Allan Jacobs

Senior Backend Engineer

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Summary

In the recent past, I have worked on back ends; their architecture, data modeling, code development, quality assurance, and operations. This has usually been in small teams and, more often than not, in start ups. In some of my work roles, I've been in leadership positions. Most of them, especially in larger companies, have required coordination with other teams. I have always hungered for jobs that are drowning in data and drenched in data analysis. I started out in scientific computing and would have preferred to continue to do that. The data drought seems to have definitely ended in the last two years. My latest and best job took in massive quantities of data and required fast statistical processing. It served a customer need (computer security) that I feel strongly about. The advent of the MOOC has also helped my pursuit. To answer my company's big-data needs, I have read through some graduate-level text books in statistics and machine learning. I have taken on-line courses in both subjects.

Experience

Staff Engineer at Layer Eight Security

February 2014 - Present (1 year 5 months)

Developed a product that intercepts web traffic, analyzes it for security breaches, and actively blocks attackers. # The product took in roughly 1.5 million hits and 250 thousand sessions per day. It should scale much higher. # 2000 to 20,000 sessions per day identified as threats. Blocking threats significantly slows the rate, so the wide variation is a good thing. # Data design provided for a Cassandra database that stores the hit, session, and threat traffic. # MySQL data design provided for a digest of the data stored in Cassandra. # Bot detection automated using headers and behavioral signatures. Coding in Python. # Designed and developed the next release of the data analysis servers. Coding in Scala. # Site management on AWS for four production data processing servers, the MySQL database, and all the machines of a Cassandra cluster. # Site management of a parallel set of data processing servers for development and test purposes.

Staff Engineer at Sony Network Entertainment Inc

April 2012 - February 2014 (1 year 11 months)

Worked on extensions to a JavaScript test engine used to test on Playstations. # Designed and wrote a substantial fraction of the automated tests for the Sony web storefront and the PS4 product rollout.

Sr Integration Engineer at Yahoo!

May 2010 - February 2012 (1 year 10 months)

Integration engineering for the Yahoo! APT (Advertising Products Group) pipeline. # Tested and diagnosed problems in new releases APT. The diagnoses used logs, perl scripts, MySQL database queries, and peeks into a Hadoop database.

Founder at Verde Strada

October 2009 - May 2010 (8 months)

Started a new company. # Sun's identity manager was customized to provide multi-tenant identity management in the cloud. # Work halted after code completion because the market was judged to be too crowded. # Planning and coding started for fine-grained access management for SQL database queries.

Principal Member of Technical Staff at Oracle

November 2007 - October 2009 (2 years)

Quality assurance work for identity management and role management products. # Performance testing of the role manager. This was instrumental in management's re-positioning of the role manager product within Oracle's suite of business products.

Software Developer at SearchForceall of

January 2007 - October 2007 (10 months)

Implemented the back end architecture for a web-based bid management system. # Worked with a front-end developer to deliver data for a Flex-driven front end. # Identified, troubleshot, and eliminated numerous major bugs with the legacy JSP front end.

Staff Engineer at Sun Microsystems Inc

1996 - October 2006 (10 years)

Architecture, leadership, and quality assurance software for the Solaris, Java, and J2EE divisions. # Software architect for the Java Enterprise System installer. The bug count was reduced from the out-of-control 1000s to the manageable small 100s. # Tech Lead for Java Enterprise System. # Tech Lead for Java Software QA Tools Group. This was group of 4-5 engineers and one manager that I founded to maintain and develop test tools for use in the Java Software division. We supplied the main test platform for the core of Java, developed a test harness used in a substantial fraction of J2EE, tracked the hardware used by the Java division, logged the test results from most of the Java and J2EE tests. We provided a platform that allowed Sun to analyze test results so as to minimize the cost of respins of the Java platform. # Lead QA for Java on Solaris. Java on Solaris was a critical product at the time for Sun.

Staff Engineer at Applied Parallel Research

1992 - 1995 (3 years)

Developed a parallel Fortran library, the runtime library for a IDE that parallelized serial Fortran code. # Invented the number theory solution that enabled cyclic decomposition of data. This must have been reinvented at Portland Group and was certainly reinvented at Sun Microsystems. # Implemented data exchange algorithms, including those for reduction functions (think Hadoop). # Developed an interface

to enable the debugging of parallel programs on Unix systems. # Developer parallel performance tool. # Developed a parallel I/O library for use on IBM workstation clusters.

Physicist at Pacific Sierra Research
1988 - 1992 (4 years)

Worked on super computer and various defense industry problems. # Development of parallel supercomputing compiler software that was spun off to Applied Parallel Research. # Anti-submarine warfare software innovation, design, and development. Conceived and developed the software that provided the first light images of submerged submarines (in the free world). # Electromagnetic pulse modeling using integral equations. EMPs are a side effect of nuclear explosions.

Staff Geophysicist at Chevron, USA
1984 - 1988 (4 years)

Researched new methods and architectures for large-scale seismic processing systems. # Research and development of a method to suppress multiple reflections. # R&D of wave equation migration.

Certifications

Intro to Data Science
Udacity September 2009
Data Wrangling with MongoDB
Udacity September 2009
Data Analysis with R
Udacity September 2009
Functional Programming Principles in Scala
Coursera Verified Certificates License JNZJZ85ZP3 June 2014
Intro to Machine Learning
Udacity September 2009
Data Visualization and D3.js
Udacity September 2009
Installing and configuring Cassandra
DataStax License 8qNLB6Rq May 2015
Understanding the Cassandra architecture
DataStax License 8qNLB6cG May 2015
Learning the Cassandra write path
DataStax License 8qNLB6Rc May 2015
Learning the Cassandra read path
DataStax License 8qNLB6M6 May 2015
Introducing the Cassandra Query Language (CQL)
DataStax License 8qNLB6dj May 2015

Education

Stanford University
Ph.D., Geophysics, 1980 - 1984
Activities and Societies: Boy Scouts of America

Massachusetts Institute of Technology
B.S., Physics, 1976 - 1980
Activities and Societies: A student newspaper, now defunct, called Thursday.

Skills & Expertise

Perl
Java
Java Enterprise Edition
Integration
Databases
SDLC
Unix
Linux
Solaris
Web Applications
Agile Methodologies
Enterprise Software
Software Development
Architectures
XML
Cassandra
MySQL
Software Engineering
Business Intelligence
SaaS
JSP
JavaScript
Algorithms
Data Processing
Geophysical Data Processing
Seismic Imaging
Algorithm Development
Scala
Python
R
D3.js
MongoDB
Team Leadership
Software Documentation
Communication

Patents

Same Virtual Machine Mode for Distributed Test Execution

United States Patent 6839647 Issued January 4, 2005

Inventors: Allan Jacobs, Alexei Volkov

An architecture is described for testing distributed applications. The designed was intended for testing J2EE. It was and may still be used in a significant fraction of J2EE's components. The architecture used an emulation of Bourne shell with some extensions for testing and written in Java (for portability). The test software uses a regular set of sockets on each server (to communicate shell commands, timeout requests, and out of band exception returns).

Projects

Unified Event Model

January 2008 to December 2008

Members:Allan Jacobs, Tavs Dokkedahl

UEM is a JavaScript library that makes all browsers, including IE (at the time IE6), comply with the W3C event model standard (http://www.w3.org/TR/2013/WD-DOM-Level-3-Events-20131105/#keys). Its URL is at https://github.com/system4t . Spin-offs from this work went into fixing Mozilla keyboard events and specifying the same for Webkit. URL: https://bugzilla.mozilla.org/show_bug.cgi?id=447757 .

Layered Eight Security web attack defender

February 2014 to Present

Members:Allan Jacobs, Neel Kumar, Balaji Venkateswaran

The Layered Eight Security web platform is a system that detects and actively suppresses attacks on web servers. The system has four main components: (1) a decision engine that decides whether or not a users profile matches a threat profile and that forwards profiles of a fraction of the sessions and clicks at a client site to a backend, (2) a user agent that forwards session and hit profiles to the decision engine and that performs threat blocking, (3) a backend and web display that stores and summarizes session, click, and threat data, and (4) a backend component for analyzing the data to determine if it comes from an automated source and if it is likely to be from a threat source. The backend components make use of fast, count-based statistics and will use logistic regression in the future. The system takes in roughly 1.5 million clicks and 250 thousand sessions per day. A customer introducing the system into their platform can expect to decrease their threat count by a rough order of magnitude. My contribution was in updates and additions to the backend components (Scala and Python), documentation of the API calls that the front end developers used, Cassandra database data modelling, MySQL database data modelling, and the AWS operations.

Tonga

January 1998 to January 2003

Members:Allan Jacobs, Alexei Volkov, Syed Ali

Tonga is, and may still be, the main testing platform used for core Java. The parser is written in Java, so that testing could be done on Windows, Solaris, and Linux with no loss of functionality. It parses a Bourne

shell subset, so that most programmers at Sun (now Oracle) could program tests with no additional training. Shell APIs included sed, before the introduction of regular expressions into the Java API. Tonga version 2 initiated by myself and written by Alexei Volkov. It runs Bourne shell jobs on a network of machines. The Bourne shell was extended with primitives message waits and synchronization. Interested readers can find details in the patent 6839647 "Same Virtual Machine Mode for Distributed Test Execution." The output from the harness was written out as a Bourne shell script. This allowed for bugs to get filed so that developers could replicate failures without knowing how to run Tonga jobs. Another benefit of this is that intermittent bugs could be replicated by writing loops around the contents of the script.

Languages

English

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2 person has recommended Allan

"I respect Allan for the commitment and responsibility he has towards our project and also love to work with him if possible.His availability is 24X7 for our project and we all remember him through his bugupdates.we miss you Allan."

— Kathick D, worked indirectly for Allan

"Great Programmer and Gem of an analyst. He is an asset to any group he works for."

— Murali Nandigama, Ph.D., worked with Allan

Contact Allan on LinkedIn