

# Michael Sheldon

*mike@mikeasoft.com*  
*http://www.mikeasoft.com*

## *Career Overview*

---

- Software engineer at Bloomsbury AI  
2017 to present  
Bloomsbury is an AI start-up focusing on machine reading and natural language processing. Our primary product, Cape, provides an API which allows developers to add rich question answering functionality to their applications. You can provide Cape with a set of documents and a natural language question and Cape will search those documents to find an answer to your question.

I work on development of the back-end services, ensuring our research models become performant, scalable production models, designing and implementing our API and python client library, maintaining our continuous deployment and testing infrastructure, and rapid development of prototypes for new uses of our core technology and their subsequent development into mature parts of our platform.

- Software developer at Canonical Ltd  
2014 to 2017  
Canonical are the company behind the Ubuntu GNU/Linux distribution. I worked within the System Apps team, developing key applications and infrastructure for the Ubuntu Touch mobile platform. I was the lead developer for the on-screen keyboard, I also became the primary maintainer of the Ubuntu Download Manager project. In addition to this I contributed to the Ubuntu Web Browser and the Content Hub infrastructure, which was used for securely sharing content between applications.
- Freelance programming  
2012 to 2014  
After finishing my Ph.D. I worked on a range of different projects including:
  - A research project with the Department of Psychology at Sheffield University, integrating the open source framework I developed as part of my Ph.D. with their neural models of the basal ganglia.
  - Mathematics Playground - A suite of interactive HTML5/JavaScript examples designed to help students gain a more intuitive understanding of a range of mathematical concepts.
  - eOceanic.com - A website which provides dynamic and detailed information about harbours and routes around the coast in an effort to keep sailors safe, utilising current marine weather conditions to provide warnings and advice. Recently this has also involved some Android development work, creating a mobile client that sailors can use when offshore.
  - ZorinOS - I was hired to fix a number of bugs in the GnoMenu and Avant Window Manager components used by the Zorin GNU/Linux distribution (an Ubuntu derivative).
  - Mobile apps - I've released two commercial mobile apps for the MeeGo platform, Erudite which makes it possible to use the Amazon Cloud Reader on MeeGo phones and Rockwatch which allows MeeGo devices to communicate with Pebble smart watches.
  - DZone - I was commissioned to write a tutorial about native development on the Tizen mobile platform.
  - Tutoring - I provide VoIP based tutoring services, most recently helping a computational biologist get to grips with GNU/Linux in preparation for running simulations on a high performance computing cluster.
  - Red Giant - I was hired to help out with a number of GStreamer related issues in Red Giant's video editing tools.

- Research assistant at Aberystwyth University  
2012  
During the final six months of my Ph.D. I was also employed as a research assistant on the IM-CLeVeR project, a pan-European robotics project focusing on the open source iCub robot platform.
- Part-time demonstrator and tutor at Aberystwyth University  
2008 to 2012  
I ran a number of practical lab sessions for undergraduate students, gave a few lectures and acted as a personal tutor for roughly 12 students each year, helping students to learn Java, Haskell and systems administration.
- Software developer at Credativ GmbH  
2006 to 2007  
I worked on customising the open source Horde and Kolab groupware systems and helped in developing mail server monitoring tools as part of the Open Security Filter project. I also performed various systems administration tasks, primarily on systems within the German government.

## *Skills Summary*

---

- Technical Skills
  - Python - The back-end system I helped to develop at Bloomsbury AI was entirely Python based, providing webservices via sanic and using tensorflow for machine learning models. In the past I was a core contributor to the python-based Jokosher audio editor, working on the recording/playback system and the GTK based user interface; I also created the initial Python bindings for the libchamplain map rendering project as well as creating Python bindings for PSchema. I also developed a large number of functional tests for Ubuntu Touch in python, using the autopilot framework.
  - Docker - Our infrastructure at Bloomsbury is based around Kontena orchestrated Docker images, fully integrated with our continuous integration, testing and deployment pipeline. I developed deployment scripts to allow our full services to be deployed on multiple cloud providers (AWS, Google Cloud and Packet) as well as allowing for local deployment.
  - Qt and QML - I was the lead developer on the Ubuntu on-screen keyboard and contributed to the Ubuntu Web Browser, both core components of the Ubuntu Touch platform, which had their user interfaces developed in QML with Qt based C++ backends. I've also developed a number of other Qt applications for Nokia's MeeGo platform including a client for the StatusNet/GNU Social microblogging platform; Rockwatch, an application for interacting with a Pebble smart watch and Erudite, which makes it possible to use the Amazon Cloud Reader to access Kindle books on mobile platforms not otherwise officially supported by Amazon. I also developed TizMee, a Cordova based compatibility layer allowing Tizen applications to run on MeeGo (and potentially other Qt based mobile platforms).
  - C - I wrote a collection of drivers for the Player robotics framework to handle image processing tasks and to control Adept robot arms and I've also written a number of elements for GStreamer in C (described below).
  - C++ - Many of the applications mentioned in the Qt section were developed in C++ (with the exception of the StatusNet client and Rockwatch which were both developed in Python). I also developed an omnidirectional camera system for the Gazebo 3D robotics simulator.
  - Vala - As part of my research work I developed an open source, glib based framework for the investigation of artificial intelligence called PSchema, which was written in Vala, and has been made use of in two large European research projects.
  - PHP - I implemented a range of customisations and helped to optimize the Horde and Kolab groupware systems for use by a number of departments within the German government. I'm also a core developer on the GNU FM music community system, which powers Libre.fm and is written using PHP and the Smarty template engine.

- JavaScript - As part of my work on GNU FM I developed a JQuery based HTML5 audio player, capable of streaming songs, reporting listening statistics and allowing users to tag songs as they hear them.
- SQL - As part of various web development projects I've had to design and implement databases using SQL, working with both MySQL and PostgreSQL, and in the case of GNU FM dealing with large data sets.
- GStreamer - I developed a number of elements for computer vision tasks within the GStreamer multimedia framework, based around OpenCV, I also created elements for performing speech recognition using Mozilla's DeepSpeech model and created an element for rendering MusicXML documents in to MIDI (which can then be synthesised by GStreamer's existing MIDI elements).

- Personal Skills

- Team working - I've worked in a number of globally distributed teams both commercially at Canonical and as part of free/open source software projects, and have been directly involved in the organisation of the GNU FM development team. I've also worked on two large European research projects, ROSSI and IM-CLeVeR. The research projects and my work at Canonical both involved international travel for meetings and conferences.
- Analytical skills - My ability to analyse problems and arrive at solutions has developed as a result of both software development experience and scientific training.
- Presentational skills - I've given short talks about my research at various academic conferences. I've also spoken about the GNU FM project at the FOSDEM free/open source software conference.
- Mentoring experience - I've mentored students as part of the Google Summer of Code program, working on both the Jokosher audio editor and the GNU FM music sharing platform, and worked as a personal tutor for undergraduate students at Aberystwyth University. I also created video tutorials for application developers, explaining various aspects of Ubuntu Touch development.

## *Education*

---

- **Ph.D., Developmental Robotics**

2008 - 2012

Aberystwyth University

- **BEng, Software Engineering**

2004 - 2008

Aberystwyth University

First class

## *Thesis*

---

My Ph.D. thesis investigated the emergence of communication in embodied agents, attempting to find ways in which robots can learn to communicate in a similar way to children.

As part of this work I created a general purpose, open source, schema learning library called PSchema. This library is capable of driving the actions of multiple robotic and simulated agents, providing a learning system that can form long multi-part action plans and an intrinsic motivation system which selects actions in such a way as to improve the agent's chances of learning something new about the environment.

## *Interests*

---

- Music - I've taught myself to play various instruments, recently focusing on the acoustic guitar and the harmonica.
- Cycling - After working for a year in Germany I cycled back to England via Belgium and France whilst camping along the way.
- Boating - I live aboard a narrowboat which I use to explore the inland waterways of the UK.
- Writing - In addition to technical and scientific writing I also enjoy writing fiction and comedy, and have had a small amount of material broadcast by the BBC.

## *References*

---

- Prof. Mark Lee  
mhl@aber.ac.uk  
Ph.D. supervisor
- Bill Filler  
bfiller@gmail.com  
My former manager at Canonical