Sebastian E. Lopez

Senior Software Engineer

Contact Information
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Experience Overview
16+ years of experience in the software industry.
Know many languages like Java, Python, Javascript, Typescript, C++, Ruby, Scala, Golang, Rust.
2+ years of experience leading different types of teams.
6+ years of experience working as a mentor for junior developers.

Brief Summary
I am a senior software engineer with experience using Java, Python, Javascript, Typescript, C++, Golang, Ruby, Scala, SQL, Bash, Batch. I also enjoy coding with Rust, Swift, Kotlin, SPARQL. Currently enjoying learning Rust. I also enjoy doing programming exercises. My job is my passion and in my spare time I enjoy creating pet projects, learning new technologies and learning new things about those technologies. I also enjoy meeting new people and learning from them. Currently working on projects that I feel will benefit all developers in the future.

Background Information
Citizenship: Naturalized U.S. Citizen, Naturalization on 2001. Security Clearance: TS-SCI (Top Secret)

Education
Master of Science in Computer Science, Software Engineering and Program Management. Completion: 2009.
Bachelor of Science in Computer Science, Minor in Business Administration, Completion: 2003.
School for both degrees: George Mason University, Fairfax, Virginia.
Foreign Languages: Fluent in English and Spanish, learning American Sign Language.

Professional Experience

Title: Senior Software Engineer
Employer: WTI
Duration: Oct 2019 - Current
Dewey project: Working as a backend software engineer. Responsible for a lot of the Data Ingest subsystems application functionality. Used Nifi technology, Java and the Spring framework. Worked a lot on data ETL for the application for different formats such as document, powerpoint, pdf and images. For each of those document types, scraped the data, fixed and filtered the data, then ingested the data. Worked on Dockerizing many of the modules, got familiar with Docker and Docker compose, also worked with Maven and Nexus. Responsible for modularizing the search functionality into different types of document parts; this became the new version of searching the data. Responsible for fixing many search filters; these were long existing issues. Worked a lot with the Sparql technology. Responsible for fixing various API issues using Java and Graphql. Responsible for updating some documentation using Swagger. Wrote on a user preference microservice using the Spring framework and Spring boot. Worked on ontology and taxonomy functionality using the RDF standard and Sparql. Worked with Python on writing scripts for helping data transferring, ETL, data cleansing, data analytics, data viewing, and machine learning for text classification. Wrote a few CLI tools to help automation on requesting and formatting the data for viewing for clients, used the Go language.
Favorite Project: Lead the project on modernizing our feed extraction approach in our graph RDF database, based on Mongodb and Accumulo, with a more intelligent extraction approach using NLP. First, worked on extracting information and feed information to our APIs and ultimately to our databases. Technology used is Apache Nifi, designed and coded automating the data flow between software systems, leveraging the concept of ETL. Initially they had a plain text extractor, I wrote the html, docx, doc, excel, pdf, ppt, pptx ETL functionality. The current system loaded entire text, paragraphs, tables, and images from a document, and tagged elements if any tag keywords appear. After understanding the system, decided it would be better to expand the extraction of

the data to become actual RDF triple data: subject, predicate, object, all from text paragraphs. Using NLP extracted noun, verb and objects from text into triple subject, predicate, objects. Also extracted tabular data for recognition of subjects and numbers and its units, that could be fed to any table. This became one of the selling points of the application.
Technologies: Java, Python, Golang, Spring, Nifi, Docker, Swagger, Graphql, RDF, Sparql, NLP, Mongodb, Accumulo, Maven, Nexus, NLP.

Title: Senior Software Engineer Advisor
Employer: CSRA / GDIT
Duration: Jul 2015 – Oct 2019
Data Retrograde project: Worked on a web application to sort, organize, clean, categorize and make available petabytes of data collected from combat units. The application processed huge datasets into relevant data that met Government retention policies and reduce the storage volume by removing unneeded data. The project used big data technologies via the Cloudera stack (the Hadoop ecosystem, Zookeeper, Hbase, Spark). The project was java based mainly, and in the frontend it used the angular javascript framework. The python language was used to implement many tools for the project. Implemented many tasks for the web application, backend, big data, frontend, ingestion, class detection, and tools to help the developing team.
FAA UAS project: Worked on a web application for the FAA to register all the commercial drones used in the country. The project was mainly based using Java and the spring framework and the Jooq library as an ORM. The application used a Mysql variant as data persistence. The project used the Angular framework as a frontend, and used several third party commercial tools for scalability, credit card payment, security and traffic monitoring. Implemented many tasks for the web application, backend, frontend, database procedures, calculations, statistics, document generation.
DAE Platform project: Worked on a huge project that provides PAAS and SAAS, it made it easier to add a web application in several different languages; and took away the complexity of data sharing between application and security, authentication, authorization. Implemented fixes in the java and python web application framework, worked on automation tools to test several of the frontend pages and functionality. Also fixed some of the backend projects and implemented a migration from Accumulo to Mongodb. Worked on a frontend subproject based on the React framework.
CRYSS Project: Worked on every aspect of an encryption/decryption project for the FBI. A project using the same concept as the machine built by Alan Turing that cracked the Enigma machine that was a contributing factor in winning world war II. Wrote many solutions that were critical for the project. One solution was to change the desktop application into a headless rest server solution so the frontend code could communicate to the backend code. Another solution was a concurrency and multithreading solution for the project that would control the number of threads to be run at the same time and when threads are started, paused, or reused. Another solution was to create an external library framework so external libraries could talk to the project, as plugins to the application that were read runtime. These was useful for a third party developers to use the application with their own library. Another solution was to setup an installer framework so the project would be able to install it in a client machine. Another solution was to setup an image processing framework to detect symbols in a scanned sheet of symbols and segment the symbols to import to a virtual keyboard. Another solution was to setup a cli version of the application for multiple solutions such as loading sample texts and loading data. Another solution was to let the client decide in which order the decryption threads were going to be run and to pause and resume the thread groups as needed. Helped in a lot of tasks and helped setup the frontend of the application. Worked on a windows system tray application that controlled the main application, wrote the code in the Kotlin language. Responsible for the installer of the project, the installer was based on the Nsis installing framework. Wrote a lot of tools for the application using the Rust and Go languages.
Favorite Project: First led the task to change an eclipse based desktop application to a web application. First analyzed and recognized the key API functions for the server processes, which functions to be called by a future client. Added a rest API based on the apache jersey framework and a front end application based on the Vue framework. Added great extensions to the app. For example, peviously for the desktop app, multiple jobs could run at the same time, but each job was assigned one thread, and they could be stopped but not paused, and that was the design. Introduced first a way to control the threads to know the status, pause, stop from the front end via rest endpoints. Then introduced how to break each job into more threads, because some jobs had 100k

processes while some jobs had 100 processes, based on the number of configured threads the new system would divide the work equally. Later introduced a way to talk via machines, used jetty's load balancer. So when requested a service, the load balancer would first break the jobs, then pass along the jobs into different computers. Also divided the jobs equally, just like the thread architecture.
Technologies: Java, Java concurrency library, Golang, Rust, Eclipse RCP, Jetty, Jersey, Jackson, Xstream, Marvin imaging framework, Vue, Typescript. Mongodb, Accumulo, React, Angular, Python, the Cloudera stack, Hadoop, Zookeeper, Hbase, Spark.

Title: Senior Software Engineer
Employer: EMC RSA
Duration: Jan 2015 - Jul 2015
Worked on the continuation of the NetWitness NextGen project, which provides real-time network forensics and automated threat analysis solutions. Worked on the web server backend and frontend part of the project. Worked with Java, the Spring framework, Maven, MongoDB, H2, Protobuf, RabbitMQ, Collectd, Puppet, Jenkins, on the backend. On the frontend, worked with ExtJs, jQuery, Momentjs, D3, Websockets. Helped the team to port the frontend code to use Ember Js, Sass, Ember Cli, Broccoli. On the backend changed the application to use the Gradle building tool. Worked to help the Health and Wellness team, which monitored and made sure all the services in a network were running, and provided the user with monitor data, customization, alerts and alert rules and suppressions.

Title: Senior Software Engineer
Employer: CyberIQ
Duration: Oct 2014 - Nov 2014
Worked on a project providing threat intelligence and ip and domain breach monitoring services. The company combined threat intelligence with analytics to rapidly discover emerging threats, visualize trends, patterns and relationships to obtain situational awareness for optimal decision making. Worked on the spring framework in the backend. The project also used hibernate, spring security, spring oauth, spring boot, spring batch, mongodb, postgresql, mapR, testNg, mockito, selenium, jenkins, and ext js as a frontend framework. The reason for leaving was the company had no funding left, the company disbanded, and all the employees were laid off. I was not aware of the situation when I was being hired.

Title: Senior Software Engineer
Employer: Object Video
Duration: Sep 2013 - Oct 2014
Worked on many different projects and applications. Worked on initiating a java rest service project using jersey and jackson. Worked on requirements and defining messages being passed and architecture of the initial project. Worked on initiating a java rest service project using the spring framework, hibernate and postgresql. Worked on requirements and defining messages being passed and architecture of the initial project. Worked on fixing a rest service using jersey and talking to a mongodb database, adding some validation and changing message being passed. Worked on porting a project from C++ to Java. Project used many features like several design patterns, inheritance, generics, http request to other servers, etc. Worked on a Java web project that converts foreign language characters drawn on a Canvas to plain text, using OCR technology. Worked on setting up the server and building the client. Installed an OCR cots application, built a java rest server that talks to the OCR server, built a web client using html5, json, base64. Client waits for ocr server to send back result response and display on the client. Client then shows response and offers several options of similar characters for the user to pick in case character rendered was incorrect. Added and fixed many web application features, page local storage, web workers, map features, street view features, canvas zooming with a lens, page layout, styling.
Favorite Project: Created a service application that would interact with two other in-house services, one getting video data, saved in chunks, the other getting tracklet information about the video, from precomputed computer vision analysis. Per the client request, the video could be from different channels that represented video sources, different formats, and date and time for period of playing time requested. The server would calculate the chunks that fit the video request and data analysis of the time period. Sliced the video data into smaller chunks and changed the info data to be more readable to a web framework client. Then served the video and tracklet data.

Created a frontend ui component or widget, based on the jquery library and websockets, built as a jquery plugin, to be used by not just our web application but several applications in the future, so the plugin would be placed into several web applications. Plugin was a video player client from the information from the video and tracklet info service. The ui component would grab the video chunks and put them next to each other for the player to play, and then the plugin would draw the tracklet information on top of the video to show the tracking object to the client.
Technologies: Java, C++, hibernate, postgresql, jquery, bootstrap css, require js, knockout js, Sass, Mongodb.

Title: Software Engineer
Employer: Sierra Nevada Corporation
Duration: Sep 2009 - Sep 2013
Worked in all areas of many different web applications. Worked a big portion on a specific google like Application. The application had a text search engine, a document search engine, and geospatial search engine and map capabilities. Worked in the frontend code using the HTML, CSS, Javascript, Google Maps API and GWT. Worked in the backend using Java, Servlets, JSP, JDBC, JNDI, Hibernate, Web Services, XML, Tomcat, Glassfish, Jetty. Worked in the database using Oracle and Postgres. Participated in taking decisions with the team in the applications use cases and what tools to use and what new tools are coming up. Wrote SOAP and Restful Web Services to have data available from an oracle database. Used Apache CXF, Spring, Hibernate. Created Android, iOS, applications for showing different faces of an application. Used the android sdk, the iOS sdk. Projects included geospatial, chart viewers and readers with voice. Other projects included forms with different widgets, autocompletion, and local storage. Created web mobile applications for prototype and in-house products. Used SQLite, rss libraries, jQuery. Projects included geospatial, chart viewers. Other projects included forms with different widgets, autocompletion, and local storage. Wrote a java application that standardizes data in different tables with different column names into one big standard table, the application also cleaned the data. Worked on a C-sharp/visual basic project that plotted data on a map and made a few tools to ease drawing on the map and to get information from layers on a map. Made a Solr/Lucene text and geospatial index on an existing Oracle table, and automated updating the index daily. Worked on helping set up a geoserver server and populated the server with some postgis data. Worked on helping set up a nexus maven server to be able to host in-house java libraries. Worked on helping set up a Jenkins service via a tomcat server. Jenkins will run different types of tests after every commit. Worked on a Google Maps javascript library to add some map drawing functionality to a product. Wrote a javascript Simile Timeline library wrapper available for a product to have time view with map view capabilities. Wrote an XSLT library that converts xml data into a html page and pdf page. Wrote an in-house ruby on rails project that showed last uploaded data and other important data. Worked on a python project that crawls several websites and gathers data and add data to a database. Wrote eclipse plugins for icon decoration, assisted views and autocompletion. Wrote a Flash/Flex project that showed different types of charts made of existing data. Wrote some R code to represent quantified data in a motion chart using the googlevis library. Worked on CMMI group to make the organization CMMI level 2. Learned and made a presentation to spearhead the company to use HTML5, CSS3 and Node js.

Title: Software Engineer/ Software Integration Engineer / DevOps / Lead
Employer: Imagine One Technology, Ltd.
Duration: Jun 2004 – Sep 2009
Worked as a Software Developer on the SIAP Joint Government Project for the Battle Management Command and Control domain team. Responsible for designing, coding and unit testing the software. Development was made using C++ and C. Wrote some C++ static and shared libraries in linux and windows. Worked as the Lead System Software Integrator. Responsible for delegating responsibilities to a team. Responsible for keeping the product always stable and executing correctly. Responsible for smoothing the cycle turnover of the project. Responsible for maintaining and adding functionality to the GUI version of the product. Created and maintained an in-house LAMP project that recorded all of the project team's submissions and made data available with them, for example release notes. Created several batch, shell and python scripts that automated some of the work like regression testing and making a release from the subversion release trunk.