

# Christopher Greenwell

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## Profile

An aspiring engineer who possesses the natural curiosity, problem-solving and adaptability needed to specialize in software development and consultation. Established a particular interest in MATLAB (m-script), using it to assemble meshes to analyze finite element problems associated with the movement of beams and bars under loading. Seeking a position in which I can utilize my logical thought process and fast learning to further my education in both software development and IT.

## Education

### **Civil BEng | July 2020 | City, University of London**

- 1<sup>st</sup> class Bachelor with honours
- Geotechnical Engineering: 83%
- Structural Mechanics: 82%
- Mathematics I: 80.4%

### **GCE | August 2017 | Bishop Ramsey C of E School**

- Physics: A
- Mathematics: B
- Economics: B

### **GCSE | August 2015 | Bishop Ramsey C of E school**

- Advanced Free Standing Mathematics Qualification: A
- 10 GCSEs grades: A\* - C (including Maths, English and Science at A\*-A)
- Functional Skills Qualification in Information and Communication Technology: Level 2

## Engineering Projects

### **April 2020 | Introduction of Timoshenko Beam Theory into an existing Finite Element Code**

- Existing Euler-Bernoulli finite element code based on CALFEM (m-script) required the integration of Timoshenko beam theory to allow for a broader application of the code.
- Independently conducted both research and development of the code, coincided with regular meetings with the project supervisor.
- Introduced multiple functions to promote readability and isolate potential problems to particular sections of the code.
- Used nested for/while loops and if statements to conduct analysis of multiple beams within a 3D mesh.
- Created functions that change behavior based on the number of input arguments, allowing for distributed loads to be optionally considered.
- Surpassed the original task by adding addition functionality to the code allowing for users to switch between the two beam theories, apply distributed loads, and analyze uneven I-beam cross-sections.

## **March 2020 | Management of Kings Cross Station Train Shed to Concourse Link**

- Tasked with producing a group poster concerning the general management and construction of a sheltered walkway between an existing train shed and a new concourse being constructed at King's Cross station.
- Developed a set of high quality sketches to show the partial demolition of the train shed and the construction sequence of the new connection; this required me not only to integrate with other quite experienced members of the team and offer constructive criticism of their ideas, but also correctly interpret the information provided to me and to display it in a comprehensible fashion.
- Achieved, as a group, the highest grade in the class, the professor stating that the main reason for this being the sketches (that I produced) on the final poster.

## **June 2018 | Wearable Device that can detect Tachycardia**

- Assigned to produce a device as a group that can measure an individual's heart rate using an infrared light and sensor, then determine if they had tachycardia and signify that to the user via an LED.
- Assisted in programming the Arduino board used as I was one of two more competent coders in the group.
- Added an LCD screen to display the BPM of the heart as well as an ECG, this required certain ranges of pixels to be assigned to the BPM and ECG so that they could be correctly displayed, as well as resizing the ECG graph so that it would fit in the allocated space.
- Independently overcame a significant problem encountered at the end of the project where one coin cell battery was not enough to power all the components.
- Received an award for being the most enthusiastic group due to us going above what was expected in the project brief.

## **Technical Skills**

### **MATLAB**

- Intermediate understanding of inbuilt functions, comfortable using nested for/while loops and if statements. Able to troubleshoot and improve existing code with appropriate background engineering knowledge of the task.

### **AutoCAD**

- Basic proficiency in use of the software, can construct meshes of 2D and basic 3D shapes. Copying paper specifications to AutoCAD can be completed with relative ease due to my ability to visualize objects.

## **Abilities**

### **Visualization**

- Being able to visualize complex problems in my head and breaking them down into smaller components allows me to develop deeper understanding of problems.

### **Problem-Finding**

- Discovering aspects of a problem that others may not will allow me to ensure that all the information is considered when tackling a task, and will lead to the correct application of creative solutions.

### **Logical Thinking**

- Understanding the sequential steps required to solve a problem is what lead to both my appreciation and enjoyment of coding and its real world applications.

## **References**

- Roger Crouch (Professor of Computational Mechanics), PhD, MSc, DIC, BSc: [rscrouch@mac.com](mailto:rscrouch@mac.com)