

Matthew Barber

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PROFILE

I'm a BSc Computer Science graduate experienced in using Python for data mining applications. I can efficiently explore, preprocess and model for data to identify the underlying patterns which lead to useful insights. I am able to engineer my own applications to achieve bespoke tasks, from quick scripts to fully-fledged CLIs. I can work efficiently alone, being a disciplined and resourceful individual, always eager to improve my craft. With my employment and volunteering experiences necessitating cohesive teamwork, I enjoy working with and learning from my peers, and can communicate my own ideas succinctly.

PROJECTS

coinflip

Python library for assuring cryptographic randomness in RNGs. The implemented statistical tests use pandas under the hood. A testing suite featuring pytest and Hypothesis ensures reliable results.

Linear B-cell Epitope Classification

Essay on exploring, preprocessing and modelling for a dirty proteins dataset. I identified subtle duplication patterns in the data, resolved via a bespoke Python script. Weka was used to create Nearest Neighbour, Random Forests, Bayesian and Logistic Regression classifiers, both for equal and uneven cost scenarios, to find the most appropriate model.

Financial Analysis Stack

Creating regression models for stock market histories in Python. Demonstrates how to build applications with distributed data via a Hive on HDFS, and how to utilise parallel processing with PySpark. All services are initialised as Docker containers.

University Events Site

NodeJS site for students to manage university events. API and front-end routing was created in Express, interacting with a MongoDB data store.

Recursive GZIP Bomb Tutorial

Comprehensive primer on the file format and compression algorithm theory involved in creating compressed file quines (i.e. extracts to an exact copy of itself, ad infinitum). Self-referential checksum was brute-forced by a multiprocessing Python script. My file is used to smoke test Apache's Tika project, and exposed a MacOS vulnerability.

EXPERIENCE

Ferndale Homeless Shelter

Nov 2015–Apr 2019

Starbucks

Sep 2018–Feb 2019

OTS Homeless Shelter

Sep 2018–Feb 2019

Adventure Island Theme Park

Jul 2017–Sep 2018

EDUCATION

1st (Honours) BSc Computer Science, Aston University

FIND ME ONLINE

 github.com/Honno

 pypi.org/user/Honno

 kaggle.com/justhonno

 matthewbarber.io

LANGUAGES

Python

SQL

Lisp

C

JavaScript

Bash

Java

PACKAGES

pandas

NumPy

SciPy

scikit-learn

Matplotlib

Altair

pytest

Hypothesis

PySpark

Redis

Jinja

Click

TOOLS

Git

Jupyter

Weka

Docker

pre-commit

GitHub Actions

TravisCI

AppVeyor