

Curriculum Vitae

William Desueza
194-02B 64th Cir
Fresh Meadows, NY 11365
(917)-889-0816 • willjdesueza@gmail.com

EDUCATION

University of Miami

August 2020 - May 2024

Major in Electrical Engineering, Medical Concentration
Summa Cum Laude
GPA: 4.0

Relevant Coursework: VLSI, Computer Organization, Digital Design, Linear Control Systems, Digital Signal Processing, Analog Electronics, Network Client-Server Programming, Electromagnetic Field Theory, Machine Learning, Data Structures, Modern Physics

WORK EXPERIENCE

Emergency Department Scribe

September 2023 - January 2024

West Kendall Baptist Hospital, Florida

- Attend and take notes during patient interviews with attending physicians at 3 different freestanding emergency clinics.
- Wrote 500+ patient charts using FirstNet's charting system, which includes the patient's HPI, ROS, MDM, Plan/Assessment, Reevaluation, and other pertinent sections in the note, freeing up the time of the attending physician by more than 100
- Call for stat consults, create work notes using FirstNet, and provide registered nurses with printed discharge instructions.

Teaching Assistant

August 2023 - December 2023

University of Miami, Florida

- Lectured 7+ groups of undergraduates in both Biomedical Signal Analysis and Biomedical Instrumentation, guiding students through 20+ different MATLAB programs and Monte Carlo simulations throughout the semester.
- Graded and provided feedback for 10+ projects for signal analysis and biomedical instrumentation, resulting in over 95% completion of on-time submission of projects and improved performance on midterms.

Peer Tutor

September 2021 - January 2022

Camner Center, Florida

- Scheduled 100+ hours of tutoring appointments on-campus and prepared independent practice exam material resulting in exam and assignment score improvements of over 25%.
- Communicated concepts in Calculus and Physics, resulting in 75%+ retention rate among tutees throughout the semester.
- Co-hosted and presented a public review session for Calculus I during finals week involving 50+ students.

RESEARCH EXPERIENCE

Florida International University, Metamaterials Lab **NSF CELL-MET Program**

May 2023 - August 2023

Advisor: Dr. Lihua Lou

- Designed a poster and presentation for an intercollegiate CELL-MET event involving 3+ academic institutions on the biomimetic applications of vascular plants at FIU's metamaterials lab for cardiac tissue engineering.
- Conducted a literature review, involving 10+ research papers on the Mimosa Pudica, prepared weekly research updates for the team which elevated productivity, and was the first to design a unique experimental procedure.
- Prepared 100+ viscoelastic samples for nanoindentation to determine forces and elastic modulus of material.

University of Miami, Biomedical Engineering Department

January 2022 - December 2023

Multichannel Galvanic Skin Response Advisor: Dr. Jorge Bohorquez

- Conducted literature review for a multichannel galvanic skin response (GSR) system which prevents disadvantages of habituation to diagnose patients with spinal cord injuries (SCI).
- Reviewed amplifier design of 4+ schematics to measure the susceptance/conductance of current in skin.
- Coded simulation in MATLAB to predict behavior of lock-in amplifier design and soldered 10+ components onto PCB.
- 3D printed container for circuitry using CAD software (with OnShape) and went through 5+ different iterations.

University of Miami, Biophysics and Physiology Department

May 2022 - August 2022

Anatomical Labeling with AI Advisor: Dr. Stephen Roper

- Read through DeepLabCut documentation, a neural network specialized in labeling anatomy, for the purposes of labeling anatomical parts of mice with 95% accuracy, aiding in analyzing their behavior.
- Coded a prototype on Python that analyzed the gait of a cat with a pre-trained model, paving the way for future code that can be used to train and analyze models for mice from sample videos taken in the lab.

ACTIVITIES

Debate Chair of Ethics Society **University of Miami**

August 2023 - May 2024

- Moderated weekly discussions of the ethics society on-campus and prepared for discussion topics.
- Searched for and worked with the club to enroll in debate competitions available in the country.

Active Member of IEEE-HKN **University of Miami**

August 2022 - January 2024

- Tutored undergraduates on a wide variety of electrical engineering courses as a requirement for the honors society for electrical and computer engineers on campus.
- Supported other electrical engineers academically and professionally as a member of the honors organization.

Front-End Developer **Unihop**

July 2021 - August 2022

- Designed the first renditions of the UI/UX for the website of an on-campus delivery service start-up company, which increased sales by 100%+. Used a combination of available Shopify's APIs as well as HTML/CSS/Javascript.
- Built and debugged the front-end for 5+ different pages including the homepage, shopping page, and contact us page.

Co-Founder
Desueza-Freire Capital LLC

February 2020 - February 2022

- Co-founded a company in an attempt to create an efficient method of managing and investing the assets of several different colleagues in the stock market.
- Primarily focused on options trading and market analysis.

PROJECTS

Muscle Memory
Electrical Engineering Department, University of Miami

August 2023 - May 2024

- Simulating different stages of analog filtering of surface electromyography (sEMG) signals with LTSpice to ensure ideal signal-to-noise ratio is within 80% of market standard.
- Designing convolutional neural network (CNN) with PyTorch library on Python to classify hand gestures and movements with the expectation that exceeds 90% accuracy.
- Designing PCB with Altium and ensuring device area and power are minimized for wearability/safety.
- Programming an Adafruit Feather 32u4 microcontroller in C++ with low-power Bluetooth protocol.

Sunset Showdown
Computer Engineering Department, University of Miami

January 2024 - May 2024

- Used Node.JS, NGINX, and Google Cloud to host a top-down battle royale online game.
- Front-end was programming used Unity WebGL and various custom-designed assets were created.

CMOS VLSI Design of ALU
Electrical Engineering Department, University of Miami

August 2023 - December 2023

- Used Cadence Virtuoso to design pull-up networks, pull-down networks, and transmission gates in 20+ modules necessary for 4-bit arithmetic logic unit (ALU) with a 5V power supply.
- Performed DC and transient simulations to ensure ALU can drive load of a minimum of 0.1pF at 100MHz.
- Conducted power simulations on the top-level ALU to ensure its consumption was minimized to approximately 1.20mW.

16-bit RISC CPU with Pipelining
Computer Engineering Department, University of Miami

August 2023 - December 2023

- Designed functional CPU using Vivado as CAD software and Verilog HDL with a 16x16 register file and 16-bit ISA.
- Implemented CPU using UART and PuTTY software to output operations, which are completed in 2 cycles using pipelining.
- Simulated CPU design through Vivado and achieved on-chip power consumption of less than 4.2W.

FGPA Timebomb Minigame
Electrical Engineering Department, University of Miami

January 2023 - May 2023

- Designed a 2-player minigame where one player sets a passcode and the other guesses using Quartus Prime and Verilog HDL.
- Created multiple submodules for the top-level design, including the controller with an ASM, a memory block, and a module which allows the game to be output on a seven-segmented display using a De1-SoC board.

SKILLS

Programming: C++, Java, C#, ARM Assembly, Python, MATLAB, HTML, CSS, JS, Typescript

HDL/CAD: VHDL, Verilog, PSpice, LTSpice, AutoCAD, Cadence Virtuoso, Quartus Prime

AWARDS

Norman G. Einspruch Scholar Award

May 2024

College of Engineering

- Awarded to the graduating student with the highest GPA in the college of engineering.

HSF Scholar

June 2023

Hispanic Scholarship Fund

- Designated as an HSF Scholar for 2023. Granted to 10,000 students selected to be an HSF Scholar from a pool of 124,000+ applicants.

Eliahu I. and Joyce Jury Award

December 2022

College of Engineering

- Awarded to one undergraduate student a year at UM in recognition of their exceptional performance in Electrical Engineering.