Curriculum Vitae

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Sidi Mohamed Beillahi
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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 *Dec 2017 – present*
Thesis Title: **Automated Reasonning about Weak Consistency in Distributed Software**
Advisors: Ahmed Bouajjani and Constantin Enea
Université de Paris, France

Master of Applied Science — Computer Engineering *Sep 2014 – Nov 2016*
Thesis Title: **Towards the Design Automation of Quantum Circuits**
Advisor: Sofiène Tahar
Concordia University, Canada

Bachelor of Engineering — Polytechnicien *Sep 2011 – Jun 2014*
Thesis Title: **Formalization of Signal-Flow Graphs in HOL**
Advisor: Sofiène Tahar
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 *Dec 2017 – present*
Advisors: Ahmed Bouajjani and Constantin Enea
Paris, France

Teaching Assistant, Université de Paris *Sep 2018 – present*

Research Intern, SRI International *Apr 2019 – Aug 2019*
Advisor: Michael Emmi
New York City, USA

Software Programmer, TRU Simulation + Training *May 2017 – Dec 2017*
Montréal, Canada

Research Assistant, Concordia University *Mar 2014 – Nov 2016*
Advisor: Sofiène Tahar
Montréal, Canada

Teaching Assistant, Concordia University *Sep 2015 – May 2016*

Research Engineer, Marinvent inc. *Mar 2016 – Nov 2016*
Advisor: Sofiène Tahar
Montréal, Canada

Intern, STMicroelectronics *Jul 2013 – Aug 2013*
Advisor: Mohamed Ben Ahmed
Tunis, Tunisia

Intern, Mauritel S.A *Aug 2012 – Aug 2012*
Advisor: Mohamed Moujtaba
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 **Robustness Against Transactional Causal Consistency** *Dec 2019*
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea
Logical Methods in Computer Science (under submission)
Invited Special Issue from CONCUR 2019

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

❖ Conference Publications

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
Invited to a Special Issue

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

Formal Analysis of Engineering Systems Based on Signal-Flow-Graph Theory *Jul 2016*
W3 Sidi Mohamed Beillahi, Umair Siddique, Sofiène Tahar
In Proc. 9th International Workshop Numerical Software Verification (NSV-CAV), 2016

On the Formal Analysis of Photonic Signal Processing Systems *Jun 2015*
W2 Umair Siddique, Sidi Mohamed Beillahi, Sofiène Tahar
In Proc. 20th International Workshop Formal Methods for Industrial Critical Systems (FMICS), 2015

A Tool for the Formal Verification of Quantum Optical Computing Systems *Apr 2015*
W1 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
  - Hardward 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