Tom Cornebize

HPC & AI Engineer

tom.cornebize@gmail.com
cornebize.net
github.com/Ezibenroc
linkedin.com/in/tomcornebize

Skills

Advanced

Python
R
C
Bash
MPI
LaTeX
GNU / Linux
Git

Intermediate

Cython
C++
Java
SQL
CI / CD

Language

French (native)
English (fluent)

Education

2017 – 2021 Grenoble (FR)
PhD in Computer Science — **Université Grenoble Alpes**

- Great focus on scientific rigor and reproducibility.
- Developed a new approach for emulating the execution of large-scale MPI applications and predict their performance. Used Simgrid simulator and statistical models. Achieved high accuracy ($\sim 5\%$ error) at low cost.
- Carried experimental campaigns on hundreds of machines with rock-solid methodology. Implemented an experiment engine in Python (packages: fabric, requests). Analyzed and visualized results in R (packages: ggplot2, dplyr, tidyr) and Python (packages: pandas, plotnine, statsmodels).
- Implemented performance non-regression testing for hundreds of machines with automated measures and statistical analyzes.
- Implemented a Python package to compute a piecewise linear regression, returning much better fits than the existing alternatives.
- Wrote several articles, published in top conferences and journals.
- Presented my work in multiple international gatherings.

2015 – 2017 Grenoble (FR)
M.Sc. & Engineering Degree in Computer Science — **Ensimag**
Obtained a Master of Science, with the highest honor, ranked $2^{nd}/88$.

2013 – 2015 Lyon (FR)
B.Sc. in Theoretical Computer Science — **ENS Lyon**
Obtained a Bachelor of Science, with great honor.

Experience

2021 – now Remote
HPC R&D Engineer — **Intel**
Performance prediction of MPI application.

- Simulated MPI applications in different *what-if* scenarios to help co-design next-generation HPC platforms and fine-tune important benchmarks.

2018 – 2020 Grenoble (FR)
Graduate teaching assistant — **Université Grenoble Alpes**

- Gave lectures, tutorials and practicals, from 1st year (L1) to 4th year (M1).
- Courses: introduction to Python, software development, operating systems, algorithmics, data analysis and visualization (in R).

2017 Chicago (US)
Performance Variability in Supercomputers — **Argonne Laboratory**
Three month research internship.

- Carried experiments and statistical analyses to characterize variability.

2017 Grenoble (FR)
Efficient Simulation of Large-Scale MPI Applications — **Inria**
Six month research internship.

- Modified the simulator (C++) and the app (C) for large scale simulations.
- Outcome: simulate executions several orders of magnitude larger.

2016 – now Side project
Contribution to Roaring Bitmaps — **roaringbitmap.org**
Fast and lightweight set of integers. Widely used library.

- Contributed to CRoaring, the C library. Implemented multiple features, reported and fixed several critical bugs.
- Developed PyRoaring, a Python wrapper, several orders of magnitude faster than the alternatives. Used the Cython programming language.

Training & Certifications

2022
Deep Learning Specialization (certificate n°32LHWDXKH397) — **Coursera**
Learned to design and use deep neural networks, including convolutional neural networks and recurrent neural networks. Used Keras library.

2022
Machine Learning Specialization (certificate n°TZZ9XL2HWZGW) — **Coursera**
Learned to use supervised and unsupervised learning algorithms.