

Dr. Tom Parker

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Career History:

LShift Ltd. *Senior Developer* *1/2015 -*

In January 2015, I returned to LShift, restarting the lead/senior role I had been in priorly, working on a variety of projects, primarily as the lead developer in most cases

- Python – Django and Flask/SQLAlchemy/Alembic
- Clojure and Clojurescript for an internal project
- Constraint satisfaction solving with Optaplanner for automated scheduling
- Exploratory work towards an energy monitoring system running on embedded hardware
- Docker – both writing a report on Docker and networking, as well as use of containers for deployment and testing
- Server build Automation – Salt, Puppet, Fabric, AWS APIs, including use of Zabbix and the ELK stack for monitoring and logging, and CI testing using Vagrant and Teamcity of the server build configurations
- .Net – Both a continuation of the earlier MVC projects (see 2010-2012 period), as well as spearheading newer work with MVC 5

Spotlight *Senior Developer* *11/2012 – 12/2014*

As a Senior Developer for Spotlight, I was responsible for multiple areas, covering development work, architectural design and discussion with Product Owners regarding their areas of interest

- Development – MVC 2-4; C#; NHibernate; NUnit; ReadyRoll; Redis; SQL Server; PostgreSQL; SignalR; jQuery
- Build/Deploy automation – Teamcity; Octopus Deploy (responsible for pushing this to be used in Spotlight – now critical to the build pipeline); MSBuild; Rake/Albacore; FAKE (F# make)
- Server build automation – spearheading Chef development work within Spotlight, including work with Vagrant for development (both for Windows and Linux machines). Various patches from which have been pushed back upstream. Includes both local VMs and work with EC2/CloudFormation.
- Legacy code bases – including Classic ASP (server side Jscript), and Selenium for regression testing of older systems
- RabbitMQ – design and implementation of a system-wide change notification system using RabbitMQ

LShift Ltd. *Senior Developer* *3/2010 – 10/2012*

My work for LShift covered a wide variety of areas, both as part of a team and as the primary client contact/lead developer for various projects with up to 3-4 developers in a team, using Agile development throughout

- Various ASP.NET projects - MVC 2 and 3; C#; Entity Framework; NHibernate; NAnt (including work with custom tasks); automated testing and deployment with Selenium, NUnit, Teamcity, Jenkins and Migrator.Net
- Python/Django on Linux (Debian and RHEL) with jQuery integration
- Java/Swing web services
- Working on the RabbitMQ C client
- DotNetNuke customisation and module creation using VB.Net
- Puppet configuration, including writing of custom modules in Ruby

Imperial College London *Research Associate in Body and Visual Sensor Networks* *4/2008 – 3/2010*

My primary focus was in embedded systems development for networked, battery powered devices

- Small devices (~3cm³ - “body sensors”) attached to and monitoring people. 2KB of RAM, using TinyOS
 - Working towards various sport-related applications; built virtual “orientation sensor” out of multiple raw sensor values (accelerometers and gyroscopes)
- Large devices (~50cm³ - “vision sensors”) with a full embedded Linux system and camera module
 - Built a generalised software development platform and applications for the devices, allowing transition from earlier limited-purpose work
 - Created userspace middleware for easy development (C API and Python bindings) ; Kernel development (primarily driver debugging and extending); Documentation and tutorials for end users

Delft University of Technology *PhD in Wireless Sensor Networks* 9/2003 - 1/2008

- Published novel, peer-reviewed work on a variety of areas in Wireless Sensor Networks, including Localisation, Routing, Time Synchronisation and Aggregation techniques
- Major work with MAC protocols and work at all levels of the sensor node radio stack
- Extensive work with implementations of protocols for TinyOS, including building low-level systems for two different hardware platforms (ATMega128- and MSP430-based), and helping to create, maintain and use two separate node hardware testbeds
- Responsible for the mentoring of a student during his MSc thesis work with MAC protocols
- Coursework supervisor for the course “Introduction to High Performance Computing”

My thesis focused on the nature of abstraction in sensor networks - examining how this causes problems through the various layers of the software stack, and showing how rethinking the way in which we approach the problems (using techniques derived from the relationship between linguistics and how it is related to how we think about ideas) can provide better solutions to the difficulties faced throughout sensor networks, with evidence from my implementations of novel protocols both in simulation and for node hardware.

Delft University of Technology *Computer Science MSc* 9/2003-11/2005

(Note that this was done concurrently with the 1st 2 years of my PhD)

Final project was in the area of Localisation for Wireless Sensor Networks, creating a statistical method for incorporating moving sensors for improved localisation without requiring additional hardware

University of the West of England *Perl/HTML Design/Visual Basic & ASP development* 7/2002 – 9/2002

- ELTIS (European Local Transport Initiatives System) - a project collecting together a series of case studies and best practices about local transport systems.
 - Re-wrote the search front end; translated the earlier database data; significantly improved the speed at which users could traverse the vast quantities of data in the system
- VirtuAL - a virtual museum system, initially covering Wells Cathedral
 - Rewrote existing website (dynamic database-driven content with ASP); initial work on the CD-based version

Zeal Solutions Ltd *Visual Basic/Visual C++ development for CAD systems* 8/2001 – 9/2001

- Built a new administration system tracking their products and their users, replacing earlier ad-hoc work with Excel
- Built a conversion utility to convert files from other DDM (Design Data Management) systems to their own system

University Of Bristol *Computer Science BSc* 9/2000 - 6/2003

Included modules in Philosophy and Advanced Computer Architectures. Final project focused on easing change-focused reprogramming of the PIC16 series of microprocessors.

Selected Publications:

- The λ MAC framework: redefining MAC protocols for Wireless Sensor Networks – published in Springer Wireless Networks, Volume 16, Issue 7 (February 2010)
- Foxtrot: Phase-space Data Representation for Correlation-aware Aggregation - presented at the Fourth Annual IEEE Communications Society Conference on Sensor, Mesh and Ad-Hoc Communications and Networks (SECON 2007)
- Adumbrate: Motion Detection with Unreliable Range Data - presented at the Fourth International Conference on Networked Sensing Systems (INSS 2007)
- Guesswork: Robust Routing in an Uncertain World - presented at the 2nd IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS 2005)

Computer Skills:

Expert C (20+ years experience) and Python (10+ years) programmer. Other languages known include C#, Clojure, Java, Javascript, Ruby and Rust. Have worked with the Gtk, wxWidgets and Qt toolkits, and the OMNeT++ simulator framework. Expert level experience with Linux systems, particularly with Debian-derived and embedded systems, and have experience writing kernel modules.

Other activities

I was involved with the Gnome project as part of the BugSquad, aiding in bug triage work. I have been responsible for closing over 11,000 bugs (mainly due to duplicate reports), and have contributed patches to over a dozen separate pieces of software within the project. I've also contributed back accepted patches for a wide variety of other open-source projects from dbus to freetype, network-manager to packagekit, and some of my work is now in the Linux kernel.

During 2004-2005 I was the webmaster for Promood (<http://www.promood.tudelft.nl/>), a society for PhD candidates at Delft University of Technology). I rebuilt the website, implementing a CMS system that is still in use.

Referees

Available on request.