291 Bain Ave
Toronto, ON M4J 1B9, Canada
(+33) 7 77 00 39 58
victorn[at]cs.toronto.edu
cs.toronto.edu/~victorn
victornicolet
victornicolet

Victor Nicolet

Fifth-year PhD in Computer Science

I am a fifth-year PhD in the Software Engineering Group at the University of Toronto. My research focuses on extending program synthesis techniques to solve interesting and difficult programming problems.

Experience

Sep. 2017 – present **Graduate Research Assistant**, University of Toronto, Canada.
As a Research Assistant to Prof. Azadeh Farzan, I participate in research projects, developing the theoretical framework as well as the supporting software artifacts. I gained experience in managing long-term research goals, large software projects as well as supervising students.

Apr. 2016 – Aug. 2016 **Research Intern**, University of Toronto, Canada.
Supervised by Azadeh Farzan. Started work on Parsynt, a tool that automatically parallelizes loops by efficiently using program synthesis techniques.

Mar. 2015 – Jul. 2015 **Research intern**, École Normale Supérieure, Team Parkas, Paris, France.
Supervised by Albert Cohen. Studied a parallel execution environment based on Kahn Processes Network model, with a strong experimental feature : developed a benchmark to analyze the performance of a runtime based on the model.

July 2014 – August 2014 **Work placement**, Impro2, Paris, France.
Developed tools in Java to interface two different web applications : the company's client relationship management and accounting applications.

Education

2017–present **PhD Student in Computer Science (in progress)**, University of Toronto, Canada.
Advised by Prof. Azadeh Farzan. My research focuses on formal methods and synthesis techniques applied to automatic parallellization.

2012–2016 **Master of Science in Engineering**, École Polytechnique, Palaiseau, France.
Common core includes physics, informatics and mathematics. 'Specialized in Computer Science during third year.

2015–2017 **Second Year of MSc in Engineering**, Telecom Paristech, Paris, France.
Pursued jointly with the Parisian Master of Research in Computer Science at Université Paris Diderot.

2015–2016 **Parisian Master of Research in Computer Science (MPRI)**, Université Paris Diderot, Paris, France.
This programme aims to offer students both core training in the fundamentals of computer science and more specialised training constitutive of a true introduction to research.

2010–2012 **Intensive Undergraduate Studies to Prepare Competitive Exams**, *Lycée aux Lazaristes*, Lyon, France.
Specialized in Physics and Chemistry.

Referred Conference Papers.

CAV 2021 **Counterexample-Guided Partial Bounding for Recursive Function Synthesis**, *Azadeh Farzan and Victor Nicolet*.

PLDI 2021 **Phased Synthesis of Divide-and-Conquer Programs**, *Azadeh Farzan and Victor Nicolet*.

PLDI 2019 **Modular Divide-and-Conquer Parallelization of Nested Loops**, *Azadeh Farzan and Victor Nicolet*.

PLDI 2017 **Synthesis of Divide-and-Conquer Parallelism for Loops**, *Azadeh Farzan and Victor Nicolet*.

PLDI is the premier forum in the field of programming languages and programming systems research, covering the areas of design, implementation, theory, applications, and performance. CAV is the premier international conference on computer-aided verification.

Teaching

Sept. 2017 – Jan.2022 **Teaching Assistant**, *University of Toronto*.
CSC401 - Software Testing and Verification.
CSC324 - Programming Languages.
CSC165 - Mathematical Expression and Reasoning for Computer Science.

Sept. 2013 – Apr. 2014 **Teaching assistant in preparatory classes**, Lycée Lavoisier, Paris XIV,France.
Gave tutorials of Maple (computer algebra system) to groups of students in intensive undergraduate studies school preparing for competitive exams.

Projects

Synduce A tool to synthesize recursive programs equivalent to a reference function, with multiple potential applications in automated parallelization, tail-recursion optimization and other program transformations.

Parsynt A divide-and-conquer program synthesizer, automatically producing a parallel implementation functionally equivalent to a given sequential loop program.

Computer Skills

Languages Proficient in OCaml, C, C++ and Python.

Skills Parallel and concurrency programming in different languages and frameworks (OpenMP, TBB, MPI, Lwt and others). Experience interacting with SMT, SAT and SyGuS solvers.

Other Basic knowledge of Java, Haskell, Rust. Always willing to learn a new language in any programming paradigm.

Languages

French Mothertongue

English Fluent

German Basic