

Tom Cornebize

PhD student in computer science

Contact

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Web

cornebize.net
github.com/Ezibenroc

Skills

Python ★★★★★
L^AT_EX ★★★★★
GNU/Linux ★★★★★
C ★★★★★
C++ ★★★★★
Java ★★★★★
MPI ★★★★★
R ★★★★★
SQL ★★★★★

Languages

French ★★★★★
English ★★★★★
German ★★★★★

Education

- 2017 – 2020
Grenoble (FR) **PhD in Computer Science** [Grenoble Alps University](#)
Under the supervision of Arnaud Legrand.
Topics of interest: high performance computing, distributed systems, performance evaluation.
- 2015 – 2017
Grenoble (FR) **Master's & Engineering Degrees in Computer Science** [Ensimag](#)
Graduate specialization in parallel and distributed systems.
Obtained a Master of Science, with highest honor.
- 2013 – 2015
Lyon (FR) **Bachelor's Degree in Theoretical Computer Science** [ENS Lyon](#)
Undergraduate and postgraduate intensive program in theoretical computer science.
Obtained a Bachelor of Science, with great honor.
- 2011 – 2013
Grenoble (FR) **Undergraduate program** [Joseph Fourier University](#)
Undergraduate program in computer science and mathematics.

Internships

- Oct/17 – Dec/17
Chicago (US) **Performance variability in supercomputers** [Argonne Laboratory](#)
Under the supervision of Swann Perarnau.
 - Performed several experiments and statistical analyses to characterize performance variability.
- Feb/17 – Jul/17
Grenoble (FR) **Efficient simulation of large scale MPI applications** [Inria](#)
Under the supervision of Arnaud Legrand.
 - Profiled and generated traces of the simulator's execution.
 - Modeled the expensive functions to inject their expected duration in the simulation.
 - Replaced large allocations by fake allocations.
 - Used huge pages to decrease the page table size.
 - Outcome: simulate executions several orders of magnitude larger while keeping a small error.
- May/16 – Aug/16
Walldorf (DE) **Multicast communication in SAP HANA** [SAP](#)
Under the supervision of Norman May.
- May/15 – Aug/15
Grenoble (FR) **Job isolation in fat tree topologies** [Bull](#)
Under the supervision of Matthieu Perotin.
- Jun/14 – Jul/14
Sophia-Antipolis (FR) **Modelisation and verification of concurrent systems** [Inria](#)
Under the supervision of Robert de Simone.
- Jun/13 – Jul/13
Grenoble (FR) **Monitoring of distributed systems** [Joseph Fourier University](#)
Under the supervision of Yliès Falcone.
- Jun/12
Grenoble (FR) **Monitoring of distributed systems** [Joseph Fourier University](#)
Under the supervision of Yliès Falcone.

Teaching

- Jan/18 – May/18
Grenoble (FR) **Introduction to Python** [Grenoble Alps University](#)
First year students (L1) in Earth Science.
 - 64 hours, including courses, exercises and practicals.
 - Correction and grading of the midterm and final assessments.

Software projects

- May/16 – now **Contribution to Roaring bitmap** roaringbitmap.org
Fast and lightweight set for unsigned 32 bits integers.
- Implemented several functionalities of the C library.
 - Implemented range constructor.
 - Implemented select query.
 - Implemented subset test.
 - Fixed several bugs.
 - Repository: github.com/roaringBitmap/CRoaring
 - Developed a Python wrapper for the C library.
 - Functionalities of the C library directly usable in Python.
 - Implementation made using Cython.
 - Several order of magnitude faster than the builtin set.
 - Extensive tests caught several bugs of the C library.
 - Repository: github.com/Ezibenroc/PyRoaringBitMap
 - Analyzed the performance of Roaring bitmap union.
 - Conducted a full factorial experiment for the C library.
 - Modeled and analyzed the duration of the operation as a function of the size and densities of the sets, for both the Python and the C libraries.
 - Repository: github.com/Ezibenroc/roaring_analysis
- Sep/14 – Dec/14 **Platypus** askplatyp.us
Modular and open source question answering framework.
- Developed a question parsing module in Python, with a grammatical approach (Stanford CoreNLP and NLTK libraries).
 - Framework currently used and valorized by Lexistems SAS.

Publications

Conference articles

- [3] Predicting the Energy Consumption of MPI Applications at Scale Using a Single Node
Heinrich, F. C.; Cornebize, T.; Degomme, A.; Legrand, A.; Carpen-Amarie, A.; Hunold, S.; Orgerie, A.-C., and Quinson, M.
URL: <https://hal.inria.fr/hal-01523608>
Cluster, 2017
- [4] Isolating Jobs for Security on High-Performance Fabrics
Perotin, M. and Cornebize, T.
2017 IEEE 3rd International Workshop on High-Performance Interconnection Networks in the Exascale and Big-Data Era (HiPINEB), 2017
- [5] Efficient and Generalized Decentralized Monitoring of Regular Languages
Falcone, Y.; Cornebize, T., and Fernandez, J.-C.
URL: <https://hal.archives-ouvertes.fr/hal-00972559>
34th Formal Techniques for Networked and Distributed Systems (FORTE), 2014

Unpublished articles

- [2] Emulating High Performance Linpack on a Commodity Server at the Scale of a Supercomputer
Cornebize, T.; Heinrich, F. C.; Legrand, A., and Vienne, J.
URL: <https://hal.inria.fr/hal-01654804>

Thesis

- [1] Capacity Planning of Supercomputers: Simulating MPI Applications at Scale
Cornebize, T.
URL: <https://hal.inria.fr/hal-01544827>
June 2017