**Liam Barstad**

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**SUMMARY**

Multi-talented software engineer with 5 years of industry experience in software development, big data engineering, infrastructure design, and machine learning. Creative, diligent, agile, and business-oriented, well-versed in enabling data science teams and automating large scale operations.

**TECHNICAL SKILLS**

You can find an in-depth explanation of each individual skill on my resume site: **resume.liambarstad.com**

* **Languages:** Python, Golang, SQL, Javascript, Ruby, C++, Cypher
* **Libraries:** Pytorch, Tensorflow, Airflow, Spark, Neo4j, Flask, React, React Native, Rails, Redis, Selenium
* **Machine Learning:** Reinforcement Learning, Time Series Analysis, Anomaly Detection, Gradient Boosting, Regression, Classification, Unsupervised Learning, Text to Speech
* **DevOps:** Linux, Git, Docker, Kubernetes, CI/CD, MLFlow, AWS, GCP
* **Soft Skills:** Mentorship, Agile/Scrum, Customer Success, Object-Oriented Programming, Test-Driven Development

**PROFESSIONAL EXPERIENCE**

**Data Engineer - AT&T**,San Diego, CA August 2021 – Present

* Created tooling for operations monitoring and ETL, using Flask, React, Airflow, SQL, and Golang
* Trained LSTMs in Pytorch and graph-based algorithms in Neo4j for predictive customer journey analysis
* Architected and developed a production-scale synthetic monitoring tool in Python/Selenium, and trained teams to be able to contribute to the codebase
* Performed data analysis on behavioral metrics in Snowflake SQL for root cause analysis and user categorization across a variety of datasets

**Machine Learning Consultant - Align Tech and Finance,** San Diego, CA June 2021 – August 2021

* Developed profitable Deep Reinforcement Learning (DQN/DDPG) solutions in Tensorflow for trading and arbitrage
* Performed quantitative analysis on real-time trade books
* Deployed pipelines to AWS SageMaker and created the infrastructure for the model to make trades

**Research Support Engineer – Quantum Metric**, Denver, CO March 2019 – May 2020

* Generated custom analyses, including a kernel two-sample test in Google Bigquery SQL, for enterprise clients
* Wrote back-end pipelines in Airflow, Kubernetes, and Google Cloud Platform (GCP) for custom reports
* Performed feature extraction in ETL processes supporting the research team, for use in Data Science and Machine Learning on a large-scale behavioral dataset
* Developed libraries in JavaScript to intercept complex events in the front-end lifecycle

**Senior Web Developer – Zober**, Denver, CO July 2018 – March 2019

* Lead and collaborated with a team of 4 developers, using agile and SCRUM methodologies, communicating with leadership and actualizing business requirements
* Created the first iteration of a production ecommerce product in Ruby on Rails and React
* Developed authenticated user funnels and subscription pipelines, building the framework for future revenue of the SaaS service
* Automated lead generation and outreach to B2B clients

**PROJECTS**

**NLP Trading** - March 2024

*github.com/tonydaggett/NLP\_trading\_strategy*

* Collaboration with Tony Dagget *https://www.linkedin.com/in/tonydaggett/*
* Predicts NLP stock signals in sentiment model for use in trading model
* Airflow pipeline using TaskFlow API
* Postgres database for technical indicators, MongoDB for storage of news files, Vector database for article vectors
* Running on local Kubernetes cluster using Airflow KubernetesExecutor

**Content-Aware MOS Prediction** - January 2024

*github.com/liambarstad/content\_aware\_mos\_prediction*

* Predicts Mean Opinion Score (MOS) of synthesized speech snippets, using NLP features
* Suite of modified MOSNet, LDNet and SSL-MOS models
* Models built in Pytorch

**Pee Wee Text to Speech** - February-July 2023

*peewee-tts.liambarstad.com* - *github.com/liambarstad/peewee-tts*

* Generates speech with the goal to mimic the context-dependent nature of Pee Wee Herman's voice
* Combination of 3 deep neural networks trained separately
* LSTM encoder generates speaker embeddings specific to the character
* Tacotron 2 text synthesizer, attention-based DNN that takes speaker embeddings and generates spectrograms
* WaveNet DNN Vocoder turns spectrograms into final waveform

**Personal Site** - July 2020

*resume.liambarstad.com* - *github.com/liambarstad/personal\_site*

* Built in Rails 6.1 and React (most of the code is using legacy React features)
* Deployed on GCP and Docker
* Very rare 3D effect with 7 layers moving at different speeds (see background graphic on top page)

**Ping Timer** - January 2019

*github.com/liambarstad/PingTimer*

* Built in React Native with a Realm NoSQL database, and deployed with Expo
* Allows users to time multiple tasks simultaneously
* Features the ability to organize timers into projects and categories
* Allows color and theme customization

**EDUCATION**

**Machine Learning Certification**, University of California, San Diego - 2023

**Back End Development Certification**, Turing School of Software and Design, Denver - 2017