Pierre Vial

Software engineer

I am a **software engineer**, coming from Academia (**ENS Paris** alumnus, ***agrégation*** in mathematics, **PhD** in **Paris Diderot**, post-doc at **Inria Bretagne-Atlantique** in Nantes and **ENS Paris-Saclay**) and the domain **functional programming** and **formal methods**. I'm looking for a software engineer position, ideally in **program verification** and in **Machine Learning**, a field that I enthusiastically discovered and I have taken the study of, mostly on the Fastai platform and on Andrew Ng's Coursera Deep Learning specialization, where I familiarized myself with TensorFlow and Numpy. I hope to do ML most of my activities in the years to come.

Experience

10/22 – 1/23   **Software verification engineer**, *Formal Land*
- As one of the 7 member of the company, I was in charge of verifying the Tezos **blockchain protocol** (written `OCaml`) using the Coq proof assistant.
- We formally verified that internal error (= errors other than those caused by users) could not occur in the protocol.
- Continuous integration (Github)

2020 – 9/22   **Post-doc at Deducteam (Inria)**, *ENS Paris-Saclay*
- In a team of 4, I developed a `Coq plugin` called `Sniper`, which **automatized** some parts of proofs: actually, proof assistant, compared to automatic provers, such as SMT solvers, have a huge expressivity and can capture extremely rich specs, but they usually lack automation.
- We implemented automated proofs using various **metaprogramming** tools.

2018 – 2022   **Teacher**, *Université de Nantes, IMT Atlantiques, Polytech'Saclay, IUT d'Orsay*, 212 h
Teaching full classes and hands-on mostly in computer science and programming, and a bit in mathematics, mostly undergraduate level.

2018 – 2019   **Post-doc in the Gallinette Team**, *LS2N (Inria and CNRS)*, Nantes
Within ERC grant CoqHott, working on the theoretical termination and quantitative properties of the `Coq` proof assistant

2017   **Teaching and research assistant ("A.T.E.R.")**, *Paris Diderot*

2014 – 2017   **Phd student - teaching assistant**, *Paris Diderot — Paris 7*
Giving some "hands-on" to undergraduate students. 64 hrs per year

2009 – 2012   ***Colleur de mathématiques***
Preparation to oral examination in mathematics for Management Schools.

2007 – 2014   **Maths *professeur agrégé***
Mathematic teacher in the french public education system, mostly in high school and in Académie de Versailles

IT Skills

Langages	`OCaml`, `Coq`, `JavaScript`, `Python`
As a teacher	`Java`, `C` (incl. some system programming), compilers, `MySQL`
Misc.	LaTeX, `emacs`, shell, `git`, metaprogramming

Software

Sniper	`Coq` plugin for automated reasoning	(https://github.com/smtcoq/sniper)

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🌐 *https://pierrevial.github.io/* • *Permis B*

Education

2014 – 2017	**PhD**, *IRIF*, Paris Diderot, Advisor: Delia Kesner. Co-advisor: Damiano Mazza.
2014	**M2 LMFI (Mathematical logic and computer science)**, *Paris Diderot* *Magna cum laude*
2007	**Master Stochastic Processes**, *Paris 6*
2005	**Agrégation de mathématiques**
2001 – 2007	**Élève fonctionnaire stagiaire**, *ENS Ulm* , Paris Provisional civil-servant and student in ENS Paris
1999 – 2001	**Classes préparatoires MPSI-MP***, *Lycée Henri Poincaré*, Nancy Intensive preparation for the entrance exams of french Grandes Écoles
1999	**High school graduation**, *Lycée E. Bichat*, Lunéville

Languages

French	Native
English	Fluent
German	Basic communication skills ($\sim$ B1+)
Yiddish	Medium communication skills
Hebrew	Notions

Personal interests

Literature (19th and 20th century), helping reviving Yiddish culture, films (from Hollywood Golden Age to now), music (classical, minimalist, punk, rock), yoga, partner dancing (Forró), running, trekking, climbing (as a beginner)

Research and publications

My resarch has been focussed on typed functional programming languages, mainly through their archetypal model, the λ-calculus. A full list of my publications can be found there:

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https://dblp.org/pid/188/6177.html

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During my PhD, I worked on typing systems capturing quantitative aspects of functional programs and during my post-docs, I operated a thematic mobility towards the `Coq` proof assistant, notably by studying its termination (normalization) property and co-developing a plugin allowing `Coq` to call external solvers and thus enhancing its automated reasoning.

POPL and LiCS are A* conferences, which are the two most important on logic applied to computer science (which in particular includes formal methods). FSCD does not have a ranking, but is the merge of two A conferences (RTA – TLCA). Two out of three of my papers accepted at LiCS were single-authored and one at FSCD.

2018	Invited speaker of HOR (Higher-order rewriting)
2021	Member of the POPL Artifact Evaluation Committee The role of this committee is to evaluate the software developments submitted to POPL