KARIM BENBOURENANE

SOFTWARE ENGINEER

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Mathematics, science, and technology. I've placed myself at the intersection of all three and routinely seek to find challenges that lie in their intersection. With more than 15 years of technical experience in the industry, I've been fortunate to build creative and technical solutions alongside talented collaborators. I've worked on the processing and analysis of large datasets; engineered value-add user experiences for my clients; optimized existing software solutions constrained by computing limitations; and developed and contributed to software libraries in use around the world in a multitude of contexts.

SKILLS

LANGUAGES	PYTHON JAVASCRIPT BASH JAVA C C++ RUST GO RUBY
FRAMEWORKS	DJANGO EXPRESS REACT BOOTSTRAP JQUERY RAILS SPRING
WEB	HTML5 XML CSS WEBSOCKET
TOOLS	VIM PYCHARM GITLAB ANSIBLE CHROME DEVELOPMENT TOOLS
NETWORKING	DHCP DNS IPAM SNMP
VENDORS	CISCO JUNIPER CIENA ARUBA INFOBLOX F5
SYSTEMS	UNIX LINUX DOCKER VMWARE NGINX APACHE PUPPET
DATABASES	MYSQL POSTGRESQL SQLITE NEO4J
SCIENTIFIC	NUMPY SCIPY MATPLOTLIB MATLAB

EMPLOYMENT

Software Engineer, Lawrence Berkeley National Laboratory

2020-12 — Present

Wrote software to support the US Department of Energy's research missions by providing and maintaining tooling that supports the vast network that connects all of its National Laboratories and partner research sites.

- Designed and implemented a web application for user self-service to register devices on campus wired and wireless networks. Users can register a device with minimal interactions by automating and predicting the network to which the user belongs.
- Maintained and updated an application that reports firewall rules. The application logs into those firewalls, collects the running configuration, processes it into a user-friendly format, and reports it to users based on their search queries.
- Wrote a set of SNMP Ruby libraries to query network devices for diagnostic and identity information.
- Implemented a new and adaptive inventory system for tracking network devices.
- Wrote a Python library for making SOAP calls to a 3rd party wireless policy manager to collect information on connected users for historical and legal purposes.
- Created a web application for registering users on the campus guest wireless network.
- Implemented a network crawling library that generates a layer 3 topology map of wired networking devices on campus.
- Wrote a Python library for consuming the InfoBlox DDI web API in an object-oriented way.

Software Engineer, Carnegie Mellon University

2012-04 — 2020-12

Designed and wrote software that provides support to the University's network infrastructure (e.g., routers, switches, and wireless access points) as well as network services (e.g., DHCP, DNS, and IP address management).

- Designed and implemented a web application for user self-service to register devices on campus wired and wireless networks. Users can register a device with minimal interactions by automating and predicting the network to which the user belongs.

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Graduate Research Fellow, University of Pittsburgh

2008-08 — 2011-05

Conducted research in computational biology in an interdisciplinary program that focused on computational methods to solve previously intractable biological problems.

- Completed work towards solving a problem in immunology; specifically, adapting a computational physical model of cytotoxic T-cell morphology.
- Simulated how the T-cell changes its shape and orientation under the influence of anti-cancer agents using only physical forces and dynamics.
- Used mathematical computation techniques to solve a constrained optimization problem to produce minimal energy cell morphologies.

Software Engineer, Field Expert

2006-09 — 2008-03

Worked with a startup company that focused on software consulting and training.

- Developed a Java EE application to solve problems in inventory logistics.
- Wrote modules to give customers access to manipulate supply inventory data stored in MSSQL through a user-friendly web interface.
- Created training tutorials to teach students how to install and use course applications.
- Composed introductory materials for students learning to write application code with our course technologies.

EDUCATION

University of Pittsburgh

2004-08 — 2008-04

SERVICE

Undergraduate Research Assistant, University of Pittsburgh

2007-02 — 2008-06

Trained as a practicing scientist in the David J. Earl Group at Pitt. I wrote code to produce genomic simulations and utilized my expertise in the statistical sciences to analyze the results and draw some new conclusions.

- Wrote a genetic reproduction simulation in C and C++ to explore a problem in metagenetics.
- Gained new insights to the question: Do traits that affect hereditary processes (like mutation rates) spontaneously emerge and regulate their own expression as an evolutionary process?