ARTHUR MILCHIOR

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Researcher and computer programmer.

During six years in academia, I created algorithms and programs to solve complex mathematical problems. In the last two years, I also joined a free-software community, where my programs were downloaded thousands of time. This gave me experiences in interacting with users and other developpers. I am looking forward to using my theoretical knowledge and my programming skills to improve people's life.

EDUCATION

Université Paris-Diderot, IRIF *2012–2016*
Ph. D. of Computer Science
École normale supérieure of Paris *2008–2012*
Master's degree, major in Computer Science, minor in Mathematics
Université Pierre et Marie Curie *2011*
Licence (Bachelor's degree) in Mathematics

EMPLOYEMENT

Post-Doc at Université Libre de Bruxelles *2017–2019*

I discovered the field of model checking and I joined the MightyL team. We developped an algorithm which allows to decide efficiently whether a logical Metric Interval Temporal Logic (MITL) formula is satisfiable or not. I became the maintener of this program (written in OCaml), created by the previous post-doc. Eventually, I rewrote this program in order to make it more modular and thus easier to update.

ATER (Lecturer) at Université Paris-Est Créteil *2016–2017*
Teaching introduction to programming and networks to students.

Ph. D. at University Paris-Diderot (IRIF) *2012–2016*
My Ph. D. considered different ways to encode set of vector of numbers. In particular, I studied sets which can be defined using a "weak arithmetic". During the first half of the Ph. D. I have proven that most natural extensions of this arithmetic lead to undecidability results for many problems.

During the second half of the Ph. D., I considered digit-reading automata, which is a standard and efficient way to represent some set of vectors. While those notions are theoretically well-known, most problems remains algorithmically complex. I searched for efficient ways to determine whether the set accepted by an automaton is definable in some of those weak arithmetics. I created an algorithm, and implemented it (in OCaml), which solves this problem in linear time.

In this period, I was a teacher assistant in different courses about fundamental computer science and first and second year programming courses.

FREE SOFTWARE CONTRIBUTION

Anki (Python, JQuery) *Since 2017*

I have been a member of the Anki community. Anki is a long-term learning assistant software. My main contribution consists in dozens of add-ons, which have been collectively downloaded more than ten thousand times. Some of those add-ons changed the interfaces displayed to the users. Other improved the efficiency of the program, for instance via caching some data and avoiding costly recomputations.

I have also made bugfixing pull requests which have been integrated into its code. I wrote documentation that covered crucial part of the program -both its code and its usage as a software- allowing power-users to improve their usage of Anki. I am currently developping a fork (https://github.com/Arthur-Milchior/anki) of this program in order to natively add many features.

TECHNICAL STRENGTHS

- **Language**: French (native) and English (Fluent). Notions of Spanish and of German.
- **Programming**: Python, OCaml, SQL.
  Notions of C, Scheme, Haskell, Java, HTML/CSS, JS(JQuery).
- **Tools**: Git, emacs, LaTeX, Linux, Unix environments such as grep, sed, make.
- **Theory** Algorithms and complexity, data structures, relational databases, formal specification.
- **Miscellaneous**: Driving license, Red Cross first-help formation.

EXTRA-CURRICULAR

Volunteering *2012–2017*

I volonteered in an association which went to schools, discussing LGBTphobia and sexism with high-schoolers. We also offered formations to adults about those subjects. This led me to create a (French) documentary, illustrating those discussions.

Music *Since 2002*

Mostly piano, guitar and ocarina

Circus *Since 2010*

I have been the president of my university's club for two years as a student.