Jacob Sharf, Software Engineer with Firmware & Machine Learning Focus

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SUMMARY

Experienced in bringing proof-of-concept prototypes to production. Breadth of experience in software engineering, machine learning, and firmware. Depth of experience in C++, Python, and Systems software.

EXPERIENCE

Research Engineer - *Cornell Language, Interaction, and Learning Lab* 2021-09-20 - Present
https://cb2.ai/

Research platform for Natural Language Processing (NLP) interactions. Created dataset of grounded language instructions in collaborative asymmetric user scenarios. Online demo serves live multi-modal model on website, simulated self-play, and dataset management.

- Dataset of 500+ interactions played on AWS mechanical turk
- Optimized Python for low latency game server (1-5ms server latency)
- Client in Unity and C#. Distributed via WebGL
- ACL 2023 system demo paper; preprint available at arxiv.org/abs/2303.08127

Software Engineer - *Alphabet* 2015-07-21 - 2021-08-04

Developed systems software. C++ and Python. Realtime distributed systems. Software Reliability.

- Platforms (2 yrs): GPU and Accelerator cloud deployment. Signed binary distribution and system software
- Daydream (2.5 yrs): High-accuracy position-tracked VR controller firmware. Bluetooth low-latency sensors
- Devices & Services (0.5 yrs): Consumer device HW. Google Pixel Buds development & factory bring-up
- Waymo (1 yr): Deterministic HW simulation framework. Hardware-in-the-loop testing and presubmit service
- Received C++ Readability Certificate

Internship, Flight Software - *SpaceX* June, 2014 - Sep, 2014

Dragon spacecraft crew communication firmware. Realtime audio codecs and HW prototyping. C++ and Python

Internship, Static Analysis - *Coverity* June, 2013 - Sep, 2013

Performance analysis tools for Coverity's static analysis software. Python

Student Research, CASIT - *UCLA Center for Advanced Surgical and Interventional Technology*

Prototyped smart lower limb prosthetic device. April, 2012 - October, 2012

PROJECTS

Plasticity Neural Network Framework
C++ Machine Learning Framework from scratch with symbolic differentiation and GPU acceleration. Demonstration model achieves 88% on the CIFAR-10 dataset, trained overnight on home computer.
https://github.com/jsharf/plasticity

Argos Smart Camera
A home apartment monitor that uses cheap, ubuiquitous wifi webcams to create a smart camera system.
https://github.com/jsharf/Argos

VOLUNTEERING

Stanford Code in Place - Weekly Section Leader, Code in Place 2021 & 2022
https://codeinplace.stanford.edu/
Weekly section lead for 10 students. Taught introductory Python course.

EDUCATION

University of California 2011-08-01 - 2015-06-20
Bachelors - Computer Science