Jonathan Swindell

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Education

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

- GPA: 3.94
- **Proposed Dissertation Topic:** Generative AI Applied to 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

Industry History

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

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 (MTT-S) Jan 2025 - 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

Service

Spectrum Sizzle: An NSF Undergraduate Spectrum Workshop May 2026 - Present

- Advanced Spectrum Sizzle Communications Teaching Assistant (2026)
- Workforce Student Group Leader (2026)

Awards

Texas Symposium on Wireless and Microwave Circuits and Systems Student Research Competition 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

Patent

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

Journal Publications

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

9. Low-Cost Turntable Designed for RF Phased Array Antenna Active Element Pattern Measurement Apr 2026
Rebekah Edwards, Taylor Martini, **Jonathan E. Swindell**, David W. Cox, Adam C. Goad, Austin Egbert, Charles Baylis, Robert J. Marks
Submitted to the 48th Annual Meeting and Symposium of the Antenna Measurement Techniques Association (10.48550/arXiv.2604.20718)

8. Implementation of a Directional Modulation Testbed for Reconfigurable Transmitters for Spatially Agile MIMO Systems Feb 2026
Jonathan E. Swindell, David W. Cox, Rebekah Edwards, Emma Lever, Adam C. Goad, Austin Egbert, Charles Baylis, Robert J. Marks II
Submitted to the 2026 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (10.48550/arXiv.2602.12452)

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
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
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
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
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, 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
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
2024 IEEE Texas Symposium on Wireless and Microwave Circuits and Systems (WMCS) (10.1109/WMCS62019.2024.10619025)

Additional Conference Presentations

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
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
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
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
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
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
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)

Research Projects

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