

Dr. Tom Parker-Shemilt

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12/2016 - Present: Oliver Wyman - Senior Developer

LShift was bought by Oliver Wyman, and I moved as part of that. I have been working on:

- Leading a team building a new internal deployment platform using Chef, Docker, Rancher, Jenkins, AWS (primarily EC2, but also RDS, Lambda and CloudFormation, mostly generated with Python and Troposphere) and Hyper-V. Target users were a variety of short-term apps needing best-practice infrastructure with minimal knowledge/setup from the developers creating the apps.
- Implementing a GDPR-compliant PII data sharing/audit platform including work with Clojure, Node.js, Vue, Kubernetes, Docker, Jenkins and AWS (ECS), including writing documentation and technical specifications
- Test/devops lead for a financial project including an iOS and Android React Native app, Kotlin/Golang backend, Python and Kubernetes
- Creating a web frontend and scheduling manager for a strategic planning application, using Node.js, Vue.js, Bootstrap, Python, C# and AWS (Elastic Beanstalk, CloudFormation, etc)

01/2015 - 11/2016: LShift - Senior Developer

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.

- Work with The Global Alliance for Genomics and Health (GA4GH) on their reference server
- 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

11/2012 - 12/2014: Spotlight - Senior Developer

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. Included 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

03/2010 - 10/2012: LShift - Senior Developer

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

- 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

04/2008 - 02/2010: Imperial College London - Research Associate in Body and Visual Sensor Networks

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

09/2003 - 11/2005: Delft University of Technology - Computer Science MSc

(Concurrently with the 1st 2 years of my PhD)

Final project was on Localisation for Wireless Sensor Networks, creating a statistical method for incorporating moving sensors for improved localisation without additional hardware

09/2003 - 01/2008: Delft University of Technology - PhD in Wireless Sensor Networks

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 in sensor networks, with evidence from my implementations of novel protocols both in simulation and for node hardware.

- 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”

09/2000 - 06/2003: University Of Bristol - Computer Science BSc

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)

Software Engineering Skills

Expert C (20+ years experience) and Python (15+ years) programmer. Other languages known include C#, Clojure, Java, Javascript, Kotlin, Ruby and Rust. Expert level experience with Linux systems, particularly with Debian-derived and embedded systems. Worked with Kubernetes, Rancher and Dokku, as well as various custom Docker management systems. Have two apps on the Android store (one written in Kotlin, the other in Java).

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.

Referees

Available on request.