Alexandra Zaharia

Back-end Software Engineer | 7+ years of experience | PhD in Computer Science

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👤 GNU/Linux **enthusiast** and **perpetual learner**, I thrive in team settings where I can **explore ideas** and **exchange knowledge**. My software craftsmanship motto is that *complex does not have to equate complicated*. With **over 7 years** of professional experience in software engineering and **broad domain knowledge** including cloud computing, IoT, machine learning, bioinformatics and cyber security, I am always in pursuit of novel challenges.

💼 Professional Experience

⌛ Cloud Engineer
Platform.sh

April 2022 – present
Remote

• Contributing to the orchestration layer which manages clusters, containers and services.

Environment: Linux, Python, Docker, LXC, git, GitLab

⏱ Back-end Engineer / Embedded Systems Engineer
Qiet / Freebox

July 2019 – March 2022
Paris, Île-de-France

• Designed a flexible framework for testing hardware in factory assembly line settings. It provides an intuitive API for effortless test writing and is optimized for operator efficiency.
• Implemented a proprietary protocol over TCP for sending alert messages to the remote monitoring center. Integrated this microservice within our back-end ecosystem.
• Prototyped a flat file system for EEPROMs (minimizes device wear, ensures data consistency).

Environment: Linux (bash, systemd), Python (socket, asyncio, serial, opencv), PostgreSQL, C, finite state machines, RTOS, EFM32, STM32, gdb, JLink, openocd, markdown, MantisBT, mercurial

⏱ Machine Learning Engineer / Research Associate (Post-Doc)
Institut National de la Recherche Agronomique (INRA)

October 2018 – June 2019
Jouy-en-Josas, Yvelines

• Developed machine and deep learning methods for predicting the most likely products of chemical reactions, using big data learning datasets that could not fit in memory (~100 GB).
• Delivered an open-source tool that enables researchers to extract relevant data from a notoriously difficult to parse knowledge base.

Environment: Linux, Python (keras, scikit-learn, numpy, requests), snakemake, HDF5, XML, GitLab

⏱ Research Associate / Teaching Assistant
Laboratoire de Recherche en Informatique (LRI)

October 2015 – September 2018
Orsay, Essonne

• Investigated a NP-hard problem in graph theory. Designed a solution tailored to the biological data of interest. Delivered an open-source Python pipeline as a practical solution.
• Taught algorithms and data structures (C), RDB design (SQL) and OO programming (Java and Swing) to M1 students. Devised lab assignments from scratch on topics that I deemed vital for their knowledge (such as file I/O, multi-file projects and makefiles, or threading).
• Conceived and graded 11 student projects in total, two of which were semester-long R&D projects focused on solving bioinformatics problems stemming from my research interests.

Environment: Linux (bash), Python, graph theory, concurrency, XML, LaTeX, git

⏱ Research Intern (10 months in total)
LRI / I2BC / CNRS

June 2012 – May 2015
Orsay and Gif-sur-Yvette, Essonne

• During my BSc and MSc studies, I did 4 R&D internships in bioinformatics at 3 different research laboratories in the Saclay research pole.

Environment: Linux, Python, graph theory, XML, LaTeX, git; Perl, R, PostgreSQL, CSV

⏱ UNIX QA Engineer
BitDefender

March 2007 – August 2010
Bucharest, Romania

• Automated tasks in the QA workflow by creating bash script pipelines.
• Proposed a web-based monitoring tool for the QA infrastructure using rrdtool.

Environment: Linux, FreeBSD, OpenBSD, NetBSD, OpenSolaris, bash, cron, rrd, Perl, JIRA, svn

🎓 Education

2018 – PhD in Computer Science
Paris Sud University / LRI, Orsay

2015 – MSc in Bioinformatics
Paris Sud University, Orsay

2013 – BSc in Biology
Paris Sud University, Orsay

2010 – BSc in Computer Science
Spiru Haret University, Bucharest (Romania)

🔗 Projects

Gal4xy – turn-based 4X strategy game (C)

libgcds – generic data structures library (C)

Linux-IPC – routing & ARP table manager using several IPC mechanisms (C)

✿ Fields of Expertise

Algorithms and data structures
Concurrency
Databases
Design patterns
Embedded systems
Graph theory
Machine learning
Network programming
Operating system internals

🔧 Main Technologies

GNU/Linux (bash, systemd, udev, cron, syslog, apache, nginx)

Python (setuptools, asyncio, requests, flask, sqlalchemy, psycopg2, h5py, lxml, numpy, scikit-learn, keras, networkx, opencv, nose, pytest, conda, venv)

C (C11, C99, ANSI C, cmocka)

C++ (C++17/14/11, STL, imgui)

SQL (PostgreSQL, SQLite, MariaDB)

Java (8 SE, Swing, JfreeChart)

Network (TCP/IP, HTTP, REST, Protocol Buffers, gRPC)

Tools (make, cmake, snakemake; valgrind, gdb; git, mercurial, svn)

💬 Languages

Trilingual English / French / Romanian

🐞 Hobbies

Scuba diving (CMAS**), underwater photography, weightlifting, science-fiction, drawing