Michael Donaghy

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DoB: 9th October, 1987
Nationality: British Citizen

Education

Trinity College, University of Cambridge, 2005-2009

MMath (formally awarded Nov 2010), Certificate of Advanced Studies in Mathematics, 2009

M.A. Mathematics with Computer Science, 1st/1st/1st, 2008 (formally awarded 2009/2012)

St Alban's RCVA High School and Sixth Form, 1998-2005

"A" Levels: Mathematics (A, 2003), Further Mathematics (A, 2005), German (B, 2004), Physics (A, 2005), Psychology (A, 2005)

Summary

Substantial programming experience in Scala, Java, Python. Working knowledge of Typescript/Javascript, C/C++, Standard ML, TCL, Ruby, Perl.

Experience using Spray, Shapeless, Scalaz, Akka, Angularjs, Django, Protocol Buffers, Spring, Hibernate, Wicket, PicoContainer, Thrift, JUnit, EasyMock, Mockito, Qt/KDE, PIL, Turbogears, and integrating with MySQL, Redis, PostgreSQL, Oracle, Memcached. Familiarity with Eclipse, Maven, Ant, Git, Subversion.

Familiarity with Windows, Linux, FreeBSD; some Chef and Puppet. Experience with AWS and Heroku.

Employment

Optim.al (later Brand Networks), Senior Developer, March 2013-present

Maintained and enhanced a dynamic social media marketing platform and associated tools.

Second UK employee - full-stack responsibility including frontend, backend services, database - design, implementation, deployment, infrastructure. Worked mostly in Scala with some Typescript, Python and Java. Made extensive use of Spray for event-driven, reactive web services; frontends were initially Wicket and later Angularjs; one side piece used Django. Experimented with Spark/Shark on top of Cassandra for "big data" analytics/reporting. Used Fabric and Chef for deployment (on AWS), Selenium-based integration tests and New Relic monitoring.

Ri3k (later Qatarlyst), Developer, August 2011 - March 2013

Developed an insurance trading platform, writing primarily Scala. Made use of Wicket, Jersey and programatically-configured Spring; persistence was Oracle via Hibernate. Took responsibility for the build environment, ensuring we had a fast, automated release and deployment process so that we could work more agilely.

Last.fm, Java Developer, April - July 2011

Worked in last.fm's Java team, mainly improving scalability of the music streaming infrastructure, replacing PHP code with Java services accessed via Thrift. Used MySQL, PostgreSQL and Memcached at various levels, and used both traditional multithreading and event-driven parallelism. Improved build and deployment infrastructure (introducing Maven), and worked on a new lightweight monitoring graph webapp, using Scala, Wicket, JMX, programmatically-configured Spring and Hibernate. Also made some use of Hadoop (MapReduce).

MX Telecom (later OpenMarket), Software Developer (later Software Engineer), October 2009 - April 2011

Maintained and developed "CMX2", an integrated mobile services platform. Highly agile environment, deploying new releases an average of three times a day; on occasion we released new features within three weeks of a customer's initial request. Application used message-passing (with queues in the database) between independent threadpools for each stage - kind of a coarse-grained actor model - for resilience and concurrency; load tested the system for 500 requests/second in preparation for a superbowl advert, and wrote additional monitoring for the occasion. Also rewrote main flowchart UI, using Ajax for a dynamic interface. Introduced the JSR166 fork/join concurrency framework (now part of Java 8) for concurrency to improve site performance; also introduced Scala on an experimental basis.

Emphasised code and product quality; my first project was a lightweight real-time monitoring checker which later alerted us to a failure of the primary database server minutes before our dedicated database monitoring. Introduced binary compatibility checking for our internal RMI interfaces (making use of Jython), PowerMock, spring-test, jasmine (behaviour-driven javascript testing), and automatic test coverage reporting; contributed to selenium functional tests for the web UI, and wrote the first dedicated integration tests for the client-facing XML API. Introduced JSR308 compile-time nullness checking.

University of Cambridge, Researcher, Summer 2008

Worked on the inertial/GPS position tracking system for an autonomous UAV (quadrotor); worked independently on all stages, from research and simulation to benchmarking possible implementations (including custom fixed-point arithmetic) for the intended processor, an ARM with low clock speed and no FPU. The project taught me a lot about low-level performance tuning, and gave me experience of working independently and self-motivatedly with minimal supervision.

Personal projects

Deliciouslie (previous version available at http://m50d.github.com/deliciouslie/, current version is internal to Brand Networks): DI framework for Scala using type-level programming (built on Shapeless).

Magus: minimal android client for the AniDB website. Very simple (mostly connecting one API to another), but has taught me the basics of Android development. http://m50d.github.com/magus/

Sakusen: multiplayer real-time strategy game, a collaboration with two friends, in C++ and Python. Has given me experience in statistical inference problems, and handling large quantities of data in distributed systems. Available at http://git.istic.org/?p=sakusen.git

Lenore: automatic subtitle extraction program using python and PIL.

pack/unpack: reverse-engineering of the archive format used by game Jingai Makyou, a game (written as part of a translation project). The actual programs are very simple, but understanding the file format was an interesting analytical challenge.