

# Fred Shone



## Profession

Data Scientist

## Current Position

Consultant

## Joined Arup

2018

## Years of Experience

10

## Nationality

British

## Qualifications

Meng Civil Engineering,  
University of Bristol, 2008

MICE, CEng, ICE, 2011

GDip, Economics, 2015,  
Birkbeck University

MSc Spatial Data Science  
and Visualisation, UCL,  
2018

## English Language

Speak/Read/Write:

Yes/Yes/Yes

## Relevant Skills and Experience

Fred has worked in the Construction and Transport Industries for 10 years, gaining diverse knowledge and skills as a Civil Engineer, Economist and Data Scientist.

He has extensive experience with data and visualisation, ranging from assisting strategic decision making with GIS; to tracking pedestrians from CCTV footage using deep learning techniques. At Arup, Fred works on the application of data and AI for the Transport Industry. He is involved in a number of projects to push the state of the art, including transport simulation using Agent Based Models and Data Harvesting with Network Rail Open Data.

His experience with design, management and strategy, combined with technical knowledge and passion for new analysis techniques, give Fred a uniquely holistic view as a Data Scientist.

Fred is a 'muddy boots' Data Scientist, with experience applying advanced techniques for a range of projects in a practicable and well communicated way.

## Employment History

**2018- present**

**Arup**

**2015-2017**

**Transport for London**

**2008-2015**

**Skanska**

### Agent Based Transport Models – 2019

Fred has worked on the technical delivery of innovative country scale agent-based transport models for New Zealand and Ireland. His work includes the design and delivery of model pipeline tooling for population synthesis, benchmarking and automatic calibration.

### Agent Based Transport Model for London – 2018

As a research collaboration with Transport for London, Fred has worked with a team to simulate the London Transport Network using a 'massive' Agent Based Model.

### Edinburgh to Newcastle Train Lateness Analysis – 2018

Fred has worked to retrieve, process and analyse Network Rail Open Data to help identify reasons for train delays. This included the application of cloud infrastructures for data harvesting and machine learning for helping interpret and understand results.

### Pedestrian Tracking from CCTV - Research Project – 2018

Fred completed a research project to design and demonstrate the safe and efficient measurement of pedestrian behaviours from video footage. For this project Fred used a variety of Deep

Machine Learning and Computer Vision Techniques to identify and track pedestrians.

#### **London Bus Mode Share Anomaly Detection – 2017**

Working with Transport for London, Fred built a statistical model of London Bus Mode-Share based on network, performance and demographic data. This model was then used to highlight areas of London with unusually high or low bus mode share – helping identify new drivers of bus patronage.

#### **Investment Mapping Business Analysis Tool – 2017**

Fred built a process and tool for adding geometric attributes to operational and capital business spending. Allowing spatial variation of business plans to be considered. This tool was demonstrated with data from the Transport for London 2016 Business Plan.

#### **Transport for London Business Planning – 2016**

Fred led a team to implement systematic data collection, visualisation and prioritisation of capital expenditure for the Transport for London 2016 Business Plan.

#### **Transport Planning and Strategy – 2016**

Fred led an initiative to roll out a framework of strategic decision making across Transport for London. This framework formed a key part of implementing the London Mayor's Transport Strategy.

#### **Bermondsey Dive Under – 2015**

Fred managed a contract of demolition and various other works for the Thameslink Programme. This work included the complex design and management of works alongside live rail.

#### **Green Court Bucharest, Romania – 2015**

Fred was seconded to Skanska Europe to help start a new operational business unit in Romania. Fred managed the construction of office block cladding and M&E installation. Fred was also responsible for working with the local team to agree new codes of practice for safe construction.

#### **Cross Rail Stations – 2014**

Fred designed temporary works for the Paddington Station Box excavation and managed construction for the Bond Street Station Shafts. Both these projects required careful design and sequencing of works for a constrained work area.

#### **Various – 2008 - 2013**

Fred has helped designed and manage other civil construction for a number of projects with a variety of clients and sectors in the UK and abroad. Projects include road, rail, tunnelling and bridge projects.