MARTIN SPIER

performance architect at netflix

contact

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skills

performance engineering
large scale systems
distributed systems
scalability
systems architecture
cloud computing
application tuning
(linux, java, javascript, python, c++, golang)
containers
performance testing
data analysis
(spark, presto, jupyter, pandas, tableau)

programming

python
javascript
(node.js, es6, es7)
golang

For the past 12 years Martin's career evolved around Technology and Performance Engineering, leading major initiatives at Netflix, Expedia and other companies. Currently, as a Performance Architect at Netflix, Martin is responsible for improving the performance of the Netflix service, end-to-end, for its 130+ million users, watching over 140+ million hours of movies and TV shows every day. Martin is also a Venture Advisor at monashees+, one of the largest venture capital firms in Brazil, angel investor and advisor to multiple startups, and an avid open source contributor.

experience

2012-Present **Performance Architect** Los Gatos, CA

Netflix

- Optimize service reliability and performance, and help scale Netflix's high-traffic, large-scale distributed systems.
- Thorough performance analysis and tuning across all services and layers.
- Find optimizations both within application stacks and across the infrastructure.
- Develop effective observability tooling and and assist with production triage and root cause analysis on performance or availability issues.
- Developed Icarus, Netflix's real user performance monitoring solution, that runs on every user device, processes over 180B+ events and petabytes of data every day, provides an intuitive GUI for analysis, alerting and anomaly detection.
- Creted multiple d3.js based visualizations for performance data, including plugins for flame graphs and heatmaps.
- Developed FlameScope (https://github.com/Netflix/flamescope), a visualization tool for exploring different time ranges as flame graphs.
- Created FlameCommander, a cloud profiling tool that allows engineers to capture and analyze CPU, memory allocation profiles, heapdumps and more, on any cloud instance or container, at a click of a button.
- Created Vector, Netflix's open source on-host, high-resolution performance monitoring framework.
- Drove a company-wide program to improve service availability by implementing and applying a collection of best practices related to the development, deployment, and operation of cloud services.
- Developed Mogul, a bottleneck analysis tool that inspects internal and downstream dependency demand for services.
- Developed Slalom, a high-level demand analysis tool that helps visualize demand flow on large scale systems.
- Implemented and extended the capabilities of the in-house performance testing framework.
- Developed and supported the performance analysis tool with fully automated analysis capabilities.

2011-2012 **Performance Engineer** Bellevue, WA
Expedia

- Responsible for ensuring the performance, stability and scalability of large scale platforms that support Expedia's Hotels, Flights, Cars and Ads lines of business.
- Led the performance engineering efforts during the large platform migration from .NET to Java/Tomcat.
- Led the performance engineering efforts during the Ads platform migration to Linux.
- Improved early issue dectection by introducing performance tests to the Continuous Delivery pipeline using HP Performance Center, Jenkins and in-house developed tools.
- Deployed and maintained the client-side performance evaluation tool based on the open-source project WebPageTest.
- Introduced JVM and Linux monitoring to the tools suite using HP SiteScope.
- Introduced Java code profiling to the tools suite using YourKit.
- Introduced the concept of Java heap trend analysis by linear regression and fully automated the process.

2007-2011 **Performance Engineer** Porto Alegre, Brazil
Dell

- Led a team of 4 performance engineers responsible for one of the most critical Dell business streams, global order management, working mostly on large, global projects, with 50+ critical applications in scope.
- Responsible for the team's development, capacity planning, project allocation and structure definition.
- Led the performance research group in conjunction with a local university, focusing on performance of virtualized environments, performance modeling and performance engineering tools.
- Coordinated the alignment between cross functional teams, including product development, QA, architecture and infrastructure, spread across multiple locations in the USA, India, UK, France, Russia, Malaysia, Singapore and Japan.
- Led the performance engineering efforts for the largest IT project in 2009 and 2010, which aimed to replace Dell's worldwide order management system and quoting engine.

2006-2007 **Software Test Analyst** Porto Alegre, Brazil
Dell

Responsible for all QA efforts on three large-scale applications. Acted as Quality Center Administrator for the whole portfolio. Developed multiple tools to automate repetitive tasks and reduce effort. Received two awards for excellence on leadership, agility and technical skills.

education

2009-2012 **Specialization, Project Management** Porto Alegre, Brazil
Pontifícia Universidade Católica do Rio Grande do Sul

2002-2008 **B.Sc. Computer Science** Porto Alegre, Brazil
Pontifícia Universidade Católica do Rio Grande do Sul

open source

FlameScope
github.com/Netflix/flamescope

FlameScope is a visualization tool for exploring different time ranges as Flame Graphs, allowing quick analysis of performance issues such as perturbations, variance, single-threaded execution, and more.
FlameScope begins by displaying the input data as an interactive subsecond-offset heat map. This shows patterns in the data. You can then select a time range to highlight on different patterns, and a flame graph will be generated just for that time range.

Vector
github.com/Netflix/vector

An open source on-host performance monitoring framework which exposes hand picked high resolution system and application metrics to every engineer's browser.

d3-flame-graph
github.com/spiermar/d3-flame-graph

A d3.js plugin that produces flame graphs from hierarchical data.

d3-heatmap2
github.com/spiermar/d3-heatmap2

A d3.js plugin that produces heatmaps.

burn
github.com/spiermar/burn

A CLI tool to convert performance profiles (Linux perf, pprof, etc) to hierarchical data structure that can be visualized as flame graphs, with the help of the d3-flame-graph plugin. burn can also generate a self contained html flame graphs from the same data.

other projects

2017-Present	Mentor at Google Summer of Code.
2017	Implemented Flame Graphs on Golang's profiling tool, pprof.

publications

abstracts

[1] Log-based approach for performance requirements elicitation and prioritization
O. M. Mendizabal, M. Spier, R. Saad
2012 20th IEEE International Requirements Engineering Conference (RE), 2012.

thesis

[1] M. Spier. "Development of a Parametric Model to Estimate Software Development Effort". Pontifícia Universidade Católica do Rio Grande do Sul - PUCRS, June 2008.