Curriculum Vitae

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*
Université de Paris, France

Thesis Title: **Automated Reasonning about Weak Consistency in Distributed Software**
Advisors: Ahmed Bouajjani and Constantin Enea

Master of Applied Science — Computer Engineering *Sep 2014 – Nov 2016*
Concordia University, Canada

Thesis Title: **Towards the Design Automation of Quantum Circuits**
Advisor: Sofiène Tahar

Bachelor of Engineering — Polytechnicien *Sep 2011 – Jun 2014*
Tunisia Polytechnic School, Tunisia

Thesis Title: **Formalization of Signal-Flow Graphs in HOL**
Advisor: Sofiène Tahar

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 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 – present.
- Artificat Evaluation Committees: POPL 2021.
- 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

C7
Checking Robustness Between Weak Transactional Consistency Models *Jul 2020*
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea
under submission, 2020

C6
Automated Synthesis of Asynchronizations *Jul 2020*
Sidi Mohamed Beillahi, Ahmed Bouajjani, Constantin Enea, Shuvendu Lahiri
under submission, 2020

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

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

  - 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

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   *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