

ARTHUR MILCHIOR

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Researcher and computer programmer.

Since 2020, I contribute to Google Assistant quality, by providing humans annotators tools to do their job as quickly and correctly as possible. Previously, I spent six years in academia, where I created algorithms and programs to solve complex mathematical problems. In the last three years, I also contributed to a free-software ecosystem, Anki, in particular I became a maintainer of AnkiDroid, an Android app with 4.8 stars, two millions active users in January 2021, and a 50% yearly growth. I am looking forward to using my theoretical knowledge and my programming skills to create software and to help solve problems.

EDUCATION

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

FREE SOFTWARE CONTRIBUTION

Anki (Python, JQuery, Java, Rust, Android) *Since 2017*
I am a member of the Anki (and Ankidroid) community. Anki is a long-term learning assistant. My main contribution consists in dozens of add-ons, which have been collectively downloaded more than thirty thousand times. Some of those add-ons changed the interfaces displayed to the users. Others improved the efficiency of the program, for instance via caching some data and avoiding costly recomputations. I ported features from the desktop version to the Android version.

I have also made bugfixing pull requests which have been integrated into desktop and Android code. I wrote documentation that covered crucial parts of the program - both its code and its usage as a software- allowing power-users to improve their usage of Anki.

EMPLOYMENT

Google Assistant (C++, Python) *2020-2021*
In May 2020, I became a member of the Assistant team, as a Software Engineer, at Google, Berlin, Germany. My work consists in improving the tool used by vendors to annotate data as efficiently and correctly as possible without sharing any PII. Those data are used to ensure that Assistant understanding of our users only increase over time.

Research in Computer science at Université Libre de Bruxelles *2017–2019*
I discovered the field of model checking and I joined the MightyL team. We developed an algorithm which allows to decide efficiently whether a logical Metric Interval Temporal Logic (MITL) formula is satisfiable or not. I became the maintainer 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 remain 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.

TECHNICAL STRENGTHS

- **Language:** French (native) and English (Fluent). Notions of Spanish and of German.
- **Citizenship:** France, U.S.A.
- **Programming:** Python, OCaml, SQL.
Notions of C, Scheme, Haskell, Java, HTML/CSS, JS(JQuery).
- **Tools:** Git, emacs, L^AT_EX, 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 volunteered 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.

Wikipedia editing

Since 2012

I created more than thirty pages in the categories of mathematics and computer sciences. In particular notions related to functional data structure and to automata theory.

Music

Since 2002

Mostly piano, guitar and ocarina

Science popularization

Since 2017

I was a regular member of the French podcast *Trajectoires*, whose goal was to popularize math. I was also invited to speak twice in *Podcast Science* where I spoke of fundamental computer science. I participated to a science popularization program for High-School students.