Silas Davis

silas@silasdavis.net

+44 7931 310 850

London, E2, United Kingdom

Summary

I am a software engineer with an interest in cryptographically verifiable processes, distributed and decentralised systems, and consensus networks.

I am a generalist with a strong mathematical background and a track record of deploying and maintaining production systems.

I believe in open source, open standards, and the open internet. I like crows.

Current position

Present March 2016	Software Engineer for *Monax*, London

Education

2010	Part II in Pure Mathematics — University of Cambridge
2009	First-class Master of Physics in Mathematical Physics (MPhys) — University of Edinburgh

Previous employment

March 2016 February 2013	**Software Engineer** Software Engineer for *SwiftKey*, London
February 2013 October 2010	**Software Developer** for *Concentra Consulting*
September 2009 June 2009	**Coding and data representation** for *Loc8 Solutions*, a location based software start-up for use in an Edinburgh festival events application for mobile devices.
September 2009 June 2009	**Integration of billing system with Google OpenID authentication** (Google federated login service) for *Whitespace*, a web and print design agency based in Edinburgh.
June 2009 May 2009	**Research and XSLT development** for *Royal Pharmaceutical Society* on the representation and syntactic validity of information in their ontology of drugs.
September 2008 June 2008	**Web Programming** for *Kitty and Dude*, provided on a personal basis free of charge, and written in Ruby on Rails.
May 2008 December 2007	**Consultancy** to *Scottish Government* on deployment and further development of software for the Scottish Cardiac risk score — the Assign Score.
2007 2001	**Credit control**, **programming**, **and administration** for *Woodcote Consulting*, a health and social care consultancy.

Interests and skills

Blockchain and smart contract networks

I am co-maintainer of the Hyperledger Burrow EVM blockchain node. I have an active interest in cryptography research, consensus networks, and computable proofs (zero knowledge, probabilistic sketches, etc). I have exeperience deploying and operating permissioned blockchain networks and with smart contract language and tooling.

Machine learning, statistics, and data

I have a variety of natural language processing experience at SwiftKey using n-gram models and neural language models, topic models (Latent Dirichlet Allocation and extensions), and general data washing-up.

Distributed systems and infrastructures

I have designed and built ETL pipelines using Spark, Hadoop, and custom processing applcations to ingest language data, build models, transform vocabularies in preparation for statistical analysis and algorithms.

Simulation

For my mathematical physics Masters I produced a Java based numeric simulation of a reaction-diffusion equation that modelled the spread of dairying culture in neolithic man; wherein there is mutualism between lactose tolerance and the practice milking cows. At Concentra I have worked on a product, R-Port, that was a Monte Carlo simulation of the daily operation of radiotherapy ward.

Health informatics

I was the lead healthcare developer at Concentra; working on a care pathway system, radiotherapy ward simulation, and patient portal systems.

Open source

I am co-maintainer and author of substantial parts of the https://github.com/hyperledger/burrow blockchain client. I am the author of https://github.com/monax/hoard a encrypted object store. I have contributed to numerous other open source projects mostly in data processing and blockchain related projects.

Study

I have studied a broad selection of topics from mathematics, physics, some computer science, including: classical dynamics, quantum theory, statistical mechanics, graph theory, measure theory, logic and set theory, number theory, topology, automated reasoning, functional programming.

Teaching

I have tutored maths and physics to various school students after my A-levels as well as first year students at university.

Technologies

I am proficient in: Clojure, Scala, Java, Go, Ruby, Python, Linux.

I have touched: Haskell, F#, Python, Scala, Erlang, Promela, COQ, Visual Basic, various databases.

On the server: Spark, Hadoop, Kafka, CoreOS, Kubernetes, Docker, and AWS.

Recreational

I enjoy running; mostly half marathon and 5k distances. I do crossfit. I have done Brazilian Jiu Jitsu (a kind of submission wrestling), and I have played Judo for the Cambridge University team.

Other interests: electronic music, crochet, and cooking. I'm a PADI qualified advanced open water diver and I enjoy swimming.

Employment detail

Monax

Monax builds ecosystem-level applications using a mixture of consensus networks and smart contracts. They produced one of the easliest permissioned blockchain clients, Hyperledger Burrow, for which I am co-maintainer. I have worked on the core functionality of Burrow the blockchain node and on deploying networks of validators to run various chains. I have also worked on implementing encryption schemes for our open source distributed file storage layer Hoard of which I am the main author.

SwiftKey

SwiftKey is keyboard app company, whose core technology is based around building probabilitic models of language and input, and using machine learning techniques to personalise those models of language. My work at SwiftKey could be characterised as a mixture of 'big data' engineering, building web services, and some algorithmic work and custom data structures.

I have worked on server-side consumer-facing cloud services for SwiftKey Healthcare and Cloud, built a geographic local-language service in Clojure, and most recently worked in Data Insights using Spark, Hadoop, and various machine learning libraries trying to find interesting trends and relationships. I devised a custom compact binary n-gram trie serialisation format with supporting libraries as part of an effort I lead to open up internal use of data. I've also built a streaming system to ingest language usage data using Kafka with stateless Java-based services to do various things.

Concentra Consulting

Concentra is hybrid consultancy, software development house, and business intelligence outfit.

I was the lead healthcare developer with a responsibility for research, prototyping, briefings, and sales activities in the health and social care space alongside development. I am also engaged in other development activities such as being responsible, largely single-handedly, for the full application lifecycle of one of our longest standing client's system. This system collects and analyses survey data on relationships between creative agencies and their clients, using a data warehouse and dimensional analysis to produce a variety of reporting outputs: flat files, presentations, spreadsheets, and various charts.

In addition to development I have presented at sales meetings and in client workshops. I have advocated the use distributed version control, functional programming, and open source internally through developer talks and pilots. I have ranged widely within the organisation; assisting consultants, doing some pencil and paper work, studying health policy, and so on.

Loc8 Solutions

I wrote Ruby code for representing regular repeating events over arbitrary time cycles. Intervals were normalised for database storage and multiple intersecting time cycles could be queried.

Whitespace

Whitespace was a Google Apps customer with an in-house job management and billing system written in PHP. They wanted to employees to be able to use their Google accounts for a single persistent login for the internal and external service. I used the Janrain PHP OpenID library and Apache httpd in conjunction with Google federated login to provide secure internal and external access to the billing system.

Royal Pharmaceutical Society

Open-ended project to experiment with a large RDF (not-quite-but-nearly OWL Lite) database of some 6 million triples, known as the Martindale Ontology. The biggest challenge was persuading reasoners and other tools to load and manipulate the data. I wrote several XSLT programs, in consultation with W3C

XML standard documentation to correct various syntactic errors, and was finally able to load and query the database. I was able to load the database into a database backend for the OWL editor protege, and the experimental reasoner SHER. I provided a a repository and journal with my software, tools, and findings using unfuddle.com.

Kitty and Dude

I output in SVG using the ruby RVG library and tracked matrix transformations and other image operations tion this class could determine if a particular version of an image had already been generated and, if so, use the cached version.

Scottish Government

I implemented a Cardiovascular risk scoring algorithm developed by Professor Hugh Tunstall-Pedoe from Dundee University. I also wrote an AJAX form with server-side clinical validation of inputs, along with SOAP and RESTful interfaces for XML consumers. Later, when the Scottish Government adopted the Assign Score, I was employed to consult with the web design agency Whitespace who took over the site.

Woodcote Consulting

This mostly involved chasing debts from law firms for unpaid expert witness work. Also some automation of back office data sources using Ruby and VBA for reports and other work. I was given free reign to clean up the tracking of old cases that had become convoluted. I automated the compilation of report summaries and other documents and used issue tracking software to build a trail through the various instructing solicitors in multi-party cases investigating by phone.