mamdani Fuzzy Inference Systems to Interference Assessments May 2024
Samuel Hussey, **Jonathan E. Swindell**, Adam C. Goad, Austin Egbert, Andrew Clegg, Charles Baylis, Robert J. Marks II
2024 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN) (10.1109/DySPAN60163.2024.10632741)

3. Dynamic Faceting in RF Amplifier Design Apr 2024
Samuel Haug, Charles Baylis, Adam C. Goad, Jason Boh, Matthew Ozalas, Robert J. Marks II, Andrew Howard, Casey Latham, **Jonathan Swindell**
2024 IEEE Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS) (10.1109/WMCS62019.2024.10619019)

2. Nine-Dimensional Gradient Optimization for Automated RF Power Amplifier Design Apr 2024
Adam C. Goad, Samuel Haug, **Jonathan Swindell**, Charles Baylis, Austin Egbert, Casey Latham, Matthew Ozalas, Jason Boh, Andy Howard, Daren McClearnon, Robert J. Marks II
2024 IEEE Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS) (10.1109/WMCS62019.2024.10619017)

1. Assessing Interference with Regression Analysis Techniques Apr 2024
Jonathan Swindell, Carson Slater, Samuel Hussey, Charles Baylis, Robert J. Marks II
2024 IEEE Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS) (10.1109/WMCS62019.2024.10619025)

Additional Conference Presentations

13. MultiCulturalRiddle Oct 2026
Tianyi Hu, Henry Gagnier, Vinod Anbalagan, …, **Jonathan E. Swindell**, …
Multilingual Representation Learning (MRL) Workshop at EMNLP 2026, Budapest, Hungary (non-archival), 139 authors
Contributed to project planning and writing, validated U.S. English riddles, and collaborated with the analysis team

12. Low-Cost Turntable Designed for RF Phased Array Antenna Active Element Pattern Measurements Apr 2026
Rebekah Edwards, Taylor Martini, **Jonathan E. Swindell**, David W. Cox, Adam C. Goad, Austin Egbert, Charles Baylis, Robert J. Marks II
2026 Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS), Poster Presentation

11. Device Agnostic Multidimensional Load-Pull Extrapolation for Accelerated Simulations and Measurement Using Bayesian Optimization Apr 2026
Jonathan Swindell, Oliver Jarvis, Adam Goad, Austin Egbert
2026 Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS)

10. Implementation of Fast RF Design Optimization Using Load-Pull Extrapolation in Nexus Apr 2026

Oliver Jarvis, **Jonathan Swindell**, Adam Goad, Austin Egbert
2026 Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS)

9. Load-Pull Extrapolation of Adjacent Channel Power Ratio (ACPR) and Error Vector Magnitude (EVM) Contours Jan 2026

Jonathan E. Swindell, Adam Goad, Justin Roessler, Austin Egbert, Casey Latham, Matthew Ozalas, Jason Boh, Andy Howard, Daren McClearnon, Charles Baylis, Robert J. Marks II
2026 National Radio Science Meeting

8. Nine-Dimensional Particle Swarm Optimization for Automated RF Power Amplifier Design Apr 2025

Adam C. Goad, **Jonathan E. Swindell**, Charles Baylis, Austin Egbert, Casey Latham, Matthew Ozalas, Jason Boh, Andy Howard, Daren McClearnon, Robert J. Marks II
2025 Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS)

7. Multidimensional Load-Pull Extrapolation for Accelerated Computer-Aided Design (CAD) Simulations Jan 2025

Jonathan Swindell, Adam Goad, Austin Egbert, Casey Latham, Matthew Ozalas, Andy Howard, Daren McClearnon, Charles Baylis, Robert J. Marks II
2025 National Radio Science Meeting (10.23919/USNC-URSINRSM66067.2025.10907182)

6. Verification of In-Situ Measurement of Antenna Transmission for Array Calibration and Directional Modulation Jan 2025

Jonathan Swindell, Adam Goad, Austin Egbert, Benjamin Kirk, Alex Bouvy, Charles Baylis, Robert J. Marks II
2025 National Radio Science Meeting (10.23919/USNC-URSINRSM66067.2025.10906854)

5. Nine-Dimensional Gradient Optimization for Automated RF Power Amplifier Design Apr 2024

Adam C. Goad, Samuel Haug, **Jonathan E. Swindell**, Charles Baylis, Austin Egbert, Casey Latham, Matthew Ozalas, Jason Boh, Andy Howard, Daren McClearnon, Robert J. Marks II
2024 Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS)

4. An In-Situ Measurement System Using Downconversion Jan 2024

Trevor Van Hoosier, Emma Lever, Adam C. Goad, Samuel Hussey, **Jonathan Swindell**, Charles Baylis, Albin Gasiewski, Aravind Venkitasubramony, Robert J. Marks II
2024 National Radio Science Meeting (10.23919/USNC-URSINRSM60317.2024.10464548)

3. Simultaneous Multidimensional Optimization for Fast Amplifier Design Jan 2024

Adam C. Goad, Samuel Haug, **Jonathan Swindell**, Charles Baylis, Austin Egbert, Casey Latham, Matthew Ozalas, Andy Howard, Daren McClearnon, Robert J. Marks II
2024 National Radio Science Meeting (10.23919/USNC-URSINRSM60317.2024.10465117)

2. Assessing and Mitigating Aggregate Interference with Real-Time Spectral Brokering Jan 2024

Samuel Hussey, **Jonathan Swindell**, Glauco Amigo, Adam C. Goad, Andrew Clegg, Charles Baylis, Robert J. Marks II
2024 National Radio Science Meeting (10.23919/USNC-URSINRSM60317.2024.10465046)

1. Multi-Dimensional Image Completion for Automated Power Amplifier Design Jan 2024

Jonathan E. Swindell, Austin Egbert, Adam C. Goad, Sam Haug, Casey Latham, Matthew Ozalas, Andy Howard, Daren McClearnon, Charles Baylis, Robert J. Marks II
2024 National Radio Science Meeting (10.23919/USNC-URSINRSM60317.2024.10465124)

Patents

Sparse Extrapolation-Powered RF Load-Pull Measurement System Feb 2026
Adam Clarence Goad, Austin Scott Egbert, **Jonathan E. Swindell**
U.S. Patent Application (Submitted)

System and Method of Measuring Original Content From Computers May 2025
Robert J. Marks II, Joshua Marks, **Jonathan E. Swindell**
Appl. No.: 19/040,509

Grants

International Mission Board Innovation Fund Jul 2026 - May 2027
- **Funded:** $26,000 (July 2026) — Sign Language Processing for Low-Resourced Sign Languages
- **Role:** Co-Principal Investigator; wrote the proposal
- Research sign language processing methods to maintain signer privacy in low-resource sign languages

Awards

Baylor ECS Graduate Research Showcase Apr 2026
- Team Won: 3rd Place
- Title: Low-Cost Turntable Designed for RF Phased Array Antenna Active Element Pattern Measurements

Texas Symposium on Wireless and Microwave Circuits and Systems Student Research Competition Apr 2024
- Team Won: 2nd Place
- Title: Nine-Dimensional Gradient Optimization for Automated RF Power Amplifier Design

DAAD RISE Germany Apr 2022
- Selected for a DAAD RISE research internship in Germany in recognition of peer-reviewed research and academic accomplishments

Teaching Experience

Guest Lecturer, ELC 5370: Introduction to Information Theory – Baylor University Spring 2026
- Taught two consecutive lectures

Spectrum Sizzle: An NSF Undergraduate Spectrum Workshop May 2026
- Advanced Spectrum Sizzle Communications Lab Teaching Assistant

Teaching Development

Teaching Capstone in Higher Education (TeaCHE) – Baylor University Spring 2026
- EDL 6302: Teaching and Learning in Higher Education (Fall 2025)

Talks

Why Should I Get a PhD When I Can Already Get a MANG Job? Jan 2026
Jonathan E. Swindell
Eta Kappa Nu Chapter, University of California, Irvine, CA

Industrial Applications of Generative AI: Multidimensional Device Agnostic Load Pull Extrapolation Jan 2026
Jonathan E. Swindell
Biola University, La Mirada, CA

Multidimensional Load-Pull Extrapolation of Unknown Devices using Generative Adversarial Networks (invited) Jan 2026
Jonathan E. Swindell
2026 IEEE Radio and Wireless Week (RWW), Hollywood, CA

Service

Spectrum Sizzle: An NSF Undergraduate Spectrum Workshop May 2026 - Present
- Workforce Student Group Leader (2026)

Cornerstone University President's Artificial Intelligence Advisory Board Jun 2026 - Present
- Advises on and develops curriculum, ethical standards, and long-term institutional strategy for AI in higher education.

Professional Society Membership

Institute of Electrical and Electronics Engineers (IEEE) Jan 2022 - Present

IEEE Computational Intelligence Society Jan 2025 - Present

IEEE Microwave Theory and Technology Society (MTT-S) Jan 2025 - Present

IEEE Antennas and Propagation Society (AP-S) Oct 2026 - Present

IEEE Systems, Man, and Cybernetics Society (SMC) Oct 2026 - Present

IEEE Eta Kappa Nu (Honor Society) Jan 2022 - Present
- University of Alabama in Huntsville Chapter President (2022-2023)

USNC-URSI Commission D (Electronics and Photonics) Jan 2024 - Present
- Early Career Member (2024-present)
- Participated in three national meetings

Research Projects

Sign Language Processing For Low-Resourced Sign Languages – International Mission Board Aug 2026 - Present

Multicultural Benchmarking of Large Language Models – Cohere Labs Apr 2026 - Present

Intelligent Automated Amplifier Design and Measurement Optimization – Keysight Technologies Aug 2023 - Present

Directional Modulation for Reconfigurable Circuits using In-Situ Measurement – Spectrum Management with Adaptive and Reconfigurable Technology (SMART) Hub May 2024 - Present

SWIFT: Broker-Controlled Coexistence of 5G Wireless Artificially Intelligent Power Amplifier Arrays (AIPAA) with Passive Weather Radiometers – National Science Foundation May 2023 - May 2024

Wearable Bioimpedance Monitoring Device for Cardiovascular Disease Patients – Alabama Biosciences Research Institute, University of Alabama in Huntsville Aug 2022 - Dec 2023

Emergency Medical Services Prehospital Safety Assessments – Alabama Biosciences Research Institute Feb 2021 - Dec 2022