

Curriculum Vitae

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Sidi Mohamed Beillahi

Postdoctoral Researcher
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❖ 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: distributed systems, blockchain, smart contracts, and asynchronous programming.

❖ 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
Université de 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, Université de Paris

Advisors: Ahmed Bouajjani and Constantin Enea
Dec 2017 – May 2021
Paris, France

Teaching Assistant, Université de 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

❖ 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

- BMW 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.

❖ Service

- Co-organizer, IRIF Verification Seminar, Mar 2020 – July 2020.
- Artificat 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.
- Student Volunteer: CAV 2016.

❖ Journal Publications

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|----|---|----------|
| | 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 | |
| | A Modeling and Verification Framework for Optical Quantum Circuit | Mar 2019 |
| J1 | Sidi Mohamed Beillahi, Mohamed Yousri Mahmoud, Sofiène Tahar
<i>Formal Aspects of Computing</i> , 31(3): 321 – 351 | |

❖ Conference Publications

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|----|---|----------|
| | SigVM: Toward Fully Autonomous Smart Contracts | 2021 |
| C9 | Zihan Zhao, Sidi Mohamed Beillahi, Ryan Song, Yuxi Cai, Andreas Veneris, Fan Long
<i>under submission</i> , 2021 | |
| | Automated Synthesis of Asynchronizations | 2021 |
| C8 | Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea, Shuvendu Lahiri
<i>under submission</i> , 2021 | |
| | Smart Contracts Refinement for Gas Optimization | Sep 2021 |
| C7 | Keerthi Nelaturu, Sidi Mohamed Beillahi, Fan Long, Andreas Veneris
<i>In Proc. 3rd Conference on Blockchain Research & Applications for Innovative Networks and Services (BRAINS)</i> , 2021 | |

C6	Checking Robustness Between Weak Transactional Consistency Models Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea <i>In Proc. 30th European Symposium on Programming (ESOP), 2021</i>	Mar 2021
C5	Behavioral Simulation for Smart Contracts Sidi Mohamed Beillahi, Gabriela Ciocarlie, Michael Emmi, Constantin Enea <i>In Proc. 41st annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI), 2020</i>	Jun 2020
C4	Robustness Against Transactional Causal Consistency Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea <i>In Proc. 30th International Conference on Concurrency Theory (CONCUR), 2019</i>	Sep 2019
C3	Checking Robustness Against Snapshot Isolation Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea <i>In Proc. 31st International Conference on Computer Aided Verification (CAV), 2019</i>	Jul 2019
C2	Hierarchical Verification of Quantum Circuits Sidi Mohamed Beillahi, Mohamed Yousri Mahmoud, Sofiène Tahar <i>In Proc. 8th International Symposium NASA Formal Methods (NFM), 2016</i>	Jun 2016
C1	Formal Analysis of Power Electronic Systems Sidi Mohamed Beillahi, Umair Siddique, Sofiène Tahar <i>In Proc. 17th International Conference on Formal Engineering Methods (ICFEM), 2015</i>	Nov 2015

❖ Workshop Publications

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

❖ Teaching

- Teaching Assistantships at Université de 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, PhD 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

❖ Talks

Checking Robustness Between Weak Transactional Consistency Models

ANR Project AdeCoDS Meeting, LIP6, Sorbonne University (virtual)

Jun 2021

IRIF Verification Seminar, Université de Paris (virtual)

May 2021

ESOP 2021, Luxembourg, Luxembourg (virtual)

Mar 2021

Behavioral Simulation for Smart Contracts

SEMINAR UM6P-CS, Morocco (virtual)

Jul 2020

PLDI 2020, London, UK (virtual)

Jun 2020

Robustness Against Transactional Causal Consistency

IRIF Verification Seminar, Université de Paris

Dec 2019

CONCUR 2019, Amsterdam, Netherlands

Sep 2019

Checking Robustness Against Snapshot Isolation

ANR Project AdeCoDS Kick-off Meeting, IRIF, Université de Paris

Nov 2019

CAV 2019, New York City, USA

Jul 2019

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

NSV-CAV 2016

Jul 2016

Toronto, Canada

Hierarchical Verification of Quantum Circuits

NFM 2016

Jun 2016

Minneapolis, USA

Formal Analysis of Power Electronic Systems

Hardware Verification Group Meeting

Oct 2015

Concordia University

On the Formal Analysis of Photonic Signal Processing Systems

Hardware Verification Group Meeting

May 2015

Concordia University

❖ List of Referees

Ahmed Bouajjani

Professor

University of Paris

abou@irif.fr

Constantin Enea

Professor

Ecole Polytechnique

cenea@irif.fr

Parosh Aziz Abdulla

Chaired Professor

Uppsala University

parosh@it.uu.se

Michael Emmi

Applied Scientist

Amazon Web Services

michael.emmi@gmail.com