

# Curriculum Vitae

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Sidi Mohamed Beillahi

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IRIF

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## ❖ Summary

I am interested in algorithmic verification, formal methods, and applying programming language techniques to improve asynchronous, concurrent, and distributed 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 National Grandes Ecoles Exam, Tunisia, 2011.
- Olympian in International Mathematical Olympiad, Germany, 2009.
- Ranked 3rd in National Mathematical Olympiad, Mauritania, 2009.
- Ranked 1st in 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.

## ❖ Service

- Co-organizer, IRIF Verification Seminar, Mar 2020 – present.
- Sub-Reviewer: CAV 2020, VMCAI 2020, FTSCS 2016.
- Student Volunteer: CAV 2016.

## ❖ Journal Publications

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

## ❖ Conference Publications

- |    |   |          |
|----|---|----------|
| C5 | <b>Behavioral Simulation for Smart Contracts</b><br>Sidi Mohamed Beillahi, Gabriela Ciocarlie, Michael Emmi, Constantin Enea<br><i>In Proc. 41st annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI), 2020</i> | Jun 2020 |
| C4 | <b>Robustness Against Transactional Causal Consistency</b><br>Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea<br><i>In Proc. 30th International Conference on Concurrency Theory (CONCUR), 2019</i><br><b>Invited to a Special Issue</b>  | Sep 2019 |
| C3 | <b>Checking Robustness Against Snapshot Isolation</b><br>Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea<br><i>In Proc. 31st International Conference on Computer Aided Verification (CAV), 2019</i>                                      | Jul 2019 |
| C2 | <b>Hierarchical Verification of Quantum Circuits</b><br>Sidi Mohamed Beillahi, Mohamed Yousri Mahmoud, Sofiène Tahar<br><i>In Proc. 8th International Symposium NASA Formal Methods (NFM), 2016</i>   | Jun 2016 |
| C1 | <b>Formal Analysis of Power Electronic Systems</b><br>Sidi Mohamed Beillahi, Umair Siddique, Sofiène Tahar<br><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** *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
  - 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

- 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** *Jun 2016*  
NFM 2016 *Minneapolis, USA*
- Formal Analysis of Power Electronic Systems** *Oct 2015*  
Hardware Verification Group Meeting *Concordia University*
- On the Formal Analysis of Photonic Signal Processing Systems** *May 2015*  
Hardware Verification Group Meeting *Concordia University*