# Emmanuel A. Larralde Ortiz

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## PROFILE

Graduate Student in Computer Science, Mechatronics Engineer, and ex CPU Design Verification Engineer. Skilled in software development, machine learning, and computer architecture, with Python as my preferred language. Eager to contribute by applying technical expertise and creative problem-solving to build world-class systems.

## WORK EXPERIENCE

**CPU Design Verification Engineer** **Intel Corporation** **(February 2023 – July 2024)**

- Collaborated on developing Intel's leading single thread performance CPU microarchitecture, focusing on a high-performance Branch Prediction Unit (BPU).
- Developed a cycle-accurate reference model for the BPU, predominantly using Python, integrated with SystemVerilog and C++.
- Modelled from bottom-top, an enhanced version of Intel's Return Stack Buffer.
- Contributed to CI/CD with GitHub Actions to improve integration and testing efficiency.

**Technical Graduate Intern** **Intel Corporation** **(January 2022 – January 2023)**

- Contributed to the design verification of a video compression controller (H.264, AV1, JPEG) for Intel Xeon Granite Rapids-D processors, tailored for Edge applications.
- Ensured pre-Silicon design accuracy through functional testing and code coverage using SystemVerilog, Python, and Perl.

## SKILLS

### TECHNICAL SKILLS

**PROGRAMMING LANGUAGES**

Python
C/C++

### TECHNOLOGIES

*Productivity*: Git & GitHub (with actions), Linux, shell scripting, Docker.
*Data & Machine Learning:* Pandas, NumPy, Pytorch, Scikit-learn, TensorFlow.
*Other:* Computer architecture, SystemVerilog, Web programming, SQLite, Perl.

*Software Dev skills*: Data Structures and Algorithms, OOP, Design Patterns.

### SOFT SKILLS

*Self-directed, Resilient, Collaborative, receptive to feedback.*

## MAJOR PROJECTS

**DonkieTown** 2022

A low-cost experimental platform for research on Automated and Connected Vehicles.

- DonkieNet: a retrained Mobilenet + SSD for object detection.
- Lane Following: Implemented k-d trees and vector fields for navigation.
- GitHub: DonkieTown Repository
- IEEE: DonkieTown paper

## EDUCATION

**CIMAT** August 2024 – Present
Master of Science in Computer Science. GPA: 95/100

**UPIITA-IPN**
Bachelor of Engineering in Mechatronics Engineering. August 2017 – December 2022
*Mx license number (cédula): 14162443* GPA: 94/100

## AWARDS & HONORS

- First place - Mexican Tournament of Robotics (2023).
- First place - Samsung Solve for Tomorrow contest (2018).
- Silver Medal - National Physics Olympiad (2016).