Tyler Walters

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Links: https://github.com/1twalters01 | https://1twalters01.github.io/Portfolio/

PROFILE

I am a MEng Mechanical Engineering graduate with freelance experience working with Django, HTML, CSS, SCSS, Typescript and React.

EDUCATION

Master of Mechanical Engineering at Loughborough University (2:1) – Oct 2018 to Sept 2022
- Of note: Maths (71%), Engineering Computation (77%), Dissertation (71%)

A levels (Further maths, Maths, Physics and Chemistry)

GCSEs (11 including English, Maths, Physics, Chemistry, Biology, and Computer Science)

SKILLS

Back-end: Python, NumPy, Pandas, Django, MATLAB, SQL (PostgreSQL), Redis
Front-end: HTML, CSS, SCSS, JavaScript, TypeScript (React)
Notable other: JSON, XML, Excel, Docker, AWS (Elastic beanstalk, S3)

EXPERIENCE

2019 – Current – Miscellaneous paid freelance tasks

I have taken on a number of paid freelance tasks including but not limited to:

- Creating a Flask site that scrapes and sorts products from Amazon and eBay.

- Using DjangoREST framework and React to build (things for) various websites. Examples include payment systems, login flows and building sites from a design.

- Creating a program that scrapes donations from a YouTube live stream and puts them into excel for further analysis.

Current – Tutoring

- I tutor GCSE and A-level Maths and Physics to several students.

PROJECTS

Current – Django/React language site – https://github.com/1twalters01/Conjugat

Overview video with timestamps in the description:

- Uses Django, DjangoRest, PostgreSQL in the back-end and React(TS+SWC), React Redux, Redux Persist, SCSS in the front-end.

- Uses the Paypal, Stripe, Coinbase APIs, their webhooks, and the python cryptography package to handle subscription payments. Uses mailchimp for newsletter signups.

- Scraped 10,000 verbs from Reverso and their conjugations. Database has hundreds of thousands of entries. It was unusably slow at first but ran smoothly on an intel Pentium PC after normalising the data to 5NF and using indexing.

- Uses DjangoRest Knox for authentication (with my own class based views rather than the inbuilt Knox ones). Made my own equations for two factor authentication.

- Currently integrating Cassandra and Redis (installed from Docker images) and using NumPy/Pandas for making the algorithm that chooses verbs to send.

Dissertation continuation

- I had the opportunity to continue part of my 3rd-year dissertation. I remade it in Python using NumPy, Pandas and MatPlotLib, and replaced the Bessel functions with modal analysis. The result sounded more natural.

4th year Group Project

- I worked in a team of 5 that followed Agile Methodology. I redesigned the pads used in production by Toyota and used Full Control Gcode to create Gcode and print them. It was new software – I am willing and able to learn things quickly. My design was predicted to last over 15% longer than their existing pads. Toyota would thus save money and increase their profitability.

Dissertation – Modelling piano notes and creating their sound using numerical analysis.

- Used MATLAB and worked with Bessel functions for accurate piano sounds. Timbre changed with the applied force and duration.

- Difficulties included working with the biharmonic operator and Mindlin's plate theory to model the soundboard. With perseverance and logical thinking, I solved the simultaneous 4th-order mixed partial differential equations.

HOBBIES

Outside of computation I enjoy learning French (Upper Intermediate level – B2 in the CEFR standard) and reading (both programming books such as Clean Code and business books such as Market Wizards and Zero To One). I am currently reading Design Patterns to improve my OOP skills. I am a self-taught pianist and was a first violinist in my local Youth Orchestra, which helped to develop my leadership skills.

These activities help me to become well-rounded. They have helped me build the discipline needed to advance in many subjects at once. My current project has helped me become a resilient problem solver, capable of overcoming difficulties and achieving excellent results.