GIOVANNI MICHEL
Electrical Engineering

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Education

Master of Science in Electrical Engineering	**Cumulative GPA: 3.4**

Northwestern University, Evanston, IL. Graduation date: May 2025

Master of Science in Artificial Intelligence	**Cumulative GPA: 3.7**

Florida Atlantic University, Boca Raton, FL. Graduation date: August 2023

Bachelor of Science in Computer Engineering	**Cumulative GPA: 3.4**

Florida Atlantic University, Boca Raton, FL. Graduation date: August 2022

Technical Skills

Programming Languages: C/C++, C#, MATLAB, Simulink, HTML, Python, VHDL and Verilog, VLSI, PSPICE, JavaScript, Quartus

Skills & Technologies: ROS, Microsoft Office Suite (Word, Excel, PowerPoint), Oscilloscopes, DMM, Soldering, PCB Design, Linux, Virtuoso

Controllers: TI MSP430, ARM Cortex-M3, Raspberry Pi, Nexys4 DDR FPGA, Intel Loihi

Professional Experience

Graduate Research Assistant, Los Alamos National Laboratory | Los Alamos, NM　　　**April 2022 – Present Day**

Engage in research, design and development for Spiking Neural Networks (SNNs) using the Intel neuromorphic research processor, Loihi.
- Implemented Q-learning using neuromorphic translatable design methods, this resulted in solving the cartpole problem with a mean average score of 200 over 200 episodes. Designed an information processing circuit out of SNNs to control information in neuronal circuit.
- Designed and implemented encoding methods for representing cartpole dynamics to be used as input to 2-layer SNN that ran on Loihi. Poster for ICONS 2023

Graduate Research Assistant, Grayson Group| Evanston, IL　　　**December 2023 – Present Day**

Made experiments to model dynamics of different electronic devices at cryogenic temperatures down to 1.5K.
- Designed experiments to model signal stability and temperature dependence for VCOs by modeling modified Allan variance, power spectral density, and phase noise.
- Designed experiments to model the temperature dependence for the voltage threshold, Fermi energy, leakage current, and insulator capacitance**.**

Software Engineer (Internship), GRUBBRR | Boca Raton, FL　　　**September 2021 – February 2022**

Responsible for performing Q&A automation duties for unit test and functional test assigned by Project Management.
- Implemented standardized processes for Q&A group, which lead to efficient product testing for and design of end-to-end product release.
- Engage in onsite coordination, progress, planning, closeout, & quality control to add support to project development.
- Led teams for client integrations using technical communications skills, Scrum, and Agile methodologies.

Relevant Projects

NFC Wireless Temperature Sensor| VLSI Group Project　　　**June 2024**
- Designed schematics of an IC that converts an analog input (temperature) into a digital output using Near Field Communication (NFC), to power the circuit.
- Designed schematic and testbench for temperature sensor, low-dropout regulators, power rectifier, and demodulation rectifier.
- Designed and tested power harvesting component, made multistage rectifiers that worked with bandgap reference circuit to generate stable signal.
- This resulted in learning about RC response, impedance matching, and designing an ADC.

4x4 6T SRAM| VLSI Project　　　**March 2024**
- Designed schematics and testbench for 4x4 6T SRAM Array with Sense Amplifier, bitline precharge and write circuits for each column.
- Designed layout for 6T SRAM with dimensions 1.495um x 0.3825um = 0.5718375um^2. This passed all DRC and LVS test.
- Designed layout for sense amplifier, write circuit, precharging circuit.
- The energy consumption: 34.31uW (schematic) and 45uW (layout) for the entire writing and reading of the 16bit SRAM. Divided down, for one single bit read/write it consumes 2.14uW and 2.81uW.

Autonomous Robot Manipulator | Senior Design Project　　　**May 2022**
- Integration between Raspberry Pi and Arduino Mega for robotic car and robotic arm that would pick and place water bottles and cans.
- Developed obstacle avoidance and autonomous navigation algorithm using LIDAR, IMU, and ROS for navigating and avoiding obstacles while navigating to user dependent locations.
- Create an innovative & responsive solar tracker using linear actuators for position optimization for solar panel sunlight exposure.

Digilent Nexys 4 DDR FPGA Projects with VHDL | Design of Digital Systems　　　**May 2022**
- Built Register Files with 8 and 16 registers on Xilinx Vivado.
- Built an ALU and a Parameterized Carry Save Multiplier on Xilinx Vivado
- Built a Vending Machine Subsystem using a Finite State Machine and Arithmetic State Machine on Xilinx Vivado.
- Learned about different ASIC, FPGAs, BIST, Timing Analysis, and different architectures for VHDL FPGA design.

Leadership

**VP Society of Hispanic Professional Engineers (SHPE)	FAU**	**August 2022 – August 2023**
**Marketing Chair Machine Perception Cognition Robotics Lab (MPCR)	FAU**	**August 2022 – August 2023**