Brian Fitzgerald

PERSONAL DETAILS

Location	Columbia, MO / Remote
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GitHub	https://github.com/brianfitzgerald

WORK EXPERIENCE

Machine Learning Engineer — 2020 - 2022
Stability AI

- Worked on the fine-tuning API for Stability's Stable Diffusion range of generative image models. 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.
- Wrote and trained a series of content classifiers to filter out NSFW generations from Stability's image generation APIs. Achieved state-of-the-art inference times with minimal hit to model performance. Developed a system to detect model drift and retrain the model based on user activity patterns.
- Designed and single-handedly wrote Stability for Blender, and maintained Stability for Photoshop, both efforts to integrate Stability's generative image models into professional workflows.
- Worked on Stability's next-generation inference platform, as well as model compilation strategies to bring inference times and memory usage in line with industry standards.

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

Frontend	TypeScript, React, Redux, MobX, Webpack
Vision	PCL, Tensorflow, Pytorch, OpenCV, OpenGL, Unity
Robotics	C++, Rust, ZeroMQ, Protobuf, ROS, Waymo Honeycomb
Backend	Express, Golang, Terraform, Kubernetes, Helm, Jenkins, Docker
AWS	SQS, CloudFront / S3, ECS, Lambda, Cognito
Mobile	Swift / iOS, Android SDK, SceneKit
XR	Unity, C#, ShaderLab, ARKit / ARCore, SteamVR SDK

EDUCATION

Governor French Academy   2011 - 2015
High School

University of Missouri   2016 - 2017
College, Not Completed