Luc Chartier

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Education

Rochester Institute of Technology   **St. Edwards High School**
BS Electrical Engineering, December 2020   *Pre-Engineering*, May 2015

Engineering Experience

Cyber Phys Consulting
ML Software Engineer

May 2023 - Present
San Francisco, CA

- Consulted for AI startups in the Bay Area, notably:
  Doppler:
  - Fine-tuned Llama 2 using QLoRA on a conversational dataset, enhancing chatbot "consciousness" illusion through reflexive language instructions and dataset ranking with GPT-4.
  - Established a cost-effective deployment strategy for LLMs using RTX3090 cloud infrastructure and developed API endpoints for fine-tuning and inference.
  - Devised data scraping tools for enriching training datasets.
  Law Beta:
  - Developed an NLP tool for parsing credit agreements to highlight key provisions, and designed a React frontend for the tool.
  - Fine-tuned Llama for named entity recognition of key provisions.

Sanative AI
Founder

January 2023 - Present
San Francisco, CA

- Secured a $50,000 grant from Mozilla Foundation for research on adversarial attacks targeting Stable Diffusion, emphasizing AI vulnerabilities and potential defense mechanisms
- Engineered a fullstack AI application written in React Native with a Pytorch Python backend.

Industrial Next
Founding Software Engineer

November 2021 - November 2022
San Francisco, CA

- Spearheaded web application development with React frontend and a Python-gRPC integrated backend.
- Authored Python modules in C for IP camera and Ethercat device communication and embedded firmware for Nvidia Jetson-ESP32 coprocessor collaboration.
- Championed the MLOps strategy, optimizing Docker containers for seamless deployment of Python AI applications in Nvidia Jetson Edge AI environments.

General Electric Healthcare
Electrical Engineer

September 2021 - November 2021
Madison, WI

- Collaborated with the new product development team to design, validate, and review electronic systems for anesthesia and respirator devices, ensuring FDA compliance.

CPR Tools
Electrical Engineer

March 2021 - September 2021
Fort Myers, FL

- Engineered a hardware-software solution for extracting data from broken hard drives, employing Cadence EDA, SPICE simulations, and FPGA servo feedback controls.
- Innovated techniques to emulate ARMv7 binaries using QEMU, and performed binary disassembly for comprehensive analysis of target device.

McIntosh Labs
Electrical Engineering Co-op

June 2019 - August 2019
Binghamton, NY

- Engineered circuits for improving power quality for production amplifiers.
- Reverse-engineered printer ink cartridges to override DRM using Arduino.
- Designed a power cycler with a web-based interface for automated testing. Conducted EMC and ESD compliance testing.

Crown Audio / Harman
Electrical Engineering Co-op

December 2016 - June 2017, August 2017 - December 2017
Elkhart, IN

- Developed an automated validation test tool in C# for software and hardware production testing of professional amplifiers.
- Demonstrated expertise in SMD rework and soldering for complex components. Performed advanced circuit analysis for troubleshooting and modifications.

Skills and Knowledge

- **Programming:** C, C#, ARMv7 assembly, MSP430 assembly, Python, MATLAB, LaTeX, git, SQL, Pytorch, VHDL
- **Electronics:** SMD soldering, PCB design experience, IC design experience, DC-DC converter design, Software Defined Radios
- **Software:** Cadence (Virtuoso, Allegro), Altium, Mentor PCB, KiCad, Pspice, Creo/ProE, Xilinx, IDA, cmake, gdb
- **Computers:** Linux/GNU, Microkernel (L4Linux), Virtualization (Xen and KVM), QEMU, pfSense, Nixos

Projects and Hobbies

- **AI Audio Mixing:** Experimented with machine learning models using TenserFlow Keras to automate live audio mixing.
- **Servo Controlled Subwoofer:** Designed a subwoofer and a PID controller that would correct error in the cone's position.
- **IC Design:** Designed a half adder that was etched on a silicon wafer. Designed and simulated opamps in Cadence Virtuoso.
- **Senior Design - 3D Bioprinter:** Designed the optics and power supply for curing hydrogel with UV light.