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