GIOVANNI MICHEL

Machine Learning Engineer

U.S. Citizen | Willing to relocate

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EDUCATION

Master of Science in Electrical Engineering **Cumulative GPA: 3.5**
Northwestern University, Evanston, IL. Graduation date: June 2025

Master of Science in Artificial Intelligence **Cumulative GPA: 3.8**
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

EXPERIENCE

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

- Spearheaded training framework for porting Reinforcement Learning, Q-Learning to spiking neural networks using feature engineering for. Optimized inference latency by 30% (9.1 → 6.0 ms) on Loihi FPGA, for solving cart-pole balancing problem, and achieved mean score across 100 episodes of 491.38.
- Researched and engineered spiking-neural networks on the Intel neuromorphic research processor, Loihi. (advisors: Andrew Sornborger, Alpha Renner, and Gerd Kunde).
- Designed assembly code for Loihi ISA processor, this reduced per-inference energy on Loihi neuromorphic cores to energy consumption of 0.653 mJ on the neuromorphic cores, 23% decrease versus the prior implementation of 0.85mJ.

Graduate Research Assistant, Northwestern University | Evanston, IL **September 2023 – June 2025**

- Designed python data acquisition suite for modeling thermoelectric characteristics of semiconductor devices for accelerating development of MOSFET's for next generation quantum computers. Optimized measurement of low-t experiments 5x by developing scripts to interact with dilution refrigerator.
- Designed and verified an NFC-powered wireless temperature-sensor IC, creating schematics and testbenches for the sensor core, multistage power-harvesting rectifiers with bandgap reference, LDOs, and demodulation/ADC blocks to digitize the analog signal. Demonstrated stable supply and accurate readout through impedance-matched RC networks and full-chip validation.
- Designed, laid out, and validated a 16-bit SRAM memory bank with sense amps, bit-line pre-charge, and write circuitry; achieved a compact 1.495 µm × 0.3825 µm cell passing all DRC/LVS checks. Optimized read/write energy to 34.3 µW (schematic) and 45 µW (layout), just ≈2.2–2.8 µW per bit.

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

- Built the Data Science Infrastructure (DSI) prototype for the Common Model Framework (CMF) – designed a SQL-backed schema that captures simulation, filesystem, and performance metadata, turning multi-day HPC runs into a searchable, permanent knowledge base for analysis and visualization.
- Built a full-stack analytics layer for CMF—authored and optimized backend APIs/SQL for in-database analytics, dataset comparison, and metadata visualizations, and developed interactive browser dashboards (with a parallel-coordinates viewer) that let scientists explore results in real time, eliminating manual post-processing.
- Evaluated GUI front ends and set reproducibility standards – benchmarked ModelDB, Apache Superset, Trame and MLflow, and defined logging of parameters, code versions and environment configs to guarantee experiment repeatability and secure collaboration.

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

- Optimized previous QA processes by 30%, by writing custom Java code to automate red team testing for android kiosk products which lead to increased efficiency in product testing and design from idea to product releases. Followed CI/CD software development with version control.
- Performed QA automation for unit and functional tests assigned by Project Management, ensuring product quality and reliability.
- Contributed to onsite coordination, progress tracking, planning, closeout, and quality control to support project development.
- Collaborate with client integration teams to engage in inciteful discussions. Tracked and raised issues along product life cycle through Jira using Scrum and Agile 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-23-283336. Association for Computing Machinery. **Poster.**
- **Michel, G**., Pulido, J., Turton, T. (2022, August). Database Visualization for the Data Science Infrastructure Project. **Poster.**

ACHIEVEMENTS

Dean's List College of Computer Science & Engineering | Florida Atlantic University **Spring 2023**

GEM Employer Master's Fellowship | Northwestern University **May 2023**

- Awarded by the National Consortium for Graduate Degrees in Engineering and Science (GEM).
- Sponsored by Los Alamos National Laboratory, covering full tuition and providing a stipend for a master's degree in electrical engineering.

NSF NRT Fellowship | Florida Atlantic University **Spring 2022**

- Awarded by the National Science Foundation for graduate studies in Data Science and Artificial Intelligence.
- Chosen as one of eight students from the entire engineering department for the 2022–2023 cohort.

TECHNICAL SKILLS

Languages & Programming: Python, C/C++, JavaScript, Java, SQL, PyTorch, CUDA, VHDL, SystemVerilog

Software Tools: Git, Docker, CMake, AWS, ROS / ROS2, Gazebo, MoveIt, SLAM (Cartographer, GMapping), Nsight Systems, OpenCV