

Curriculum Vitae

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Sidi Mohamed Beillahi

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IRIF

Université de Paris

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❖ Summary

I am interested in algorithmic verification, formal methods, and applying programming language techniques to improve asynchronous, concurrent, distributed, and quantum systems and smart contracts.

❖ Education

PhD — Computer Science

Thesis Title: [Automated Reasoning about Weak Consistency in Distributed Software](#)

Advisors: Ahmed Bouajjani and Constantin Enea

Dec 2017 – present

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

Bachelor of Engineering — 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

Research Assistant, Université de Paris

Advisors: Ahmed Bouajjani and Constantin Enea

Dec 2017 – present

Paris, France

Teaching Assistant, Université de Paris

Sep 2018 – present

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

- 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.

❖ Service

- Co-organizer, IRIF Verification Seminar, Mar 2020 – July 2020.
- Artifact Evaluation Committees: POPL 2021, CAV 2021.
- Sub-Reviewer: CAV 2020, VMCAI 2020, FTSCS 2016.
- Student Volunteer: CAV 2016.

❖ Journal Publications

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| J2 | Robustness Against Transactional Causal Consistency
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea
<i>Logical Methods in Computer Science</i>
Invited Special Issue from CONCUR 2019 | Dec 2020 |
| J1 | A Modeling and Verification Framework for Optical Quantum Circuit
Sidi Mohamed Beillahi, Mohamed Yousri Mahmoud, Sofiène Tahar
<i>Formal Aspects of Computing</i> , 31(3): 321 – 351 | Mar 2019 |

❖ Conference Publications

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| C7 | Automated Synthesis of Asynchronizations
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea, Shuvendu Lahiri
<i>under submission, 2021</i> | Jan 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> | Dec 2020 |
| C5 | Behavioral Simulation for Smart Contracts
Sidi Mohamed Beillahi, Gabriela Ciocarie, 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>
Invited to a Special Issue | 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** 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

❖ 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.

❖ Talks

- 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, Paris, France Nov 2019
CAV 2019, New York City, USA Jul 2019
- Formal Analysis of Engineering Systems Based on Signal-Flow-Graph Theory** Jul 2016
NSV-CAV 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