

PERSONAL DETAILS

Location Columbia, MO / Remote
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WORK EXPERIENCE

Machine Learning Engineer, Research / Applied

2023 -

Stability AI

- Trained a sequence-to-sequence model to perform prompt upsampling for Stable Diffusion 3. Achieved best-in-class performance on a model size and inference speed that beats the state-of-the-art, while maintaining high image fidelity.
- Trained, deployed and maintained a text classifier for user prompt moderation. This classifier meets industry standards for accuracy on all safety-related categories tested, as well as additional ones specific to generative models.
- Worked on a variety of customer-facing LLM projects related to tool use and conversational AI, including accelerated inference, evaluation, and tuning of models. Worked with researchers to achieve best-in-class safety and accuracy scores for the LLMs.
- Worked on the Stability Fine-Tuning API. Developed an inference, fine-tuning and post-processing stack that led to best-in-class fine-tuning training times, and best-in-industry image fidelity. This API is being trialed with several large enterprise customers.

Machine Learning Engineer, Inference

2022 - 2023

Stability AI

- Worked on Stability's next-generation text-to-image inference platform, as well as model compilation strategies to bring inference times and memory usage in line with industry standards.
- Designed and wrote Stability for Blender, and maintained Stability for Photoshop, both efforts to integrate Stability's generative image models into professional workflows.

Senior Software Engineer, Robotics

2020 - 2022

EquipmentShare

- Worked on various computer vision tasks for an autonomous construction system, including filtering and segmentation of LIDAR and image data in C++ and Python.
- Developed and maintained a distributed simulation environment for testing and developing autonomous construction equipment, including a highly performant LIDAR simulator and test scenario generator with Mujoco and Unity.
- Wrote and implemented a system for training large scale Computer Vision models based on validation and testing data gathered from real-world testing.
- Developed a pipeline for the recording and replay of sensor data from physical machines, including a real-time visualization system for reviewing defects and anomalies in training data.
- Designed and implemented a custom video streaming solution intended for low-bandwidth use, streaming video from the robot's cameras to a remote client, as well as other services on the machine.
- Mentored a team of interns in developing a custom depth estimation and segmentation system for obstacle detection from video data.

Senior Software Engineer, Elogs

2019 - 2020

EquipmentShare

- Worked on expanding support for the Elogs ELD compliance system, which gave real-time alerts for FMCSA guideline violations to thousands of drivers. Grew the list of supported state regulations from 2 to 30.
- Maintained the React Native - based iOS and Android Elogs app, which served a wide range of mobile devices and trackers.
- Coordinated with other teams within the company to expand DOT regulation support across multiple products.
- Maintained a front-end and API for fleet managers to manage their drivers in React and TypeScript.

Software Engineer

2016 - 2019

CARFAX

- Led the development of the CARFAX Service Shops application, which provides shops with a toolset for managing customer-facing data for their shop and viewing analytics.

- Designed and implemented a package-based frontend architecture for myCARFAX's core products over the span of several project timelines. Developed a standard for sharing common functionality across products and teams.
- Created an architecture for one of CARFAX's first user-facing products running on Amazon Web Services. Collaborated on the strategy for migrating the CARFAX's on-premises consumer services to an AWS-managed, Kubernetes-based infrastructure.
- Worked on the rewrite of myCARFAX's core web applications from Angular to React/Redux. Worked with the User Experience team to enforce a consistent look and feel across myCARFAX products.
- Led the development of the CARFAX Service Shops application, written in React / Node / Typescript, which is used by 1,000s of customers daily.

Developer

February 2018 - January 2019

InteraXon Inc

- Developed the CES demo experience for the MUSE 2 by Interaxon, an AR experience that allows users to try out a virtual version of the headset and explore its features. Built in Unity with ARKit, utilizing face detection and masking.
- Was later deployed in demo kiosks in California, and integrated into InteraXon's marketing material.

Developer

September 2018 - February 2019

Healium XR

- Designed and developed several AR experiences for assisting with meditation in Unity with ARKit and ARCore, targeting mobile devices and the Oculus Go headset.
- Built a dashboard and analytics platform for tracking biometric data. Used AWS Cognito for authentication and Lambda and DynamoDB for the backend.

Developer

June 2017 - May 2018

GeneTrait Laboratories

- Developed the MedTrait reporting system for GeneTrait.
- Developed a backend service to generate genetic testing reports with Node / Express, as well as a component library in React and Typescript to render the reports.
- Was involved in the entire product development cycle, including designing features and developing a user experience and visual identity.

Developer

Oct 2015 - Jun 2016

QuarkWorks

- Worked on a variety of native mobile applications, including ZephyrCharts, an aviation mapping application for pilots. This involved developing native iOS and Android clients for each project.
- Developed the companion app for Columbia's local Roots n Blues festival, as well as a backend for managing user data in Google Cloud.

Software Developer

Feb 2014 - Sep 2015

WireCloud, LLC

- Worked on various contracting projects including the backend for a local food delivery service. Built a system for managing a stream of orders, and assigning them to drivers, as well as a customer-facing order tracking system.
- Developed a companion mobile web application for drivers.

SKILLS AND TECHNOLOGIES

<i>ML</i>	PyTorch, Jax, Lightning, CUDA, Slurm, Ray
<i>Vision</i>	PCL, OpenCV, OpenGL, PhysX, Mujoco
<i>Robotics</i>	C++, Rust, ZeroMQ, Protobuf, ROS, Waymo Honeycomb
<i>Frontend</i>	TypeScript, React, Redux, MobX
<i>Backend</i>	Golang, Terraform, Kubernetes
<i>AWS</i>	SQS, CloudFront / S3, ECS, Lambda, Cognito, Cloudflare Workers
<i>Mobile</i>	Swift / iOS, Android SDK, SceneKit
<i>XR</i>	Unity, C#, ShaderLab, ARKit / ARCore, SteamVR SDK

EDUCATION

Governor French Academy
High School

2011 - 2015

University of Missouri
College, Not Completed

2016 - 2017