

# Francis Gurr

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## Summary

I am a recent Electronic Engineering (MEng) graduate from Durham University.

I enjoy solving complex problems both independently and as part of a team. I am a fast learner and enjoy widening my skill set by challenging myself with personal projects. I have experience working on large long term projects and can work well in a range of team dynamics. Whilst completing projects I am highly motivated, organised and strive to ensure all my work is of a high standard. These attributes have led me to receive a first in every programming assignment throughout my degree.

In my spare time I am a keen rock climber, mountain unicyclist and occasional juggler.

## Skills

Most experience with:



Java Python C Javascript MatLab  
Electronics Linux LaTeX German

Some experience with:



C++ React Express.js Node.js  
MySQL PHP Graphic Design

## References

### Dr Stefano Giani

 Assistant Professor  
Durham University  
 stefano.giani@durham.ac.uk

### Colin Reekie

 Head of Development  
Q-Free ASA  
 colin.reekie@q-free.com

## Experience

### Masters Project - 1st Class (80%) Durham University 2019 - 2020

- Q-Free, a global leader in intelligent transportation systems (ITS), offered me the opportunity to begin developing a new product for my masters project.
- My project proposed the use of video images to determine the speed of detected vehicles. As a non-intrusive alternative to current ITS and infomobility systems, the aim was to add a unique product to the market.
- I used a convolutional neural network for object detection with an accuracy of 98% mAP and a Kalman filter was used to track the vehicles.
- I developed Python software to calibrate the camera using road markings, and used C++ to calculate the vehicle speeds.
- The resulting software was able to provide vehicle speeds in real-time from road-side camera footage.

### R&D Internship Q-Free ASA, Bristol Jul 2019 - Sep 2019

- During my third year design project, I designed an innovative prototype for a non-intrusive roadside detection system to count and classify vehicles.
- Q-Free awarded me the opportunity to develop a working prototype of my design during a summer internship.
- I developed software in C to process data from LiDAR and radar sensors, and used Python to generate graphical 2D side profiles of each vehicle in real time.

### Internship Durham University, Maths Dept. Jun 2018 - Feb 2019

- Co-authored ancillary software for an academic paper entitled *Quartic Graphs that are Bakry-Émery Curvature Sharp*, published in Discrete Mathematics **343** (3), DOI: 10.1016/j.disc.2019.111767.
- I developed a computer classification algorithm in Python to recursively generate all unique radius two local configurations of quartic graphs.
- These results were the basis of the main theorem in an academic research paper.

## Education

### MEng Electronic Engineering - 2:1 Durham University 2015 - 2020

- Took a year out following bereavement as an exam only student.

### MChem Chemistry Durham University 2014 - 2015

- Switched course after year one.

### A Levels Bournemouth Grammar School 2013 - 2014

- A\* Chemistry, A Maths, A Physics, A German.

## Personal Projects

### Pathfinding Visualiser 2021 - Ongoing

- Currently working on a full stack web application to visually depict pathfinding algorithms in action with real world map data.
- Skills used:** Javascript, React, Express.js, Node.js, MySQL.

### Sudoku Solver Summer 2017

- Created a JavaFX app to solve Sudoku problems using a recursive backtracking algorithm.
- Skills used:** Java, XML.