**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, TI-BASIC

**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