

Fraser Greenlee

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Work

Machine Learning Engineer Darktrace, Cambridge, England (March 2020-Present)

As part of the Developer-Analyst team, I made ML models & services to alert customers on indicators of compromise.

- Transformers - Led using transformers to categorise hostnames, file paths, emails & more.
- AWS - Made Terabyte sized datasets with Lambda & Athena to train deep learning models.
- Graph Databases - Used Neptune to map all web links in CommonCrawl.
- Terraform - Made secure infrastructure for data pipelines using customer data.

Software Engineer Skyscanner, Edinburgh, Scotland (Sept 2019-March 2020)

As part of the Data Transformation Tribe, I format raw datasets for critical internal systems.

- Led making a series of prototype ML notebooks into production-ready DAG of Pyspark/AWS Batch jobs.
- Redshift - Made a low-latency Redshift cluster half the expected size by creating an index based on user queries.
- Dimensional Modelling - Converted raw data into fact & dimension tables by speaking with customers across the business.

Software Engineering Intern Apple, Cambridge, England (Jun-Aug 2018)

Developed tools for use in development and unit-testing.

- Java - Created software to convert internal data structures into human-readable forms and convert them back again.
- Python - Made simulations of core components in Siri's dialogue infrastructure.
- Testing - Identified and recorded bugs in soon to be released projects.

Software Engineering Intern MyOptique Group, London, England (Jun-Sept 2017)

Selected through HackCampus. hackcampus.github.io

Created an internal analytics tool that tracked every department's well-being and displayed it on screens in the office.

- Vue.js - Made the frontend with Vue implementing WebHook subscriptions to show live values on the site.
- GraphQL - Implemented a GraphQL API for the database and fixed issues on howtographql.com

Education

University of Glasgow - BSc Software Engineering, 1st Class (2015-2019)

Projects/Awards

Huggingface JAX Contest (June 2021)

Came in the top 15 in the [Flax-JAX Community Week](https://www.huggingface.co/Flax-JAX-Community-Week).

- JAX - Converted my T5-VAE into a JAX model to train on a TPUv3-8 VM on all English sentences from Wikipedia.

T5-VAE (March 2020-Sept 2021)

Converted [Google's T5 model](#) into a [VAE](#) that allows smooth transitions on structured sequences (e.g. text, code, music). This model does not suffer from posterior collapse allowing the model to be larger than any before.

- Scraping - Made a [Kaggle dataset](#) of 1 million Python HackerRank solutions all ran with state-changes stored.
- Pytorch - Converted a T5 transformer into an MMD-VAE and trained it on Python state changes to a <1.1 perplexity.
- Google Cloud - Trained models, stored data and [ran HackerRank solutions](#) while tracking state changes using GCP.
- Research - Used by PhD researchers working on [representation learning](#) and [conversational search](#).

RL REPL (2019-2020)

A Python REPL converted into reinforcement learning [environment](#) with an [agent](#) that learns to predict state changes.

PPO - Made a PPO-RND model with Pytorch to explore addition problems. Find out more [here](#).

Live Coder (2019)

A [VSCode Extension](#) that shows how your code executes as you type.

Has over 10k installs and showcased during my [Pioneer livestream](#) with instagram cofounder Mike Krieger.

Pioneer Award - Winner (2019)

Pioneer is a global startup tournament funded by Marc Andreessen and Stripe.

I won the [award](#) with my desc2code project that converted natural language into code by letting developers specify intent.