

# Théophile Dubuc

Computer Science PhD Student  
ENS de Lyon, Outscale

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## PhD thesis

title *DiskScale: Efficient Storage Virtualization*  
director Pr. Alain Tchana, ENS de Lyon.  
co-supervisors Pierre Olivier, University of Manchester  
Mar Callau-Zori, Christophe Hubert, Outscale  
description With the massive development of cloud computing, cloud providers start to worry about the performance of their systems. In collaboration with Outscale, we could notice that the storage is not as performant as other resources (cpu, memory, network) when virtualized. The goal of my PhD is to explore some of the reasons why the i/o requests are slowed down and propose improvements (for instance by modifying Qemu, or the QCOW2 format used for virtual disks).

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## Education

2020–2021 **“Long Research Project”**, *ENS de Lyon*.  
This is an academic year that consists of two long research internships. See the Training section for detail.  
2019–2020 **M2 Theoretical Computer Science**, *ENS de Lyon*.  
*Courses detail:* Cryptanalysis, Virtualization, Modern Algorithms for Symbolic Summation and Integration, Parameterized and Exact Algorithms, Quantum Information and Computation, Advanced Cryptography, Molecular Programming.  
2018–2019 **M1 Theoretical Computer Science**, *ENS de Lyon*.  
2017–2018 **L3 Theoretical Computer Science**, *ENS de Lyon*.  
2015–2017 **Classe Préparatoire aux Grandes Écoles (CPGE)**, *Lycée Louis-le-Grand*, Paris.  
MPSI-MP\*  
This consists in two years of intensive math and physics (and a bit of computer science) formation.  
2015 **Scientific Baccalauréat**, *Lycée Sophie Berthelot*, Calais.

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## Experience

### Training

March - August 2021 **Research Internship “PLR2”**, *Romain Rouvoy, Inria Lille*, Lille, France.  
*Optimizing cloud energy consumption with smart Faas functions scheduling* Keywords: system, Faas, energy, green cloud.  
September 2020 - February 2021 **Research Internship “PLR1”**, *3DS Outscale and Alain Tchana, ENS de Lyon*, St Cloud - Lyon, France.  
*Analysis of the impact of the length of qcow2 chains on cloud storage performance*  
Mots clés : Cloud computing, Qemu, qcow2, storage, system.

- January-June 2020 **M2 Research internship**, *Alain Tchana, ENS de Lyon, Lyon, France.*  
*SGX performance improvement using a smart function colocation algorithm* Keywords: middleware, Intel Software Guard Extension, trusted execution environment, performance.
- May-July 2019 **M1 Research internship**, *Robert Mercaş, Loughborough University, Loughborough, UK.*  
*Minimal absent words of words with don't cares.*  
 Keywords: text algorithms, minimal absent words, indexing, partial words.
- Juin-Juillet 2018 **L3 Research Initiation internship**, *Hugo Gimbert, LaBRI, Bordeaux, France.*  
*How to control a population ?*  
 Keywords: game theory, automata, markovian process.
- [Teaching](#)
- 2017-2020 **“Colles” in CPGE, in mathematics**, *Lycée du Parc, Lyon.*  
 This consists in a weekly preparation to oral examinations for students in CPGE.
- [Miscellaneous](#)
- 2018-2019 **Sports Association**, *ENS de Lyon.*  
 In charge of table tennis and volleyball. Organisation of sport and festive events.

## Languages

French	Native	
English	Fluent	<i>C2 Certification (Cambridge English Advanced)</i>
Greek	Basic	
Spanish	Basic	

## Computer skills

Tools	Linux/Unix, Git, LaTeX, Qemu
Languages	Python, C/C++, Ocaml