

## Personal Information

<b>Permanent Home Address</b>	On Request Wandsworth, London SW18	<b>Phone (Mobile)</b>	+447972912740
<b>Placement Accommodation</b>	On Request Bristol BS1	<b>Email</b>	ec602@bath.ac.uk
		<b>Online Portfolio</b>	edmund.coxnetworks.co.uk
		<b>LinkedIn</b>	linkedin.com/in/edmundcox
		<b>Nationality</b>	British

## Placement

As a part of my sandwich (MEng) degree, I will be undertaking a **year long placement** during the current academic year (2017-2018) at **OC Robotics** in Filton, Bristol.

## Education

### University of Bath

**MEng in Mechanical Engineering (Sandwich) 2<sup>nd</sup> year student**

**Predicted Classification: First**

First Year - Semester 1	First Year - Semester 2
Mathematics 1	Mathematics 2
Solid Mechanics 1	Solid Mechanics 2
Thermodynamics	Fluid Mechanics
Design, Materials and Manufacturing 1	Design, Materials and Manufacturing 2
Experimentation, Engineering Skills & Applied Engineering	Instrumentation, Electronics & Electrical Drives
<b>Year Average: High 2:1</b>	
Second Year - Semester 1	Second Year - Semester 2
Systems & Control	Thermal power and heat transfer
Modelling Techniques 1	Modelling techniques 2
Solid Mechanics 3	Solid mechanics 4
Design 3	Design 4
Fluid Dynamics with historical perspective	Manufacturing operations and technology
<b>Semester Average - High 2:1</b>	

In order to help me in my degree, I have used MATLAB for data processing when appropriate, and have exposed myself to Solid Edge for Engineering design projects (as well as being proficient using NX from work experience).

### KCS Wimbledon, London

<b>A Level (A2)</b>	<b>A*A*A* in Mathematics, Physics and Chemistry</b>
<b>Advanced Subsidiary (AS)</b>	<b>A (91%) in Economics</b>
<b>(I)GCSE</b>	<b>10 A*s, 1A</b> including Mathematics and English
<b>Continuation French Diploma</b>	<b>Distinction (Highest Grade)</b>
<b>Physics AS Challenge (BPhO)</b>	<b>Silver</b>

## Engineering Projects and Technical Skills

### Automatic paper aeroplane launcher

As a group project, we have designed, and made a device to fire six paper aeroplanes at a variety of angles, without any intervention. I have expanded my knowledge of the use of motors in a scenario like a belt drive, timing mechanisms and aerodynamic considerations, as well as developing my communication skills in relation to conveying design ideas in a group context.

### Computer controlled hovercraft

I am in the process of building an RC hovercraft, using a repurposed Raspberry Pi, to be controlled initially using a WiFi module and an Apache web server. The aspiration is to have the possibility of controlling the craft using both the directional keys of a computer, and also via the gyroscope of a mobile device. The aim of the project is firstly to create something that is enjoyable to use. However, I have also developed my understanding of motors (including EDFs), servomotors, air transit and the associated electrical control systems that are prevalent in a variety of 'Mechanical Engineering' products today.

### Shaft Design

I have been involved in designing a shaft, in a pair, for a small kart-like vehicle, where the mock brief specified its use as a target practice tool for the military. Through this I have gained a better understanding of the purposes of, and what modifications are required to use bearings, sprockets and circlips, as well as having gained a fuller grasp of manufacturing techniques. Through this project, I have familiarised myself with the process of iteration in order to tend towards an optimal solution, as well as enhanced my project management skills through compartmentalizing large tasks and assigning them to other people working on the same overarching project. I feel also it has aided the development of my CAD skills, and I am becoming more adept and efficient in building up the geometries required.

### Drill Powered D-Lock Cutter

In a pair, I have designed a device to cut through bicycle D-Locks, up to a maximum diameter of 25mm (grade 60 steel), that is solely powered by a battery operated hand drill. This has been designed in mind for use by a local council, so ease of use, weight, ergonomics and business factors were all taken into account during the design process. The final design used a lead screw and a link mechanism to cause two blades to converge, slicing the D-Lock shaft. This exercise has made me feel more secure in Solid Mechanics techniques such as stresses and energy conversion mechanisms, by allowing me to apply them to more expansive scenarios than those found in exam questions. My understanding of ergonomics, and what makes a good product for the sale market I feel has also significantly improved, along with my time management skills.

### Masala Dosa Wrapper

With a partner, I designed a machine suitable for creating wrapped Masala Dosas (a type of Indian meal) purely autonomously, allowing a business to capitalise on an expanding market, without requiring high labour costs. The final design worked on a principal of 'folding by geometry', with the pancake hanging down over the filling, and the two being pushed along by a notched conveyor. In addition to giving me the opportunity to manage the largest CAD assembly yet, I have gained significant knowledge of food safe design, as well as introducing me to frame design. This was also a test of innovative thinking, as to our knowledge no other group chose a similar method, so to create a design that was praised on novelty and viability by staff was hugely satisfying.

## Technical Feasibility Study of a Clay Court Dragger

To gain a better understanding of what makes a viable product, an in depth investigation was conducted regarding the possibility of creating a product to automatically level a clay tennis court after games. Dragging was found to be essential for both long term health of a court, and creating a playable surface, however due to apathy many players neglect doing so. The conclusion was reached that while being technically possible (a potential solution was designed), there was likely not a strong enough business case for a new company to invest in the market.

## Home Server

I currently use a Raspberry Pi connected to a screen which displays a dashboard I personally designed. This shows me a variety of daily information, and acts as a multi-use server and logger. It has helped my knowledge of HTML, PHP, MySQL and Linux based operating systems. In the future, I'd like to look into other things I can use this lightweight computer for, via learning lower level programming languages like C and Python, focusing on automation of tasks.

## Extended essay analysing the design of London Underground trains

After the end of my AS-Level exams, as a personal project set by my school, I wrote and presented a 3000-word extended essay on the subject of 'Can London Tubes, travelling in the Underground part of the network, be improved in a way that results in a greater economical benefit to TFL, by focusing on the aerodynamics of the bodies?'. The idea for this was inspired by seeing the contrast between the meticulous aerodynamic design of modern day supercars, as well as some public transport vehicles like Japan's bullet train, and the vertical block shaped exterior of the tubes that were present on my commute to school. This question led me into a cost-benefit analysis situation that I feel distinguishes the commercial Engineering sector from the more theoretical Physics, with how a positive effect in one area can have a (significantly) negative effect in others. In this case crucial ventilation of tunnels, safety and storage would be affected by an 'improved' aerodynamic design. I achieved an A for the work (the highest grade), as marked by a Design and Engineering teacher, and the portfolio itself is available upon request.

## Work Experience

### Williams Advanced Engineering, Grove, Oxfordshire (2 Weeks - 2014)

I was exposed to the huge variety of expertise an Engineering Consultancy can offer by spending time with designers, aerodynamic and materials specialists, quality control officers, finite element analysts and the purchasing team. This array allowed me to view how important communication is in order to facilitate clients' requests efficiently. I was able to develop a good understanding of WAE's business model, and the services they could offer clients, along with how they initialized their projects. I also gained a good understanding of their CAD system (SIEMENS NX) and the associated EBOM tools, and saw how they utilised these in meetings to convey how the product was building up. This culminated in using NX to model a component with complex geometry in 3D for use in the main EBOM.

### Teaching Science, Wimbledon (Sept. 2014 – July 2015)

On Friday afternoons, I volunteered in a group to conduct lessons for gifted pupils from surrounding schools (GCSE level) in Science and Mathematics. The aim of these sessions was to inspire the children to take up these subjects at higher levels, and so practical work and class interaction featured heavily. This environment allowed me to develop my interpersonal and presenting skills, along with the organizational skills needed to prepare an effective lesson (as well as realize in situ where this can be improved).

### Tutoring Maths GCSE at Ricards' Lodge, Wimbledon (Sept. 2013 – July 2014)

I voluntarily taught GCSE Maths on Friday afternoons to small groups of people who are struggling with topics. I used a combination of worksheets and explanations in order to help students feel more confident with their mathematical knowledge. I believe it has improved my ability to explain Mathematical concepts in plain English, which is a useful skill in Engineering to communicate with clients and colleagues.

### Momart IT Department (1 Week - 2013)

I viewed how technology aids the development & upkeep of the company, to allow the workers of this art logistics company to work efficiently. Activities included seeing the systems in their warehouse, the development of a new management application, assisting with the helpdesk, and learning to use applications and services such as Windows Server 2008 and VMWare to manage their servers and infrastructure.

## Personal Interests

### Powerlifting

I enjoy applying myself to powerlifting, on average training five days a week. I feel that this is a good way of unwinding for me, as well as demonstrating the benefits of being in good muscular and cardiovascular fitness. In the future, I aim to compete in tested competitions.

### General Sports

I have a general interest in sports- particularly American football, rugby, basketball, boxing and MMA. I enjoy watching sports with friends, along with playing many recreationally.

### Clarinet

I was taught, and played Clarinet to Grade 5 level during my time at school, and still am keen on taking time to practice in order to improve my comfort level.

## Miscellaneous

Full UK Passport holder

