Luc Chartier

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Education

Rochester Institute of Technology
BS Electrical Engineering, December 2020

St. Edwards High School
Pre-Engineering, May 2015

Engineering Experience

Cyber Phys Consulting
May 2023 - Present
ML Software Engineer
San Francisco, CA

- Consulted for AI startups in the Bay Area, notably:
  Hypernym:
  - Trained a text-to-speech model (E2-TTS) from scratch using Shampoo optimizer saving 20% compute cost.

  Plurigrid:
  - Used Graph Neural Networks for link prediction between hyperedges of ”loom” conversation history using clj.
  - Created Rust library for generating ologs (category theory ontologies), enhancing hypergraph chat history representation.

  Doppler:
  - Enhanced llama2 ”consciousness” illusion via QLoRA fine-tuning of reflexive language and small → large self-teaching.
  - Optimized LLM deployment using RTX3090 cluster and developed API endpoints for fine-tuning / inference.

  Law Beta:
  - Developed NLP tool with React frontend for parsing credit agreements, highlighting key provisions using NER.

Sanative AI
January 2023 - Present
Founder
San Francisco, CA

- Secured a $50,000 grant from Mozilla Foundation for a privacy-preserving adversarial attack on Stable Diffusion fine-tuning.
- Engineered a fullstack AI application written in React Native with a Pytorch Python backend.

Industrial Next
November 2021 - October 2022
Founding Software Engineer
San Francisco, CA

- Developed a fullstack web app with React frontend and a Python-gRPC backend for AI powered industrial automation.
- Authored Python modules in C for IP camera and Ethercat devices. Wrote embedded firmware for Nvidia Jetson coprocessor.
- Championed the MLOps strategy, optimizing Docker containers for seamless deployment of Python AI applications in Nvidia Jetson Edge AI environments. Prototyped a NixOS deployment strategy for AI applications.

General Electric Healthcare
September 2021 - November 2021
Electrical Engineer
Madison, WI

- Designed and validated FDA-compliant electronic systems for anesthesia and respirator devices.

CPR Tools
March 2021 - September 2021
Electrical Engineer
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.
- Emulated ARMv7 binaries using QEMU, and performed binary disassembly for comprehensive analysis of target device.

McIntosh Labs
June 2019 - August 2019
Electrical Engineering Co-op
Binghamton, NY

- Engineered circuits for improving power quality and conducted EMC and ESD compliance testing 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.

Crown Audio / Harman
December 2016 - June 2017, August 2017 - December 2017
Electrical Engineering Co-op
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, clj, Rust
- **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.