# Jonathan Laurent

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## Research and teaching experience

Research internship at Harvard Medical School — March 2015 – August 2015

Developed a formalism to capture the notion of a biological pathway along with some techniques to uncover the pathways resulting from a network of protein-protein interactions modelled using Kappa.
**Advisor**: Professor Walter Fontana.

Summer internship at NASA Langley Research Center — June – August 2014

Developped a tool for proving safety properties of runtime monitors written in the Copilot language using model-checking techniques.
**Advisor**: Alwyn Goodloe.

Teaching assistantship in mathematics at Lycée Condorcet and Lycée Louis-Le-Grand — 2014 –

Training freshman students in classes préparatoires for oral exams in mathematics, two hours a week.

## Education

École Normale Supérieure — 2013 –

**Master of Science in Computer Science and Applied Mathematics**:
*2015 – 2016* : Statistical learning (Master Vision et Apprentissage, with ENS de Cachan)
*2014 – 2015* : Theoretical Computer Science (Master Parisien de Recherche en Informatique)
**Bachelor of Computer Science**: awarded with highest honors.

Lycée Louis-Le-Grand — 2011 – 2013

**Classes Préparatoires aux Grandes Ecoles (MPSI – MP*) :**
Preparatory courses to nationwide competitive exams in mathematics (major), physics and computer science. Admitted to the École Normale Supérieure in computer science, ranked $11^{th}$.

## Graduate courses

Programming languages and formal methods

Lambda-calculi and category theory – type theory – software verification (abstract interpretation, model-checking, proof assistants) – functionnal programming – compiler design.
**Rule-based modelling in systems biology**.

Statistical learning

Probability theory and statistics – graphical models – information theory – theory of machine learning.

## Publications and selected talks

**Assuring the Guardians:** full paper, coauthored with Alwyn Goodloe and Lee Pike and published in the proceedings of the $6^{th}$ international conference on Runtime Verification (*RV'15*).

**Peut-on tout calculer ? (Can everything be computed?):** two hours invited introductory lecture on decidability theory at Lycée Louis-Le-Grand. The slides are available online.

**A survey of SMT-based model checking techniques for formal software verification:** one hour talk at National Institute of Aerospace in August 2014. The slides and the video are available online.

**Languages:** french *(mother tongue)*, english *(TOEFL score : 103)*.

**Programming skills**: *(by order of proficiency)* Haskell, OCaml, Coq, Python, C++

**Programming competitions:** ranked $4^{th}$ at the Google HashCode 2014 contest (in team with two other persons).

**Hobbies:** opera music, playing the piano and the trumpet, teaching and functionnal programming.