Raul Acevedo

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Professional Summary

Software Engineer specializing in Java and web services. MIT graduate with over 30 years of experience writing software. Experience includes website development, web services, e-commerce, concurrency, scalability, and performance.

Education

Massachusetts Institute of Technology   *Cambridge, MA • June 1992*
Bachelor of Science in Computer Science and Engineering. Concentration in East Asian Religion. Related course work includes Software Design, Artificial Intelligence, Computer Architecture, Computation Theory, and Compiler Design.

Open Source

BreezeHttpClient   `https://github.com/LendingClub/breeze-http-client`
An extensible, easy to use HTTP/REST client interface with multiple pluggable implementations. Its simple fluent and extensible API handles JSON object mapping, logging, error handling, retries, web forms, and HTTP requests with ease; implementations can be written in less than a day and require a single configuration change to use, without having to change existing client code.

Employment

Ripple   **Cryptography, Java, Security**
Cryptocurrency   *San Francisco, CA • December 2018 – Present*
Senior Staff Engineer working on security for RippleNet, Ripple's banking payments network leveraging XRP to make fast and secure cross-border payments.
- Designed and implemented RippleNet's security library, used by RippleNet for signing, encryption, and cryptography.
- Abstracted away complex cryptographic implementation details from developers so they can focus on code; developers can change algorithms, Key Management System (KMS), change database encryption keys, and more via configuration only; no code changes or even application restart required.
- Out of the box implementations using Gemalto Luna HSM, HashiCorp Vault, and Bouncy Castle.
- Key rotation, transparent database encryption with migration path from cleartext, plugin provider API for cryptographic primitives and KMS systems, password encryption, and multi-tenancy support with automatic keys per tenant.
  Encourages safe practices of keeping cryptographic keys off application servers; trivial to switch between in-memory keys (e.g. Java KeyStore), exported keys, or remote encryption/signing in a KMS.
- Transparently supports bulk encryption with optional in-memory cache for use with Vault (or any KMS that supports bulk operations); a single request to Vault can decrypt all column values at once, rather than decrypt per field. Design allows for more sophisticated bulk operations such as multi-row level hashing for validating integrity of complex business objects.
- Worked with Bouncy Castle cryptographers to encrypt REST API messages within HTTPS using Diffie-Hellman encryption with Perfect Forward Secrecy so messages sent over third party networks cannot be decrypted at TLS endpoints, and guarantees application security if TLS servers are compromised. This scheme can be implemented without caching ephemeral cryptographic keys and can be transparently integrated into applications using the RippleNet Security API.

Lending Club   **Java, REST Web Services, Encryption, Oracle, Aurora, Netflix Hystrix**
Finance   *San Francisco, CA • September 2015 – November 2018*
Senior Principal Engineer on Lending Club's Core Services and Infrastructure teams, which own several key backend web services for Lending Club's lending platform, as well as maintaining key software libraries used throughout the company.
- Wrote a new REST service communication library to replace the RESTEasy client library. The new library is easier to use than any existing REST library, has a pluggable backend architecture so we can migrate to any future library easily, and supports Graphite metrics, automatic retries, and Hystrix integration. It was soon adopted as the standard REST library for the whole company and was open sourced in 2018 as BreezeHttpClient.
- Led the effort to encrypt all personal information in Lending Club's next generation user management service.
- Designed and created or extended several services to synchronize user data between Lending Club's legacy user database and the new AWS microservice for user management.
- Designed and implemented a new version of Lending Club's cryptography library. The new library presents a far simpler developer API, enables transparent encryption key rotation for any data field in case encryption keys are compromised, and allows dynamic switching of encryption key providers in case of future KMS vendor migration.

Expedia   **Java, REST Web Services, AWS, MongoDB**
Travel   *San Francisco, CA • January 2013 – August 2015*
Technical Lead for Expedia's User Reviews Service, a REST web service providing customer reviews for all Expedia travel sites across the world, processing nearly 120 million customer and backend API requests per day.
  • Provided technical leadership for the development and QA teams in San Francisco, Bellevue and India.
  • Redesigned the core AWS Java/MongoDB architecture, introducing Node.js, ElastiCache and a refactor of the MongoDB database to provide greater throughput, higher performance, global data locality for customers, and cross-regional disaster recovery and backup, all at significantly lower cost.
  • Designed a smart caching layer based on the AWS ElastiCache Redis API and SQS, using a simple but efficient pre-fetch algorithm that minimizes cache misses.

BlackRock   **Java, Concurrency, PL/SQL, i18n, REST, Sybase, Solaris**
Finance   *San Francisco, CA • July 2008 – September 2012*
Technical Lead for BlackRock's iShares international websites on Exchange Traded Funds.
  • Led the technical redesign and rewrite of the iShares Canada website to use a new REST web service API, backed by a completely new database schema, to replace a traditional PL/SQL stored procedure database interface. Responsible for technical design, API integration, coordination with web service, database and business teams in San Francisco and India. Led the front and backend teams, project schedule, technical development and coordination with business, content management, QA, performance, operations, and data teams.
  • Designed and implemented iShares' cache API. The API revolves around a concurrent, multithreaded, extensible cache with transparent disk persistence and entry expiration, and features the ability to run websites during database outages, overall tolerance of database or disk failures, cache preloading, and a web management console.
  • Performed extensive refactoring and efficiency enhancements throughout the iShares code base to lower memory footprint, decrease session replication overhead, and increase overall performance, resulting in a 50% improvement in page response.
  • Refactored major components of iShares websites into a common, reusable library shared by the U.S., Latin America, and Canada sites. Made significant improvements in concurrency, scalability, monitoring, and overall code cleanup.

Nokia   **Java, SOAP Web Services, JBoss, Axis, Spring, Torque, Oracle, Linux**
Social Media for Online Gaming   *San Francisco, CA • July 2007 – July 2008*
Technical Lead of the web services team for N-Gage, Nokia's gaming platform for its high-end smartphones:
  • Managed the web services team for N-Gage, Nokia's community gaming platform for high end phones and a cornerstone of Nokia's transformation into an Internet services company. N-Gage is a complex platform comprising the N-Gage community website, ability to add friends and rate other players, sophisticated score rankings, online chat, discussion forums, and game store. Web services forms the backbone of the core community functionality, servicing the phone client, community website, and several backend systems for game licensing, authentication, customer service, chat and multi-player features.
  • Responsible the for the web services architecture of N-Gage. Worked with product management, QA and development teams across the world, including Finland, Germany and Canada. Steered the team through all technical decisions including feature development, bug fixing, performance and scalability, monitoring, and integration with other systems.
  • Led the team through several key releases including a marketing pre-launch website in August 2007, an initial "beta" release in January 2008 and then the final production release in April 2008.

Pay By Touch   **Java, Concurrency, SOAP Web Services, Axis, Spring**
Biometric Payments   *San Francisco, CA • November 2006 – June 2007*
Senior Java Software Engineer for Pay By Touch's biometric payment authentication system:
  • Led the business requirements and technical design and implementation of the upgrade component of a biometric authentication server. Responsible for meeting and coordinating various teams to understand business needs and balance the technical limitations of the existing architecture.
  • Part of team working on writing a new web services SOAP API to an existing proprietary protocol for biometric payments and authentication. Developed WSDL and schema and wrote most of the web service handlers.

The Gap   **Java, WebSphere, EJB, XML, Oracle**
Retail Website   *San Francisco, CA • March 2006 – November 2006*
Senior Java Software Engineer for The Gap, providing support and development for their high transaction website:
  • Implemented several new features on the website and provided support for debugging many existing problems.
  • Provided on-call support for backend website issues regarding complex XML imports among various backend systems.

Hotwire.com   **Java, EJB, WebLogic, SOAP Web Services, PKI, XML, MQSeries, Oracle**
Internet, Travel   *San Francisco, CA • January 2002 – March 2006*
Technical Lead supervising all finance related code. Worked closely with the Director of Finance, business owners, and third party technical contacts. Also part of a team of Java support engineers responding to live website issues. Led the following projects, including technical design and implementation:
  • Added PayPal as a new payment method using SOAP, web services and PKI (public/private keys, certificates, and digital signatures). Cleanly abstracted a different payment model originally designed for simpler "mom & pop" online shops.
  • SOAP integration with a new web service from JPMorgan Chase offering real-time credit card authorization controls. This was Hotwire's first SOAP implementation, thus requiring research into SOAP APIs, PKI, and WSDL/XML.
  • Fraud prevention via complex fraud detection rules, able to either block a live purchase or computing a fraud risk score used in later manual review of high risk transactions by the Finance business team.
  • Designed and implemented the complex search algorithm for our package product, involving asynchronous, simultaneous searches across various products with elaborate callback semantics between our JSP and EJB tiers.
  • Designed and implemented the real-time migration of customers from our first generation website to our fully redesigned second generation website. This involved a gradual migration of customer data over a period of several weeks, operating both sites simultaneously, and transparently transferring customers between the two sites.

Support.com   **Java, WebLogic, WebSphere, XML, Oracle, DB2, iPlanet, Apache**
Internet, Technical Support   *Redwood City, CA • March 2001 – July 2001*
Java Software Developer aiding with Solaris/WebLogic/Oracle and AIX/WebSphere/DB2 customer deployments, and configuring the Unix development environment under all platforms.
  • Customized customer deployments of Solaris/WebLogic/Oracle implementations.
  • Created AIX/WebSphere/DB2 development environment, keeping it consistent with Solaris/WebLogic/Oracle.
  • Wrote simplified Java database API, focusing on simplicity for ASP developers transitioning to JSP.

In 2000, I moved from Boston to San Francisco to join zipRealty.com as Software Architect.

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zipRealty.com   **Java, J2EE, XML, Servlets, Octane, Oracle, Apache, Linux**
Internet, Real Estate   *Berkeley, CA • February 2000 – January 2001*
Software Architect in charge of company's overall software technology architecture.
  • Led the technical design and implementation of the company's website, a complex project completed under intense time pressure and coordinated with a separate team implementing the company's Octane customer service platform.
  • Designed and implemented most core Java functionality, including the basic database access layer, generic form handling routines, XML infrastructure, and most JSPs.
  • Worked directly with product development, I/S, QA, and Executive Team in coordinating the company's software direction.
  • Led engineering team of Java and Perl developers, supervising technical tasks and ensuring a common, coherent architecture.
  • Wrote the Unix build system used by Java and HTML developers to create the website.

From November 1995 to December 1999 I worked as an independent contractor.

Pharmatrak   **Java, XML, UML, PHP, Apache, Linux**
Internet, Healthcare   *Boston, MA • April 1999 – December 1999*
Designed and implemented interactive websites and tools for web tracking, analysis, and configuration. Wrote tools to validate code errors in client web pages and administrative front end for web tracking analysis tools.

Thomson & Thomson   **Java, Perl, Netscape Publishing Xpert, Oracle, Unix**
Internet, Copyright & Trademark   *Quincy, MA • April 1998 – April 1999*
Designed an end user pricing server supporting a wide range of product billing models. Improved billing process and performed significant data integrity and revenue recovery against billing database.

Wellington Management   **C++, Visual Basic, Oracle, Windows NT**
Finance   *Boston, MA • September 1997 – April 1998*
Developer aiding in maintenance and enhancements to existing financial analysis tools and critical client/server applications. Worked on a wide range of technologies, focusing on platform migration and performance.

Thomson & Thomson   **Perl, Netscape Publishing System, Oracle, Java, Unix**
Internet, Copyright & Trademark   *Quincy, MA • May 1997 – August 1997*
Developer on website providing access to company's trademark and copyright database. Redesigned backend billing algorithm to facilitate error handling, dynamic updating, and upgradability.

BBN Planet   **Perl, Netscape Publishing System, Oracle, JavaScript, Unix**
Internet, Law, Consulting   *Cambridge, MA • January 1997 – April 1997*
Developer for website providing news, moderated discussion forums, and searchable library archives for lawyers. Wrote CGI and Perl modules for member management, access control, billing, and reporting.

Fidelity Investments   **C++, Oracle, SQL, Perl, Unix**
Finance   *Boston, MA • July 1996 – December 1996*
Developer for a client/server application gathering and manipulating corporate action information. Performed extensive debugging and enhancements to the C++ and Oracle SQL backend and designed a hierarchical test group engine.

Teradyne   **C++, X Window System, Unix, C, PostScript, Automated Testing**
Hardware   *Boston, MA • November 1995 – June 1996*
Extended an X Window System application for creating and editing hardware schematics; designed and implemented algorithms for analyzing schematics, added new user interface functionality, and wrote new C/C++ APIs.

After finishing MIT in 1992, I worked full-time at Sapient and GCC Technologies,
receiving promotions to Lead Developer and Engineering Manager respectively.

Sapient   **PowerBuilder, Oracle, SQL, Visual Basic, SQLWindows**
Public Utility, Consulting   *Cambridge, MA • October 1994 – October 1995*
Software Engineer implementing an automatic dispatching and order tracking system for a large gas service company.
  • Iteratively worked with clients on designing entire business subprocesses essential to overall functionality.
  • Primarily responsible for entire reporting portion, including design, test, and client approval.
  • Promoted to Lead Developer for assignment on subsequent projects.

GCC Technologies   **C, Perl, Unix, PostScript, Embedded Systems**
Printers, Embedded Systems   *Bedford, MA • August 1992 – October 1994*
Software Engineer for embedded, multi-tasking operating system driving sophisticated PostScript printers.
  • Wrote source code control system for individual sandboxes and distributed, parallel build system.
  • In charge of important software port contract with large distribution company in Korea. Solely responsible for porting design and implementation, and the primary technical contact for the Korean distributor.
  • Received GCC Engineering Award and promoted to Engineering Manager leading GCC's Core Engineering team.

Before graduating from MIT, I had several key internships in research and private industry.

Digital Equipment Corporation   **C++, X Window System (Xlib, Xaw), Unix**
Hardware   *Littleton, MA • June 1991 – August 1991*
Redesigned and extended the functionality of flow graph viewer produced by a machine code translator.

MIT Artificial Intelligence Laboratory   **Common Lisp**
Artificial Intelligence   *Cambridge, MA • September 1989 – April 1990*
Implemented and designed a Lisp checkpoint facility for portably saving and restoring the current Lisp environment.

Naval Air Development Center   **Common Lisp**
Research   *Warminster, PA • June 1989 – August 1989*
Designed a blackboard expert system to study target recognition and situation assessment algorithms and methods.

Temple University Hospital   **BASIC, x86 Assembler**
Medical   *Philadelphia, PA • June 1985 – August 1985*
Designed and implemented a radiological physics flashcard test program for medical students. Used a hybrid approach embedding fast graphic assembler routines into the core BASIC code.

Personal

Born in San Juan, Puerto Rico; fluent in English and Spanish. Interests include sushi, chocolate, martial arts, yoga, fitness, music by Asura, Vangelis, Dead Can Dance and Nine Inch Nails, and Bi-Rite Salted Caramel ice cream.