Diego Lopez

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Intro

Embedded systems engineer with a passion for designing and integrating embedded software and hardware.
Available May 2025 to December 2025.

Education

Rochester Institute of Technology - B.S. Computer Engineering Technology
Expected May 2026
Dean's List Fall 2023
Relevant Courses: Embedded Systems Design, Digital Electronics, Signals, Systems and Transforms.

Relevant Projects

RIT Electric Vehicle Team · Firmware Team · Rochester, NY 09/2023 - Present

- Worked with a team to create a **C++** abstraction layer is to integrate the **RTOS** into the library to enhance functionality.
- Implemented an Allegro ACS71240 current sensor to send data to an **ADC** and then display the info over **UART**.
- Programmed an STM32 Nucleo Microcontroller to read temperature and voltage using **I²C** and tested it with a Saleae Logic Analyzer and an **Oscilloscope**.
- Working with an Integration team to decide how to design the firmware of a Low Voltage Sub-System to safely power on a electric motorcyle.

MSP432 Security System 01/2024 - 02/2024

- Developed a security system using an ESP32 and a magnetic latch to send hardware interrupts to an MSP432 when the latch sensed the magnet was missing. The ESP would then send an SMS message letting the user know when it detected an interruption.

Embedded VHDL Audio Processor 08/2024

- Programmed an embedded **VHDL-based** audio processor with an 8-bit instruction set.
- Implemented **state machine** control for fetching and executing instructions.
- Managed 16,384 x 16-bit memory with user-controlled instruction progression.
- Integrated a **rising-edge synchronizer** to ensure signal accuracy during execution.

MSP432 hardware interrupts 01/2024

- Programmed an MSP432 connected to wheel motors to redirect them in the case of a collision.
- Coded an MSP432 to move and change course if there was something in its way utilizing ultrasonic sensing signals then send the data through **SPI**.

Arduino Macro Pad 07/2024

- Design a 3x3 **PCB** schematic in **Altium Designer**, using an Arduino to transmit macros to a PC for enhanced functionality and automation.

Arm Assembly Counter 09/2024

- Programmed an Intel Cyclone V **FPGA** using **VHDL** to count up in binary and display the count on LEDs. Utilized **Assembly** to create a counter that increments or decrements based on input from a switch and push button, with the result displayed on a seven-segment display.

Skills

Languages
Arm Assembly
C
CMake
C++
Python
VHDL

Environments and Software
Altium Designer
Git
GitHub
MATLAB
Microsoft Office
LTSpice

Embedded Systems
FPGA
FreeRTOS
I²C
SPI
STM32 MCUs
TI MSP430/432 MCUs
UART

Hardware
Soldering/Crimping
Function Generator
Logic Analyzer
Oscilloscope