

# Curriculum Vitae

## Personal

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## Interests

Promoting Open Science, Open Source and engaging the research community. Experienced with the entire life cycle from initial data exploration through to modelling, testing and application / publication. Specific interest in the use of modelling and machine learning techniques for analysing and solving real world problems. Applying visualisation to gain insights, including related social and educational aspects.

## Education

**2007 – 2012** *Brunel University (UK) – Bioengineering – Advanced modelling and visualisation*

- (Part time) Degree: Doctor of Philosophy (PhD)

**1998 – 2000** *Fontys University (Netherlands) – Computer science*

- (Accelerated course) Degree: First degree / Bachelor

**1994 – 1998** *Fontys University (Netherlands) – Applied physics*

- Degree: First degree / Bachelor

## Languages

English (fluent), Dutch (native), Spanish (fluent), German (conversational)

## Computer skills

**Machine Learning:** PyTorch, TensorFlow, Keras, Weka, Hugging Face, spaCy, NLTK

**Platforms:** Windows, Linux, Android, Raspberry PI, QNX (RTOS), Docker, AWS, HPC

**Languages:** C++, C#, Java, Python, R, Matlab, LabView, Cypher (Neo4j)

**GitHub:** [github.com/fofoterj](https://github.com/fofoterj) and various projects in [github.com/FrancisCrickInstitute](https://github.com/FrancisCrickInstitute)

## Additional courses

**2022** Hugging Face (online) – NLP modelling course (part 1 & 2)  
**2017** Udacity (online) – Google Deep Learning (advanced class)  
**2016** University of York (UK), CHE – Regression Methods for Health Economic Evaluation  
**2014** Brunel University (UK) – Graduate Learning and Teaching Programme (GLTP)  
**2014** Brunel University (UK) – Academic Practice: Influence and Impact for Researchers  
**2013 / 2014** Brunel University (UK) – Professional Development in Academic Practice (PDAP)  
**2005** IEEE / French-Mexican Laboratory in Computer Science (Mexico) – Image and Robotics  
**2004** Metropolitan Autonomous University (Mexico) – Pattern Recognition

## Key journal publications

**2022** [OptoPi: An open source flexible platform for the analysis of small animal behaviour](#)

**2021** [Automatic instance segmentation of mitochondria in electron microscopy data](#)

**2021** [Deep learning for automatic segmentation of the nuclear envelope in electron microscopy data, ...](#)

**2020** [Citizen science, cells and CNNs - deep learning for automatic segmentation of the nuclear envelope in electron...](#)

**2018** [Decision-components of NICE Technology Appraisals Assessment Framework](#)

**2017** [Interoperable End-to-End Remote Patient Monitoring Platform based on IEEE 11073 PHD and ZigBee Health...](#)

**2014** [Designing effective visualizations of habits data to aid clinical decision making](#)

**2012** [Facilitating insight into a simulation model using visualization and dynamic model previews](#)

Full list of publications at Google Scholar profile: <https://scholar.google.com/citations?user=AggHQrMAAAAJ>

## Main work experience

### 2019 – Current *The Francis Crick Institute (UK)* – Research Software Engineer

Creating solutions for AI/machine learning projects, including establishing collaborations with research teams:

- Responsible for software components in large microscopy project focussing on automation and reproducibility (CZI funding) Collaborating with project consortium gathering & defining user requirements, translating into technical requirements
- H&E histopathology convolutional pipeline including xAI explainability visualisation, mentoring & advising junior team members
- Designed image conversion pipeline for deep learning and set up Open Source project for community use ([github:OmeSliCC](#))
- Providing improved pipeline for tracking animal behaviour, from raw images to scientific data points ([github:BIO-B](#))
- Collaborating on fully automated deep learning segmentation workflow (U-Net) and aggregation of crowd sourced data for detection of biological cell features in Electron Microscopy images, including packaging for Amazon AWS ([github:EaC-NE](#))

### 2018 – Current *Metacognis (UK)* – Technical lead

Leading development at AI Start-up:

- Developing an online tool for exploring, finding and analysing scientific literature in an open and visual way
- Establishing development team and project managing software development
- Employ machine learning, Natural Language Processing (NLP, Spacy), Graph Models (neo4j) & visual data analytics

### 2015 – 2018 *National Institute for Health and Care Excellence (NICE) (UK)* – Operational Researcher

Leading research & development of novel methodology at NICE:

- Design tools to aid appraisal committee decision making, including visualisation of decision outcomes and processes
- Decision making factor analysis, using various text mining / natural language / ML methods
- Qualitative & quantitative User Centred Design research
- Multi-disciplinary simulation modelling (IMI GetReal)
- Establishing and leading collaborations across different teams
- Various external research collaborations including MIT - CBI (Center for Biomedical Innovation)

### 2014 – 2015 *Computer Science at Brunel University (UK)* – Research Fellow

Research on modelling software fault prediction:

- Creating ensemble prediction models
- Applying Machine Learning techniques

### 2012 – Current *Imperial college (UK) / Leuven University (Belgium) / Living Earth (USA) / Francis Crick Institute (UK)*

Independent research collaboration on modelling ([github:BioImageOperation](#))

- Establish cross-domain research links, support use in Open Science community including [TReND in Africa](#)
- Multi agent analysis & modelling including pattern recognition
- Image analysis and tracking using OpenCV for real-time processing

### 2010 – 2014 *Brunel Research Into Good Health Technology (UK)* – Research Fellow

Collaborating in multi-disciplinary teams as part of European projects: Hydra, inCASA, Reaction (funded by TSB / FP7):

- Embedded software managing (Zigbee) wireless device communication
- Standards implementation (HL7, ISO/IEEE 11073, 11073-20601, Continua Health Alliance)
- Data processing & analysis of motion / pressure sensors for behaviour detection
- Applying data visualisation techniques based on clinicians' feedback

### 2007 – 2010 *Brunel Institute for Bioengineering (UK)* – Lab technician / PhD

Maintaining and supplying labs and computer systems, and conducting research on modelling and visualisation of liquid-liquid separations:

- Developing model algorithms and advanced UI with visualisation and interactivity including 3D graphics
- Developing computer model using chromatography distribution, diffusion theory and particle simulation, to be able to accurately estimate results of hypothetical experiments
- Developing a scientific computer game based on chromatography theory; featured at scientific public engagement

### 2003 – 2007 *Innovamedica / Vitalmex (Mexico)* – Head of software development

Research and development in medical equipment as head of software development:

- Project planning / management, organising resources, operating in a multi-disciplinary team
- Responsible for recruitment of department staff
- Development, testing and implementation of software for safety-critical medical prototypes
- Compliance with safety standards and risk assessments
- Developing user interface and complete control software for a Ventricular Assist Device on Real Time OS (QNX)
- Developing software for a Gastric Tissular Impedance Spectrometer, including reliable communications protocol
- Create impedance analysis model and classification algorithms using Neural Network