

# Ben Francis

## Curriculum Vitae

**Benjamin Tola Francis MEng**

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## Personal Profile

*I am a full stack Software Engineer specialising in Web Applications and the Internet of Things. Colleagues have described me as "driven", "creative", "an awesome communicator" and "a web visionary". Through over fifteen years of commercial experience I have acquired a wide range of skills in software engineering, user experience design, system administration and project & product management. I am also involved in web standardisation as a W3C Invited Expert on Web Applications and the Web of Things.*

## Skills

- Full stack web development with HTML, CSS, JavaScript, Node.js, TypeScript, Java, Python, PHP, and frameworks like Django, Spring and Express
- Embedded systems programming including Assembly, C, Python and JavaScript
- User research, user interface design, user experience design and user testing
- MySQL, PostgreSQL, JCR, BigTable, SQLite, IndexedDB, LevelDB, PouchDB and MongoDB databases
- Unit testing and integration testing with JUnit, PyUnit, PHPUnit, Mockito, Marionette, Mocha and Chai
- Source Code Management with Subversion, Perforce and Git
- LAMP (Linux/Apache/MySQL/PHP), Windows & Mac server administration
- Cloud technologies (Amazon Web Services, Google App Engine & Ubuntu Enterprise Cloud)
- Agile (XP, RUP, TDD, Scrum) development and project management
- Market Research and Product Management

## Education

### University of Birmingham, September 2005 - July 2009

Department of Electrical, Electronic & Computer Engineering

### MEng Computer Interactive Systems

Graduated with First-class honours and the A.P. Jarvis prize for outstanding achievement in a final year project. My degree covered a wide range of topics from electronic and software engineering to cognitive psychology, user interface design and

project management. My final year project was a 3D web application to visualise the colonisation of an artificial reef. I worked in conjunction with the National Marine Aquarium and Marine Biological Association and presented a paper on my project at the Web3D Symposium in Darmstadt, Germany.

## Experience

### Founder, Krellian (February 2020 - Present)

I incorporated [Krellian Ltd.](#) in 2020 to build commercial smart building solutions around the [WebThings](#) IoT platform, which some ex-colleagues and I spun out of Mozilla as an independent open source project. This includes the development of a commercial [Web of Things](#) gateway, and a cloud service which builds a digital twin of a building to model how it is being used and identify potential optimisations.

Krellian has participated in multiple startup accelerators and won grant funding from the [Ignite Accelerator](#), [Sunderland IoT Accelerator](#) and [Innovate UK](#).

**Key Technologies:** HTML, CSS, JavaScript, Node.js, TypeScript, Express.js, MongoDB, Electron & Ubuntu Core.

### Software Engineer, Mozilla (October 2011 - January 2020)

Staff Application Engineer & Product Owner, Mozilla WebThings  
(March 2017 - January 2020)

In the Emerging Technologies department I worked as the Product Owner of [Mozilla WebThings](#), Mozilla's IoT platform. This included user interface design, full stack web development, project management and product management. I also contributed to the standardisation of the [W3C Web of Things](#).

Senior Product Engineer, Connected Devices (January 2016 - February 2017)

In the Connected Devices department I worked on prototyping and user testing connected devices products including a smart router, tablet and home monitoring system. I took on a Product Management role as well as being hands on with design, development and user testing.

Front End Engineer, Firefox OS (October 2011 - December 2015)

I worked on the Firefox OS mobile operating system (B2G) for around five years, from shortly after the project's announcement until it was transitioned to the community in 2015. I had involvement in front end development, product ownership, user interface design, user testing and the standardisation of the [W3C Web App Manifest](#) specification.

**Key Technologies:** HTML, CSS, JavaScript, Node.js, Express.js and Java.

## Software Engineer/Product Manager, Rabbitsoft (June 2009 - October 2011)

I was a software engineer at Rabbitsoft, and later became the Product Manager of their web-based collaboration platform, [Clinked](#).

In this role I gained a wide range of experience including agile software development, user interface design, architecture design, market research, usability testing, cloud system administration, project management and recruitment.

**Key Technologies:** PHP, Java, Spring, HTML, CSS, JavaScript & JQuery.

## Technical Solutions Engineer Intern, Google (June 2008-September 2008)

I carried out an individual project over a three month internship with Google London. This was the design & implementation of a scalable web-based XML data quality testing pipeline for the Google Maps team in the Partner Solutions Organisation. The project included user & task analysis and agile software development.

**Key Technologies:** Python, HTML, CSS, JavaScript, XSLT, Django, Perforce, and a wide range of proprietary Google tools & production infrastructure.

*"This is a mission-critical tool that we use on a DAILY basis in LEC around the globe... I've been at Google for 5+ years and it's one of the great unsung internal tool-heroes." -- Dan Cath, Strategic Partner Manager, Google, 2011*

## Software Engineer Intern, Senokian Solutions (July 2006 - September 2006)

A two month summer placement as a Software Engineer, working on a complete rewrite of the company's main product (Enterprise Groupware System) as part of a small development team. This included the development and testing of a web framework based on the Model-View-Controller design pattern and the demonstration of its use in the rapid development of business web applications.

**Key Technologies:** PHP, HTML, CSS, JavaScript, PostgreSQL, PHPUnit, Subversion, Smarty and GNU/Linux.

## IT Technician, Vale of Catmose College (August 2004 - September 2005)

In my gap year job I had responsibilities for hardware, software and network installation, maintenance, repairs and technical support for staff and students. I also took on the role of a web developer, developing a web site and calendar publishing based content management system. Other responsibilities included classroom support, working with groups of students on IT projects and attending regular marketing meetings.

**Key Technologies:** MS Windows, Mac OS X & GNU/Linux (Server & Desktop). PHP, MySQL, HTML, CSS.

## Part-time Roles

- Consultant, Digital Native Academy (October 2008 - March 2009)
- Co-founder, Twisted Lemon Solutions Ltd. (June 2005 - June 2006)
- Founder, Tolagrafix/Tolatech (2003 - 2005)
- Web Developer, Presslake (July 2002 - January 2003)
- Assistant Sound Engineer, B&H Sound Services (from June 2001)

## Professional Institution Memberships

- Associate Member of the IET (2004 - Present)
- Member of the W3C (2011 - Present)
- Member of the Cambridge Network (2010 - 2012)
- Member of the Web3D Consortium (2008 - 2009)

## Publications

Stone, R., White, D., Guest, R., Francis, B. (2008). The Virtual Scylla: an exploration of "serious games", artificial life and simulation complexity, *Virtual Reality Journal*

Francis, B. & Stone, R. (2009). *WebScylla: a 3D web application to visualise the colonisation of an artificial reef*, Proceedings of the 14th International Conference on 3D Web Technology, Darmstadt, Germany

Francis, B. (2019). *Mozilla WebThings: An open source implementation of the Web of Things*, Second W3C Workshop on the Web of Things, Munich, Germany