

Lilian Besson | Curriculum Vitæ

PhD student, "normalien" from ENS Cachan, and teacher in Maths and Computer Science

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Personal information

Date of birth: January 12, 1993 at *Briançon*, Hautes-Alpes, France. **Age:** 24. **Citizenship:** French.

Teaching experience.....

(1) Lycée Lakanal

Sceaux, France

TA in Mathematics and Computer Science in a prep' school (MP) (106h/year)

Sept. 2015 – June 2016

(2) Mahindra École Centrale

(Hyderabad, India)

Teaching Assistant at full time (250h/year)

July 2014 – May 2015

○ Lectures, tutorials and practical sessions as a TA, for Mathematics (MA101,102) and for Computer Science (CS101) for two semesters, and helped a lot on various aspect for the first academic year at the very new MEC engineering college.

Programming and development skills.....

- **Very regular use:** Python (*scripting and OOP*), GNU Bash (*scripting*), OCaml (*functional language*).
- **Regular use:** HTML & CSS, JavaScript (*for the web*), Matlab & GNU Octave (*sequential computation*), C.
- **Basic knowledge:** Maple, Assembly (Intel x86, TI-83+), nVidia CUDA (*parallel computation on GPU*), BASICS.
- **Documenting programming projects:** Used to OCamlDoc for OCaml, PyDOC and Sphinx for Python.

Computer skills.....

- **Operating Systems:** fluent with all (Microsoft Windows, Mac OS X, Android, and mainly GNU/Linux).
- **Text edition:** frequent use (and occasional hacks) of Gedit, GNU Nano, Spyder and SublimeText.
- **Text processing:** advanced use of L^AT_EX and Beamer, and also of reStructuredText and Markdown.

More about myself.....

Passionate about new technologies and programming. Active on GitHub and Bitbucket (Git), and Wikipédia.

Good theoretical and practical background in maths and computer science, +2 level in physics and chemistry.

- **Language:** French: native (mother tongue), English: fluent (Speaking and writing. TOEIC got in April 2012, with the mark 900/990). Spanish: medium level. Japanese: early beginner.
- **Health:** Perfect health clearance (all required vaccines, including some exotic ones). I wear glasses.
- **Sports:** Occasional practice of trek, mountain bike, kick scooter, swimming, badminton.
- **Acting:** Theater and clown lessons, for 6 years (2003 – 2009).
- **Hobbies:** Painting, RPGs, theater and cinema, video games, fantasy literature, hitch-hiking and traveling.
- **Traveling:** to Spain, Germany, Sweden, Iceland, UK, Ireland, USA, Canada, Switzerland, India. . .

Reference contacts.....

Professors from ÉNS Cachan

- Gabriel Peyré (Dauphine)
- Nicolas Vayatis (CMLA)
- Claudine Picaronny (LSV)
- Hubert Comon (LSV)

Former internship tutors

- Michael Unser (EPFL)
- Julien Fageot (EPFL)
- Jules Villard (ICL)
- Florian de Vuyst (CMLA)

Recent employers

- Lycée Lakanal (15/16)
- École Centrale of Paris (14/15)
- Mahindra École Centrale (15/16)
- ENS de Cachan (2011/16)

Detailed academic education

(2009 – 2016)

(Currently) 2nd-year research M.Sc. (Sept. 2015 – August 2016).....**ÉNS de Cachan (4th-year student, normalien) & Université Paris Saclay***MVA: 2nd-year of Master of Science in applied maths (machine learning, numerical optimization) Rank: 1st, avg: 18.4/20*

- 1st sem.: Graphs ML, Convex Opt. Reinforcement and Stat. Learning, PGM, Compressed Sensing (Avg: 18.25/20).
- 2nd sem.: Kernel Methods, Neuro-Science, High-Dim. Stats, Sequential Learning, Brain Imaging (Avg: 17.68/20).
- May 2016: *Machine Learning Summer School* (MLSS'2016), at Cadiz (Spain), for a poster: lbo.k.vu/MLSS2016.

2nd-year M.Sc. and a teaching training (Sept. 2013 – July 2014).....**ÉNS de Cachan (3rd-year student, normalien)***M.Sc. major in Maths, minor in Computer Science**Ranked 3rd/26, summa cum laude*Received at the French national competitive exam for prep' schools teachers (*agrégation*), ranked 23rd over 795.1st-year M.Sc. (Master of Science) (Sept. 2012 – August 2013).....**ÉNS de Cachan & Paris Diderot University (Paris VII)***1st-year M.Sc., in Computer Science**Mark 15.25/20, magna cum lauda*

Functional programming and typing, cryptographic protocols, compilation, Markov chains and random algorithms, net programming, machine learning.

*1st-year M.Sc., in Mathematics**Mark 14.4/20, magna cum lauda*Complex analysis, functional analysis, numerical optimization, exterior calculus, *PDE* approximation.3rd-year B.Sc. (Bachelor, French "licence") (Sept. 2011 – July 2012).....**ÉNS de Cachan & Paris Diderot University (Paris VII)***B.Sc., in Computer Science**Mark 14.27/20, magna cum lauda*Logic, semantics, cryptography, algorithmic, graph theory, λ -calculus, compilation, parallel computation.*B.Sc., in Mathematics**Mark 14.7/20, magna cum lauda*Functional analysis, differential geometry, integration, algebra, arithmetic, partial differential equations (*PDE*).2nd-year B.Sc. (Sept. 2010 – August 2011).....**Lycée Thiers****Marseille***"Classe préparatoire", 2nd year**Ranked 1st/33 & mark 17.9/20*

Second year, "MP*" : maths, chemistry, physics, engineering, computer science, literature, English and Spanish.

"Grandes Écoles" entrance exams.....

- **ÉNS de Cachan ("École Normale Supérieure")**

Cachan

- *Accepted, and matriculated (with the special French status "élève normalien"), ranked 99th/1200*

July 2011

- Student at the maths department, with a government-funded 4-years scholarship since Sept. 2011.

- **École polytechnique**

Paris

- *Accepted, ranked 81th/1900*

July 2011

- **All the 5 École Centrale, Supélec, SupOptique**

Paris, Lyon, Marseille, Nantes, Lille

- *Accepted, ranked 7th/2700*

*August 2011*1st-year B.Sc. (Sept. 2009 – July 2010).....**Lycée Thiers****Marseille***"Classe préparatoire"**ranked 1st/46 & mark 17.3/20*

First year, "MPSI" : maths, chemistry, physics, engineering, philosophy, literature, English and Spanish.

- **École des Mines of Alès**

Alès

- *Accepted, Ranked 19th/3000 & mark 18.2/20*

July 2010

Other French national diplomas.....

- **C2I2E**: French "Informatics and Internet Certificate for Superior Studies", level 2, obtained in July 2014.

- **Driving licence**: French driving licence for cars ("Permis B") in February 2012, and international in February 2014.

- **High-school certificate (French scientific “Baccalauréat”)**: obtained with the average mark 15.7/20, *magna cum laude*, in July 2009, at “Lycée d’Altitude” at Briançon (*major* in mathematics, *minor* in theater).
- **Diplôme national du Brevet**: obtained with the average mark 18.7/20, *summa cum laude*, in July 2006, at “Collège Les Garcins” at Briançon (*languages*: English and Spanish).

2nd M.Sc. research internship and Master thesis

Title: “A theoretical study of steerable homogeneous convolutions, and applications to sparse stochastic processes”

Supervisor: Pr.Dr. Michael Unser and Julien Fageot. **Graded:** 19/20.

Description: Mathematics research internship at BIG Team at EPFL (Lausanne, Switzerland), April – August 2016.

Master thesis: On my web page, my internship report and the slides in English : <https://goo.gl/xPzw4A>.

1st M.Sc. research internship

Title: “Towards modularity for planning and robot programs verification”

Supervisor: Dr. Jules Villard and Prof. Peter O’Hearn. **Graded:** 17.5/20.

Description: Computer Science research internship at UCL (at London), June – August 2013.

Abstract: General study of classic AI method to represent dynamic worlds (situation calculus and STRIPS), 3 main problems: frame, ramification and qualification problems. Need for modularity and compositionality, focused on the GOLOG language for robot programs, and Liu’s proof system.

Master thesis: On my web page, the internship report in English and the slides in French.

B.Sc. research internship and Bachelor thesis

Title: “Finite volumes method on nVidia graphic cards, applied to solve the compressible Euler problem”

Supervisor: Prof. Florian de Vuyst and Dr. Daniel Chauveheid. **Graded:** 17/20.

Description: Research internship in mathematics at CMLA (“Centre des mathématiques et de leurs applications”, ÉNS de Cachan maths. lab research), February – July 2012.

Abstract: General study of numerical solvers for differential equations and partial differential equations. Linear solver, first and second order, 1D, 2D and 3D, with the VFFC method. Numerical simulation, sequential using C and VTK, and parallel using nVidia CUDA. Interactive 2D simulation with OpenGL.

Research report: My bachelor thesis, in French on my website: <http://besson.k.vu/rapportL3Maths12.pdf>.

Other research and programming experiences

Current programming projects.....

- **Personal web site** (<http://besson.k.vu/>): an experimental, responsive, lightweight and standards-respectful website, powered by Sphinx. Stores my resume, all my projects, and tutorials on web-design and programming.

M.Sc. programming projects (2012 – 2013).....

- **ANSIColors**: a Python script and module to easily use colors in a terminal on GNU/Linux, on Pypi.
- **Bombberman**: a Python-powered multi-player Bomberman game with formal semantics (MPRI net lecture 1.21).
- **Machine Learning**: a Python-powered Kaggle project, about Titanic survivors.

B.Sc. programming projects (2011 – 2012).....

- **ZenityOCaml**: an OCaml binding for the Debian-based Zenity project (a tool to display GTK⁺ dialog boxes).
- **Tetravex**: implementation of a “Tetravex” game in OCaml (interactive programming and algorithmic work).

2nd-year B.Sc. research and programming project (2010 – 2011).....

Title: “Tropical Algebras et Linear Systems applied to Mobility problems”

Supervisors: Prof. Agnès Borel (Lycée Thiers) and Prof. Glenn Merlet (Aix-Marseille I University)

Abstract: General study of tropical algebras, time processes (Petri nets and Markov chains).

Dijkstra algorithm, both *tropical* and time dependent versions, implemented with Maple 12.