

Curriculum Vitae

March 10, 2022

Sidi Mohamed Beillahi

Postdoctoral Researcher
University of Toronto
Toronto, Canada
med.beillahi@gmail.com

<https://beillahi.github.io>

Tel: (1) 438 921 7395

❖ Summary

I am interested in algorithmic verification, formal verification, and programming languages. I develop new techniques to improve the reliability of software systems. I work in a variety of application areas including concurrent programs, distributed systems, blockchain, smart contracts, and asynchronous programs.

❖ Education

Doctorate — Computer Science

Thesis Title: [Automated Verification of Programs Running on top of Distributed Systems](#)
Advisors: Ahmed Bouajjani and Constantin Enea

Dec 2017 – Mar 2021
University of Paris, France

Master of Applied Science — Computer Engineering

Thesis Title: [Towards the Design Automation of Quantum Circuits](#)
Advisor: Sofiène Tahar

Sep 2014 – Nov 2016
Concordia University, Canada

Engineer's Degree — Polytechnicien

Thesis Title: [Formalization of Signal-Flow Graphs in HOL](#)
Advisor: Sofiène Tahar

Sep 2011 – Jun 2014
Tunisia Polytechnic School, Tunisia

DEUPC — Mathematics and Physics

Sep 2009 – Jun 2011
Sfax Preparatory Engineering Institute
University of Sfax, Tunisia

❖ Experience

Postdoctoral Researcher, University of Toronto

Advisors: Fan Long and Andreas Veneris

Jun 2021 – present
Toronto, Canada

Research Assistant, University of Paris

Advisors: Ahmed Bouajjani and Constantin Enea

Dec 2017 – May 2021
Paris, France

Teaching Assistant, University of Paris

Sep 2018 – Jan 2021

Research Intern, SRI International

Advisor: Michael Emmi

Apr 2019 – Aug 2019
New York City, USA

Software Programmer, TRU Simulation + Training

May 2017 – Dec 2017
Montréal, Canada

Research Assistant, Concordia University

Advisor: Sofiène Tahar

Mar 2014 – Nov 2016
Montréal, Canada

Teaching Assistant, Concordia University

Sep 2015 – May 2016

Research Engineer, Marinvent inc.

Advisor: Sofiène Tahar

Mar 2016 – Nov 2016
Montréal, Canada

Intern, STMicroelectronics

Advisor: Mohamed Ben Ahmed

Jul 2013 – Aug 2013
Tunis, Tunisia

Intern, Mauritel S.A

Advisor: Mohamed Moujtaba

Aug 2012 – Aug 2012
Nouakchott, Mauritania

❖ Teaching

- Teaching Assistantships at University of Paris
 - Automata and Lexical Analysis for 2nd Year Computer Science Students, Sep 2020 – Dec 2020.
 - Principles of Binary Machines for 1st Year Computer Science Students, Sep 2020 – Dec 2020.
 - Java Programming for 1st Year Computer Science Students, Sep 2019 – Dec 2019.
 - Principles of Object-Oriented Programming in Java for 2nd Year Computer Science Students, Sep 2019 – Dec 2019.
 - Python Programming for 1st Year Social Science Students, Sep 2018 – Dec 2018.
 - Relational Databases and SQL for 2nd Year Computer Science Students, Sep 2018 – Dec 2018.
- Teaching Assistantships at Concordia University
 - Hardware Functional Verification for Senior Undergraduate and Graduate Students, Jan 2016 – Apr 2016.
 - Computer Architecture and Design for Graduate Students, Jan 2016 – Apr 2016.
 - Digital Design for Undergraduate Students, Jan 2016 – Apr 2016.
 - Microprocessors and their Applications for Graduate Students, Sep 2015 – Dec 2015.

❖ Mentoring

- Keerthi Nelaturu, Ph.D. student, University of Toronto
- Zihan Zhao, MSc student, University of Toronto
- Zhiyang Chen, MSc student, University of Toronto
- Eric Keilty, MSc student, University of Toronto
- Srisht Fateh Singh, MSc student, University of Toronto
- Hossein Ghotbaddini, MSc student, University of Toronto

❖ Service

- Co-organizer, IRIF Verification Seminar, Mar 2020 – July 2020.
- Artifact Evaluation Committees: POPL 2021, CAV 2021, OOPSLA 2021, POPL 2022, OOPSLA 2022.
- Extended Review Committees: OOPSLA 2022.
- Sub-Reviewer: FTSCS 2016, VMCAI 2020, CAV 2020, Blockchain 2021, ICBC 2022, ICDCS 2022.
- Student Volunteer: CAV 2016.

❖ Journal Publications

- | | | |
|----|---|----------|
| | Robustness Against Transactional Causal Consistency | Feb 2021 |
| J2 | Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea
<i>Logical Methods in Computer Science</i> , 17(1): 12:1 – 12:42
Invited special issue for selected papers from CONCUR 2019 | |
| J1 | A Modeling and Verification Framework for Optical Quantum Circuit | Mar 2019 |
| | Sidi Mohamed Beillahi, Mohamed Yousri Mahmoud, Sofiène Tahar
<i>Formal Aspects of Computing</i> , 31(3): 321 – 351 | |

❖ Conference Publications

- | | | |
|-----|--|------|
| C11 | SigVM: Toward Fully Autonomous Smart Contracts | 2021 |
| | Zihan Zhao, Sidi Mohamed Beillahi, Ryan Song, Yuxi Cai, Andreas Veneris, Fan Long
<i>under submission, 2021</i> | |

- C10 **Automated Synthesis of Asynchronizations** 2021
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea, Shuvendu Lahiri
under submission, 2021
- C9 **Automated Auditing of Ponzi Scheme Smart Contract TOD Vulnerabilities** May 2022
Sidi Mohamed Beillahi, Eric Keilty, Keerthi Nelaturu, Andreas Veneris, Fan Long
In Proc. IEEE International Conference on Blockchain and Cryptocurrency (ICBC), 2022
- C8 **LMPTs: Eliminating Storage Bottlenecks for Processing Blockchain Transactions** May 2022
Jemin Andrew Choi, Sidi Mohamed Beillahi, Peilun Li, Andreas Veneris, Fan Long
In Proc. IEEE International Conference on Blockchain and Cryptocurrency (ICBC), 2022
- C7 **Smart Contracts Refinement for Gas Optimization** Sep 2021
Keerthi Nelaturu, Sidi Mohamed Beillahi, Fan Long, Andreas Veneris
In Proc. 3rd Conference on Blockchain Research & Applications for Innovative Networks and Services (BRAINS), 2021
- C6 **Checking Robustness Between Weak Transactional Consistency Models** Mar 2021
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea
In Proc. 30th European Symposium on Programming (ESOP), 2021
- C5 **Behavioral Simulation for Smart Contracts** Jun 2020
Sidi Mohamed Beillahi, Gabriela Ciocarlie, Michael Emmi, Constantin Enea
In Proc. 41st annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI), 2020
- C4 **Robustness Against Transactional Causal Consistency** Sep 2019
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea
In Proc. 30th International Conference on Concurrency Theory (CONCUR), 2019
- C3 **Checking Robustness Against Snapshot Isolation** Jul 2019
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea
In Proc. 31st International Conference on Computer Aided Verification (CAV), 2019
- C2 **Hierarchical Verification of Quantum Circuits** Jun 2016
Sidi Mohamed Beillahi, Mohamed Yousri Mahmoud, Sofiène Tahar
In Proc. 8th International Symposium NASA Formal Methods (NFM), 2016
- C1 **Formal Analysis of Power Electronic Systems** Nov 2015
Sidi Mohamed Beillahi, Umair Siddique, Sofiène Tahar
In Proc. 17th International Conference on Formal Engineering Methods (ICFEM), 2015

❖ Workshop Publications

- W3 **Formal Analysis of Engineering Systems Based on Signal-Flow-Graph Theory** Jul 2016
Sidi Mohamed Beillahi, Umair Siddique, Sofiène Tahar
In Proc. 9th International Workshop Numerical Software Verification (NSV-CAV), 2016
- W2 **On the Formal Analysis of Photonic Signal Processing Systems** Jun 2015
Umair Siddique, Sidi Mohamed Beillahi, Sofiène Tahar
In Proc. 20th International Workshop Formal Methods for Industrial Critical Systems (FMICS), 2015
- W1 **A Tool for the Formal Verification of Quantum Optical Computing Systems** Apr 2015
Sidi Mohamed Beillahi, Mohamed Yousri Mahmoud, Sofiène Tahar
In Proc. Automated Reasoning Workshop (ARW), 2015

❖ Awards and Recognitions

- Best Undergraduate Thesis, Tunisia Polytechnic School, 2014.

- Ranked 31st in the National Grandes Ecoles Exam, Tunisia, 2011.
- Olympian in the International Mathematical Olympiad, Germany, 2009.
- Ranked 3rd in the National Mathematical Olympiad, Mauritania, 2009.
- Ranked 1st in the National Bac Exam in Mathematics, Mauritania, 2009.

❖ Grants and Scholarships

- VMW Scholarship Award for CAV 2016, USD 650.
- Concordia Graduate Student Association Conference Funding for CAV 2016, CAD 100.
- Concordia University Conference and Exposition Award for NFM 2016, CAD 1,000.
- Graduate Student Support Program, Concordia University, 2014 – 2016, CAD 20,000.
- National Scholarship, Mauritania, 2009 – 2014, EUR 13,500.
- Scholarship Award to Participate in the International Mathematical Olympiad, Mauritania, 2009, EUR 1,000.

❖ Talks

Checking Robustness Between Weak Transactional Consistency Models

ANR Project AdeCoDS Meeting, LIP6, Sorbonne University (virtual)	<i>Jun 2021</i>
IRIF Verification Seminar, University of Paris (virtual)	<i>May 2021</i>
ESOP 2021, Luxembourg, Luxembourg (virtual)	<i>Mar 2021</i>

Behavioral Simulation for Smart Contracts

GROUP SEMINAR, University of Toronto (virtual)	<i>Dec 2021</i>
SEMINAR UM6P-CS, Morocco (virtual)	<i>Jul 2020</i>
PLDI 2020, London, UK (virtual)	<i>Jun 2020</i>

Robustness Against Transactional Causal Consistency

IRIF Verification Seminar, University of Paris	<i>Dec 2019</i>
CONCUR 2019, Amsterdam, Netherlands	<i>Sep 2019</i>

Checking Robustness Against Snapshot Isolation

ANR Project AdeCoDS Kick-off Meeting, IRIF, University of Paris	<i>Nov 2019</i>
CAV 2019, New York City, USA	<i>Jul 2019</i>

Formal Analysis of Engineering Systems Based on Signal-Flow-Graph Theory

NSV-CAV 2016	<i>Jul 2016</i>
--------------	-----------------

Toronto, Canada

Hierarchical Verification of Quantum Circuits

NFM 2016	<i>Jun 2016</i>
----------	-----------------

Minneapolis, USA

Formal Analysis of Power Electronic Systems

Hardware Verification Group Meeting	<i>Oct 2015</i>
-------------------------------------	-----------------

Concordia University

On the Formal Analysis of Photonic Signal Processing Systems

Hardware Verification Group Meeting	<i>May 2015</i>
-------------------------------------	-----------------

Concordia University