

Minor E. Gordon, Ph.D.

Curriculum Vitae

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Summary

I am a **software architect** and **full-stack software engineer** with 9 years of experience in industry. I specialize in building:

- **complex web sites and web applications**, such as custom dashboards;
- **software-as-a-service (SaaS) implementations**; and
- **programming tools**, such as compilers and runtimes for domain-specific languages.

I've worked on projects in a variety of domains, from supercomputing to the digital humanities. My strengths are a solid foundation in an analytical discipline; a range of hands-on skills; critical thinking and a systematic approach to new problems; attention to detail; high personal standards; a strong work ethic; and the ability to work autonomously. I am a lifelong learner and avid reader, especially in history.

Education

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| 2009 | Ph.D., Computer Science , University of Cambridge
Dissertation: Stage scheduling for CPU-intensive servers |
| 2005 | Diplom Informatiker , Technische Universität Berlin
Diplomarbeit: Staged design for highly concurrent web servers |
| 2003 | B.Sc., Computer Science , Oklahoma State University Tulsa |

Projects

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|-------------------------|---|
| 6/2017 – ongoing | Full-stack development for Motivated Cognition experiment |
| Part-time | Columbia University / New York, NY USA and remote

Motivated Cognition is a psychology research experiment investigating the effects of cognitive bias on our consumption of information online. |
| Activities | Created a complete web application from a high-level specification, using TypeScript, Bootstrap, Knockout.js, and webpack on the frontend; Java with microservices, YAML configuration, and MongoDB persistence on the backend; Jenkins continuous integration; and Docker deployment

Generated code for models and services in TypeScript and Java

Integrated with Mechanical Turk for subject recruitment |
| 4/2016 – ongoing | Full-stack development for Polygon Analytics |
| Part-time | Polygon Analytics Ltd. / Edinburgh, UK (remote only) |
| Activities | Designed and implemented proprietary software in C++ and Python |
| 9/2014 – ongoing | Software architecture and full-stack development for the Notablist email newsletter search engine |
| Part-time | New York, NY USA and remote

Notablist indexes millions of email newsletters from hundreds of thousands of publishers and provides both a search interface and real-time change alerts to users. |
| Activities | Backend prototyping in Python : <ul style="list-style-type: none">• Classified signup responses and mapped form inputs using numpy/scipy/scikit-learn Backend production rewrite in Java : <ul style="list-style-type: none">• Generated Python JSON-RPC clients, Python command line tools, Java service interfaces and abstract |

implementations, and Java JSON-RPC servlets from Thrift interface and data structure definitions

- Implemented Guice-injected Java micro-services that encapsulated MongoDB collections; Elasticsearch indices; Redis databases; S3 buckets; screenshotting and signups with Selenium; SpamAssassin checking; logstash queries; Stripe integration; Drip (CRM) integration; MailChimp, SparkPost, and SendGrid transactional email posting; etcd locking; DNS and whois querying and parsing; DMOZ category and Alexa and Quantcast rank lookups
- Designed and implemented a scalable distributed system for processing Common Crawl WARC records and submitting newsletter signups
- Created administrative user interface in Vaadin
- Set up Jenkins continuous integration
- Deployed with Docker+Compose on real hardware

Frontend:

- Assumed responsibility for a three year-old Bootstrap+Backbone.js+Marionette.js code base in JavaScript
- Incrementally migrated code from JavaScript to TypeScript
- Added Selenium (Java) browser tests

7/2012 – ongoing Full-stack development of the TeraScript product suite

Full-time then Tronics Software LLC / Stirling, NJ USA and remote

part-time

TeraScribe and TeraScript Server are a visual development environment and server-based runtime for TeraScript Action Files (TAFs), TeraScript Class Files (TCFs), and the TeraScript Markup Language (TML). TML is a markup-based web application language, similar in spirit to ColdFusion. TAF and TCF are ways of organizing TML.

Activities

TeraScript Server 8:

Rewrote TeraScript 7 in Java while maintaining strict backwards compatibility:

- ANTLR-based compilers for TML and associated little languages
- Tree interpreters for TML, TAF, and TCF
- Versioned OSGi bundles with Maven and Apache Felix
- Library of standard functions, primitive types, and collections with extensive unit tests

TeraScript Server 7 (formerly Witango Server):

Reorganized, cleaned up, and modernized a 17-year-old C++ code base and addressed numerous bugs and feature requests for the server's first major release in over two years; now in maintenance releases

Eliminated diverging platform-specific build systems (on Win32, Linux, and OS X) in favor of CMake and ported the code base to Win64 using Visual C++ 2012

Designed and implemented a SQL generator that visits dialect-specific trees of SQL-99 constructs

TeraScribe 8:

Reorganized and cleaned up a 10-year-old Java Swing code base in order to add a number of features to the code editor, including autocomplete and syntax highlighting, and refit the data source management interface to use JDBC metadata

Subcontracting:

Debugged production installations of TeraScript Server 7 and 8

Developed cross-platform (Android, iOS, Windows) mobile app prototype with Xamarin Forms and C#

4/2017 – 5/2017 Drug name comparison project

Part-time PSW Applied Research Inc. / Toronto, ON and remote

Activities

Implemented Kondrak's phonetic alignment and similarity algorithm (ALINE) and a bigram-based orthographic algorithm (BI-SIM) as a PostgreSQL C extension

Built a JavaScript demo application using jQuery and Bootstrap

4/2014 – 7/2014 Application development for the Muninn Project under contract to the Library and Archives Canada

Part-time PSW Applied Research Inc. / Toronto, ON and remote

Activities

Created a command-line Java application for transcribing handwritten World War I medical records from the Canadian Expeditionary Force (<http://blog.muninn-project.org/node/79>) using Amazon's Mechanical Turk

crowdsourcing service: precut images for groups of lines, redundancy between workers, artificially-introduced mistakes and edit distances to detect cheating, and feedback to workers

3/2013 – 7/2013	Back end development for <u>Txtmrkt</u>, a marketplace for digital publications
Part-time	Txtmrkt LLC / New York, NY USA and remote
Activities	<p>Designed and implemented a Model-View-Controller-based Java web application with Guice-injected microservices backed by Amazon S3</p> <p>Authenticated and authorized users with Shiro</p> <p>Integrated co-branded order placement and payment notification with Amazon's Flexible Payments Service</p>
12/2011 – 6/2012	Haystack: performance monitoring platform for online businesses
Full-time	GrokIO LLC / New York, NY USA
Activities	<p>Designed an agent (Python) and manager (Java with Spring Security+MVC and Guice) architecture for gathering, storing, and querying time series data and metadata</p> <p>Implemented time series databases from scratch using relational tables and memory-mapped files</p> <p>Wrote RFC 3986 grammar-based URL and URN parsers using Ragel (Java) and pyparsing (Python)</p> <p>Generated service interfaces in Java and Python with custom Protocol Buffers compiler plugins</p> <p>Coded agent plugins in Java and Python for discovering and fetching metric metadata and data:</p> <ul style="list-style-type: none">• Open source monitoring systems: Nagios, Ganglia, collectl, Graphite• Open source server software: Apache httpd, nginx, MySQL, memcached, MongoDB, JMX• Platform interfaces: procfs, sysctl, WMI, SNMP• Third party APIs: Google Analytics, MailChimp, Spring Social, Amazon CloudWatch <p>Supervised user experience and graphic designers in Ukraine</p> <p>Implemented a client-side user interface with the Google Web Toolkit, starting from wireframes:</p> <ul style="list-style-type: none">• Architectural best practices: Model-View-Presenter; event bus; activities and places• Custom widgets: date time range picker, cell table pager, search box, selection tree• .war deployment to Tomcat with Maven
8/2011 – 12/2011	Back end development for <u>Birchbox</u>, a personalized subscription service for women's cosmetics samples
Full-time	Birchbox Inc. / New York, NY, USA
Activities	<p>Designed, implemented, documented, and successfully deployed warehouse integration code in Java (back end) and PHP (administrative front end)</p> <p>Wrote a Thrift compiler and targets in Python+pyparsing to generate Java and PHP from Thrift definitions</p> <p>Produced ad hoc business reports from MySQL using Java and Jython</p>
5/2011 – 8/2011	Benchmarking server stacks in order to accurately provision EC2 instances at <u>Chartbeat</u>, a real-time web analytics software-as-a-service provider
Full-time	Chartbeat Inc. / New York, NY, USA
Activities	<p>Synthesized a realistic benchmark for front-line web servers from statistical analyses of nginx access logs</p> <p>Significantly reduced network bandwidth and latency on production servers with targeted optimizations</p> <p>Wrote Python scripts for analyzing Ganglia RRDs, replaying HTTP request streams, harnessing httperfs</p>
10/2010 – 4/2011	File I/O library for <u>X10</u>, a type-safe, parallel object-oriented language for high-productivity computing
Full-time	IBM Research / Hawthorne, NY, USA
Activities	<p>Designed, implemented, tested, and documented a new low-overhead, buffer-based file library for X10:</p> <ul style="list-style-type: none">• inspired by POSIX, FUSE, Boost.Filesystem, and Java NIO.2• X10 and native code for the Java and C++ source-to-source compilation backends• Scatter/gather I/O, aligned buffers, memory-mapped files, advisory locking <p>Microbenchmarked the X10 runtime</p>

1/2009 – 7/2010 **LXFS: fast and reliable data storage for High-Performance Computing clusters**
 Full-time NEC High Performance Computing Europe / Stuttgart, Germany
 Activities Wrote Python and bash scripts for configuring, deploying, and administrating LXFS installations: Lustre and Inet configuration (MGS, MDS, OSS, clients); redundant NFS exports; Nagios, Ganglia, and collectl monitoring; Heartbeat/Linux-HA services for failover; Promise RAID devices; network interfaces (Infiniband, bonded Ethernet)
 Finished two major LXFS releases, used in numerous deployments
 Debugged and resolved issues in production parallel file systems

1/2009 – 7/2010 **XtreemFS: a distributed and replicated file system for wide-area networks**
 Full-time NEC High Performance Computing Europe / Stuttgart, Germany
 Activities Designed, implemented, and tested the XtreemFS userspace client:
 • FUSE and Dokan (Windows FUSE-like library) interfaces
 • Multiple pipelined ONC-RPC streams to a single server
 • Staged, event-driven concurrency for robust performance under load
 • Close-to-open file caching with per-file page sizes
 • Automatic failover between file replicas on timeout
 • Heavily benchmarked under different I/O loads (iobench, dbench, metadata benchmarks)
 Finished two major XtreemFS releases, both used in production
 Collaborated with academic and industry partners in Europe, Israel, and China

Teaching Experience

2/2014 – 4/2014 **Two sections of „SQL Fundamentals“ and „Python fundamentals“ workshops for Ph.D. students and post-doctoral researchers in the natural sciences**
 Iowa State University / Ames, IA USA

2002 – 2004 **Technical supervision of Masters' theses**
 Oklahoma State University / Tulsa, OK USA

1/2002 – 3/2002 **Mathematics tutoring for 6th and 7th graders**
 Tulsa Public Schools / Tulsa, OK USA

Computer Skills

Programming Java; Python; TypeScript; C++; C; SQL; C#; JavaScript
Frameworks Thrift; Protobufs; Guice; Guava; Shiro; jQuery; Bootstrap; Knockout.js; Backbone.js
Databases Elasticsearch; MongoDB; Redis; SQLite; H2; SQL Server
Platforms Windows; Debian- and RedHat-based Linux; OS X
IDEs and tools Visual Studio; Eclipse; IntelliJ; Visual Studio Code; Maven; CMake
Revision control Git; Subversion

Personal

Languages English (native); German (fluent)
Hobbies Reading (history, biography, popular science); photography; Tai chi; open source software

"Minor" is a family name. My father, Dr. Minor W. Gordon, is a clinical psychologist in Claremore, Oklahoma, where I grew up. My grandfather, Dr. Minor E. Gordon, was a medical doctor in Claremore, as was his father, Dr. Minor H. Gordon.