Victor Mercklé

Curriculum vitæ

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github

Education

2018–Present **Master Degree in Computer Science**, *É.N.S de Lyon.*

2017–2018 **Bachelor Degree in Computer Science**, *É.N.S de Lyon.*

2015–2017 **Classe Préparatoire Scientifique (C.P.G.E)**, *Lycée Fabert*, Metz.
MPSI and MP*, computer science option

2015 **Baccalauréat Scientifique**, Alsace.

Internships

Feb,Aug 2021 **5 Months Research Internship**, *IRIT*, France, supervised by Andreas Herzig, Abdallah Saffidine, Frederic Maris.
Efficient reasoning via learning for dynamic logic and its extensions

Feb,Aug 2020 **5 Months Research Internship**, *Huawei Paris*, France, supervised by Jean-Marie Lagniez.
Optimizing GPU memory usage with SAT

June,Aug 2019 **3 Months Research Internship**, *UNSW - Sydney*, Australia, supervised by Abdallah Saffidine.
Logic-based AI to explain a Hanabi(blind cooperation card game) player's moves

June,July 2018 **6 Weeks Research Internship**, *LAMSADE*, Paris, supervised by Tristan Cazenave.
Playing an incomplete information card game using Monte Carlo methods and neural networks

Languages

French Fluent *Mother Tongue*

English C1 *Cambridge Advanced Exam (2018)*

Computer skills

Programming C++, Python, C, OCaml, Go

Tools LaTeX, Git, UNIX systems

Interests

Model Flying Building and flying multicopters

Electronics Small personal projets involving microcontrollers(arduinos)

Courses Attended

September 2020 - January 2021 — **Master 2 at ENS de Lyon**.

- **Statistical learning and concentration inequalities**: Chernoff-Hoeffding, PAC learning, VC dimension, PAC framework, No Free Lunch theorem
- **Graph-based knowledge representation** : Category theory, graph rewriting, Querying graph, Neo4j use.
- **Quantum Information and Computation** : Quantum circuits, Shor's algorithm, teleportation and secrecy in communication
- **Molecular Programming** : Tile assembly, Making a DNA origami, Turing-complete nanotubes
- **Virtualization design and implementation** : Overview of virtualization methods for the cloud, coding a kernel module to use sockets to share memory between virtual machines
- **Numerical mechanics for computer graphics** : Theoretical and pratical tools to simulate springs, cloths. Finite elements, Euler methods

September 2018 - June 2020 — **Master 1 at ENS de Lyon**.

- **Machine Learing**: Regression, sparsity in convex optimization, SVM, neural networks and deep learning, bounds and guaranties, theory of boosting, non-parametric methods, metric learning, optimal transport
- **Database and Data Mining**: Relational model SQL, functional relations, Armstrong's system, normalisation, query rewriting, data mining, stress propreties, clustering
- **Computational Geometry and Digital Images**: Image and shape representation, image processing, digital geometry, computational geometry, data structures, rendering
- **Cryptography and Security**: Symmetric and asymmetric cryptography, security reductions, zero-knowledges proofs, secret sharing, hash functions
- **Parallel and Distributed Algorithms and Programs**: Sorting networks, PRAMs, ring and grids of processors, MPI, distributed algorithms, scheduling
- **Compilers and Program Analysis**: Writing an end-to-end compiler, methods for static analysis of programs
- **Performance Evaluation and Networks**: Modelisation, generation and simulation of random processes, queuing theory, statistics
- **Information Theory**: Entropy, data compression, Shannon's theorems, error correcting codes, Kolmogorov complexity
- **Optimisation and Approximation**: Linear programming, approximations via linear relaxation, Semi-definite programming and non linear optimization

January 2018 - June 2018 — **Second Semester of Bachelor**.

- **Algorithmic 2**: Main paradigms of algorithmic design, with special focus on data structures, graph theory related results and algorithms on words
- **System and Networks**: Operating system design, structure of communication networks
- **Probabilities**: Elementary probabilities, discrete Markov chains, randomized algorithms, statistics
- **Preparation for competitive programming**: Training in the effective resolution of algorithmic problems
- **Logic**: Set theory, first-order logic and model theory, Peano's arithmetic, Gödel's completeness and incompleteness theorems

September 2017 - January 2018 — **First Semester of Bachelor**.

- **Algorithmic 1**: Main paradigms of algorithm design, complexity, NP-completness and approximations
- **Computability**: Computation models, language theory, Church–Turing thesis, indecidability
- **Architecture and System**: Project where we designed a new processor with its assembly language, and implemented a simulator and the lower layers of an OS
- **Programming theory**: Semantics of programming languages, typing, logic
- **Project 1**: Basics and small projects in C, python, ocaml