Christian B. Duffee
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EDUCATION

Northwestern University **Evanston, IL**
- Doctor of Philosophy in Electrical Engineering (w/ GPA of 4.000) *Anticipated Spring 2026*
- Master of Science in Electrical Engineering (w/ GPA of 4.000) *Spring 2023*

University of Texas at Dallas **Richardson, TX**
- Master of Science in Electrical Engineering with Computing Systems focus (w/ GPA of 3.959) *Summer 2022*
- Bachelor of Science in Electrical Engineering *Fall 2021*
  - Summa Cum Laude (w/ GPA of 3.953)
  - Collegium V Honors
- Minor in Nanoscience and Technology *Fall 2021*

RESEARCH AND WORK EXPERIENCE

Physical Electronics Research Laboratory (PERL) Research Assistant *September 2022-Present*
- *Supervisor:* Dr. Pedram Khalili, PhD
- Designed system for performing factorization with VCMA generated random numbers
  - Author on Probabilistic computing with voltage-controlled dynamics in magnetic tunnel junctions

NeuroSpinCompute Laboratory Student Assistant *June 2019-August 2022*
- *Supervisor:* Dr. Joseph Friedman, PhD
- Designed and simulated domain wall systems based neural networks using Virtuoso, Spectre, HSpice and Verilog
- Created custom circuit simulation software in Java, and power consumption estimation and graphing software in MATLAB
- Coauthored *High-Speed CMOS-Free Purely Spintronic Asynchronous Recurrent Neural Network*
  - Presented at 2022 Joint MMM-INTERMAG Conference
- Designed spintronics neuron represents positive and negative weights with adjustable systematic and random error resistance
- Presented at Spring 2020 Undergraduate Research Scholar Award Poster session

Qorvo Product Quality Engineering Intern *May 2021-August 2021*
- Oversaw qualification testing and related material builds for new parts and processes
- Redesigned SharePoint database for greater use of use and accuracy
- Designed material storage, and processing system to conserve thousands of dollars' worth of materials
- Created data processing and analytics scripts

Private Tutor *2017-2020*
- Tutored a variety of clients across grade levels in subjects ranging from elementary math to college level physics

ACTIVITIES

IEEE Tutor *2020-2022*
- Assists students in understanding concepts of Computer and Electrical Engineering courses

Hackathons *2015-2022*
- Drew knowledge from research papers to create skin wearable electronic controls that interfaced with a smartphone app
- Designed from scratch a neural network system trained to solve Minesweeper puzzles
- Created software to sort playlists by musical attributes and play music based on detected facial expression
- Created a robot that can punt a football using microcontrollers and hardware store supplies

IEEE Eta Kappa Nu President *2020-2021*
- President of newly revived Kappa Kappa chapter of IEEE's academic and service honor society

Society of Automotive Engineers (Formula SAE) *2018-2019*
- Designed and implemented paddle shifting system for use on a formula race car

AWARDS & HONORS

Texas Analog Center for Excellence Undergraduate Research Internship *January 2020-Auguest 2020*
University of Texas at Dallas Undergraduate Research Scholars Award *January 2020*
McKinney School Board of Directors Recognition for Work Teaching Elementary Students Coding *2017*

TECHNICAL SKILLS

Programming Languages
- Verilog, Python (2 & 3), C++, Java, MATLAB, Node.js (w/ socket.io), JavaScript, C, Bash, Assembly

Software
- Microsoft Office (esp. Excel), Microsoft Windows, Linux, Git, NI Multisim, Cadence CAD, Virtuoso, Spice, Spectre, Shell

Subjects
- Magnetic Tunnel Junctions, Neural Networks, Digital Design, PCB design, Cloud/Client Programming, Dynamic Programming

Design Related Coursework:
- EE Lab I/II/III, Electromagnetic Engineering, Digital Circuits, Signals & Systems, Systems & Controls, Computer Arch., Senior Design I/II, VLSI Design, ASIC Design, Advanced Digital Logic, Microprocessors & Embedded Systems

Nanoscience & Fabrication Related Coursework:
- Intro. Nanoscience & Nanotechnology, Microscopy Spectroscopy & Nanotech Instrumentation, Electronic Devices, Electronic Circuits, Electronic Optical & Magnetic Materials, Introduction to MEMs, Quantum Mechanics I, Quantum Physics Electronics