GIOVANNI MICHEL

Embedded Software Engineer

U.S. Citizen | Willing to relocate

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EDUCATION

Northwestern University, Evanston, IL | Master of Science Electrical Engineering (June 2025) | GPA: 3.5/4.0

Florida Atlantic University, Boca Raton, FL | Master of Science Artificial Intelligence (August 2023) | GPA 3.8/4.0

Florida Atlantic University, Boca Raton, FL | Bachelor of Science Computer Engineering (August 2022) | GPA 3.4/4.0

EXPERIENCE

Graduate Research Assistant, Los Alamos National Laboratory | Los Alamos, NM **April 2022 – June 2025**

- Developed SITL framework for training spiking neural networks on reinforcement learning tasks using OpenAI Gym environments.
- Optimized inference latency by 30% (9.1 to 6.0 ms) on Loihi FPGA for cart-pole balancing, achieving mean score of 491.38 across 100 episodes.
- Developed spiking neural network for real-time pendulum balancing, demonstrating successful deployment of neuromorphic ML algorithms on FPGA hardware.

Software Engineer (Internship), Los Alamos National Laboratory | Los Alamos, NM **May 2022 – August 2022**

- Built Data Science Infrastructure prototype with SQL-backed schema, transforming multi-day HPC simulations into searchable knowledge base for real-time analysis.
- Developed full-stack analytics platform with optimized APIs and interactive dashboards, enabling scientists to explore results without manual post-processing.
- Evaluated visualization frameworks (ModelDB, Apache Superset, Trame, MLflow) and established reproducibility standards for experiment tracking and collaboration.

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

- Optimized QA processes by 30% through custom Java automation for Android kiosk testing, accelerating product development cycles.
- Automated unit and functional tests while implementing CI/CD workflows with version control for reliable product releases.
- Collaborated with client integration teams and tracked project issues through Jira using Agile/Scrum methodologies.

PUBLICATIONS

- **Michel, G**., Nesbit, S., Sornborger, A. (2024, December). Closed-loop Q-learning Control with Spiking Neuromorphic Network. LA-UR-24-32562. Association for Computing Machinery. **Paper**.
- **Michel, G**., Renner, A., Kunde, G., Sornborger, A. (2023, August). Towards Q-Learning-based control using a spiking neuromorphic network and sparse encoding. LA-UR-23-28336. Association for Computing Machinery. **Poster.**
- **Michel, G**., Pulido, J., Turton, T. (2022, August). Database Visualization for the Data Science Infrastructure Project. **Poster.**

PROJECTS

Cryo-Thermoelectric Modeling | Graduate Research Northwestern University **February 2025**

- Modeled cryogenic MOSFET behavior from 4K to 300K, deriving analytic expressions for key parameters including Fermi potential, threshold voltage, and subthreshold slope.
- Reduced measurement time by 5× through automated Python scripts for SR860-LOCKIN temperature sweeps.
- Collaborated with Fermilab and Global Foundries on custom low-temperature MOSFET development.

NFC Wireless Temperature Sensor | VLSI Group Project **June 2024**

- Designed integrated circuit for wireless temperature sensing with analog-to-digital conversion, powered entirely through NFC energy harvesting.
- Developed power-harvesting system with multistage rectifiers and bandgap reference for stable operation without external power source.

4x4 6T SRAM | VLSI Project **March 2024**

- Designed complete 4x4 SRAM array with sense amplifiers, pre-charge circuits, and write logic, passing all DRC and LVS verification.
- Optimized low-power operation achieving 2.14µW per bit (schematic) and 2.81µW per bit (layout) for read/write operations.

FPGA Digital Systems | Xilinx Vivado/VHDL **May 2022**

- Designed register files, parameterized multipliers, and full ALU implementations in VHDL for Nexys 4 DDR FPGA.
- Developed finite state machine for vending machine control system with integrated arithmetic processing.
- Implemented UVM testbenches and Built-In Self-Test (BIST) infrastructure for comprehensive verification.

ACHIEVEMENTS

Dean's List College of Computer Science & Engineering at FAU **Spring 2023**

GEM Employer Master's Fellowship **May 2023**

- Issued by National Consortium for Graduate Degrees in Engineering and Science (GEM) Fellowship.
- Selected by Los Alamos National Laboratory and Northwestern University for a master's degree in electrical engineering.

NSF NRT Fellowship **Spring 2022**

- Awarded by National Science Foundation for graduate studies in Data Science and AI; selected from entire engineering department (8 of 100+ students).

TECHNICAL SKILLS

Programming: C / C++, Python, MATLAB, Bash, VHDL, SystemVerilog, SQL, Git, Docker, CMake, CI/CD (GitHub Actions), AWS
AI / ML Frameworks: PyTorch, TensorFlow/Keras, MLflow, ModelDB, Computer Vision (OpenCV)
Embedded / HW: RTOS, SPI/I²C, Cadence Virtuoso, Cadence Innovus, Xilinx Vivado, Synopsys Genus, Quartus, CUDA