

# Tyler Walters

**Contact Details:** 07758 256370 | [1twalters01@gmail.com](mailto:1twalters01@gmail.com)

**Links:** <https://github.com/1twalters01> | <https://stackoverflow.com/users/4569239/>

## PROFILE

---

I am a hard-working, highly motivated MEng Mechanical Engineering graduate with a passion for personal development. My degree has helped me gain skills relevant to software development such as problem-solving, Agile project development, and teamwork.

I have used Python since my GCSEs and can use it in areas including, but not limited to: calculating and viewing the results of numerical analysis with NumPy and Matplotlib, web development with Django or Flask, and web scraping with BS4.

I also have freelance experience working with HTML, CSS, Typescript and React. This has let me develop my customer relationship and time management abilities. It has also made me self-motivated and has given me a good understanding of Software Engineering principles.

## 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 (as well as Django and Flask), MATLAB

Databases: SQL (PostgreSQL), NoSQL (MongoDB, Redis)

Front-end: HTML, CSS, JavaScript/TypeScript (as well as React)

Notable other: JSON, XML, Excel, Numerical Analysis, Problem Solving, and Teamwork

## EXPERIENCE

---

**Current – Django conjugation practice site – <https://github.com/1twalters01/Conjugat>**

- I scraped the top 2000 words and their conjugations for five languages and then put this into a PostgreSQL database using JSON. It holds over 400,000 conjugations.
- I joined the verbs to subjects and auxiliary verbs. It was unusably slow on my PC, taking over 15 seconds to load admin. I normalised the model for this data to 5NF and used indexing when appropriate. Once finished, loading pages took sub 1 second.
- I coded full login features (reset password, email verification, social authentication etc.). The 2FA functionality provided by Django-two-factor-auth forces you to use their login design, so I created my own TOTP functions and 2FA functionality.

- I incorporated Stripe, Paypal and Coinbase APIs and used encryption and webhooks.
- Currently creating a branch that separates the front and back end. It uses React, TypeScript and the DjangoREST framework instead of the templating engine.

### **Current – Tutoring**

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

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

### **Dissertation continuation**

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

### **4<sup>th</sup> year Group Project**

- I worked in a team of two Product Design Engineers and two other Mechanical Engineers 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 the Luton Youth Orchestra, which helped to develop my leadership skills.

These activities help me to become well-rounded person. 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.