

# Curriculum Vitae

Prof. Dr. Mohamed Mosbah

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## **Current Position**

I am a professor of exceptional class in computer science at Bordeaux INP (Polytechnic INstitute of Bordeaux, a Graduate Engineering School in France).

My research work is done in LaBRI (computer science laboratory of the university of Bordeaux ).

I am Vice President for Digital Transformation at Bordeaux INP

I am deputy director of LaBRI

Past main position: I have been responsible of doctoral studies in computer science at the university of Bordeaux 1 between 2005 and 2010

## **Degrees**

Habilitation Thesis, “Habilitation á diriger des Recherches en informatique” in computer science, University of Bordeaux 1, September 2002.

Ph.D.Thesis, “Doctorat”, in computer science, University of Bordeaux 1, February 1993.

## **Research Interests**

I am working on defining a model, called local computations and based on graph rewriting systems, for encoding and expressing distributed algorithms. The

main advantage of such a model is its use for proving distributed algorithms. By using this high-level encoding and formal proofs, it is possible to obtain general results w.r.t distributed computing. This work is done within the visidia that I manage at the university of Bordeaux. I am also working on formalizing security problems. More recently, I have been involved in an academic-industrial project (chair) dealing with Intelligent Transportation Systems.

Interest areas: Modeling distributed systems and distributed algorithms, Local computations systems, Formal methods and Security of distributed systems

### Teaching

Distributed Algorithms, Distributed systems

Relational database systems

Programming languages, Software engineering.

### Research Support and Grants

Coordinator of an industrial chair at ENSEIRB-MATMECA on Mobility and Intelligent Transportation Systems.

Responsible of a French/Tunisian research project, Program PHC Utique “Sensor Networks at Large Scale for Smart Cities” number : 37090WD (2017 - 2019).

Member of CEFIPRA Indo-French project “Reflection Aware ICC Analysis Framework for Android Apps” (2016 - 2018, avec MNIT Jaipur)

2014 - 2015: Bilateral French-Italian PHC GALILEE “Secure Distributed Protocols in Wireless Environments”. With the university of Padua, Italie.

2014 - 2017: Member of REACH (Rural broadband intEernet Access using Cooperative mesh networking in wHite space spectrum) project, between Europe and India (EurpeAid).

2010 - 2013: French Ministry of Industry Grant - Project SIMID <http://www.simid-project.eu> (Distributed interconnection of heterogenous aircraft maintenance information systems), with partners: Airbus, Dassault Aviation, Eurocopter, Equip’Aero Services, 2MORO, Vinci Consulting and laboratory IMS.

2007 - 2009: French ANR Grant RIMEL “ Incremental Refinement for Event Models” (with LORIA and Clearsy). ANR-SETIN

2008 - 2010: French Ministry of Industry Grant - Project RECORDS (LaBRI partenship with seven companies). <http://records.2moro.fr>

2006 - 2008: French - Tunisian project (DGRSRT/INRIA): SUPCOM - INRIA - LaBRI “ Desining an automatic inductive proof system”.

Member of past European projects (GETGRATS, COMPUGRAPH I, COMPUGRAPH II)

### Publications

(Selection of publications. The complete list can be found on the website: <http://www.labri.fr/~mosbah>)

- W. Ben Jaballah, B. Mbarek, A. Meddeb, and **Mosbah, M.**, “A secure electric energy management in smart home,” *International Journal of Communication Systems*, vol. 30, no. 17, 2017.
- S. Bhandari, W. Jaballah, V. Jain, V. Laxmi, A. Zemmari, M. Gaur, **Mosbah, M.**, and M. Conti, “Android inter-app communication threats and detection techniques,” *Computers and Security*, vol. 70, pp. 392–421, 2017.
- I. Jemili, D. Ghrab, A. Belghith, and **Mosbah, M.**, “Context-aware broadcast in duty-cycled wireless sensor networks,” *International Journal on Semantic Web and Information Systems*, vol. 13, no. 3, pp. 48–67, 2017.
- M. Ktari, M. Haddar, **Mosbah, M.**, and A. Hadj Kacem, “Maintenance of a spanning tree for dynamic graphs by mobile agents and local computations,” *RAIRO - Theoretical Informatics and Applications*, vol. 51, no. 2, pp. 51–70, 2017.
- W. Ben Jaballah, M. Conti, **Mosbah, M.**, and C. Palazzi, “The impact of malicious nodes positioning on vehicular alert messaging system,” *Ad Hoc Networks*, vol. 52, pp. 3–16, 2016.
- D. Méry, **Mosbah, M.**, and M. Tounsi, “From event-b specifications to programs for distributed algorithms,” *International Journal of Autonomous and Adaptive Communications Systems*, vol. 9, no. 3-4, pp. 223–242, 2016.
- F. Fakhfakh, A. Kacem, **Mosbah, M.**, and M. Tounsi, “Towards a formal model for dynamic networks through refinement and evolving graphs,” *Studies in Computational Intelligence*, vol. 612, pp. 227–243, 2016.
- F. Fakhfakh, M. Tounsi, **Mosbah, M.**, D. Méry, and A. Kacem, “A formal approach for maintaining forest topologies in dynamic networks,” in *16th IEEE/ACIS International Conference on Computer and Information Science (ICIS)*, pp. 123–137, Springer, 2017.
- A. Alleg, T. Ahmed, **Mosbah, M.**, R. Riggio and R. Boutaba, “Delay-aware VNF placement and chaining based on a flexible resource allocation approach,” in *13th International Conference on Network and Service Management, CNSM 2017*, Tokyo, Japan, November 26-30, 2017. IEEE Computer Society 2017, ISBN 978-3-901882-98-2

- V. Jain, S. Bhandari, V. Laxmi, M. Gaur, and **Mosbah, M.**, “Sniffdroid: Detection of inter-app privacy leaks in android,” in *Proceedings - 16th IEEE International Conference on Trust, Security and Privacy in Computing and Communications, Trustcom 2017*, pp. 331–338, IEEE, 2017.
- T. Abdellatif, K. Rouis, and **Mosbah, M.**, “Adaptable monitoring for intrusion detection in wireless sensor networks,” in *Proceedings - 2017 IEEE 26th International Conference on Enabling Technologies: Infrastructure for Collaborative Enterprises, WETICE 2017*, pp. 54–59, IEEE Computer Society, 2017.
- B. Mbarek, A. Meddeb, W. Ben Jaballah, and **Mosbah, M.**, “A broadcast authentication scheme in iot environments,” in *Proceedings of IEEE/ACS International Conference on Computer Systems and Applications, AICCSA, IEEE, 2017*.
- D. Ghrab, I. Jemili, A. Belghith, and **Mosbah, M.**, “Correlation-free multipath routing for multimedia traffic in wireless sensor networks,” in *Ad-hoc, Mobile, and Wireless Networks (ADHOC-NOW 2017)*, vol. 10517 of *Lecture Notes in Computer Science*, pp. 276–289, Springer International Publishing, 2017.
- B. Mbarek, A. Meddeb, W. Jaballah, and **Mosbah, M.**, “An efficient broadcast authentication scheme in wireless sensor networks,” in *The 8th International Conference on Ambient Systems, Networks and Technologies (ANT 2017)*, vol. 109 of *Procedia Computer Science*, pp. 553–559, Elsevier, 2017.
- M. Ktari, **Mosbah, M.**, and A. Kacem, “Electing a leader in dynamic networks using mobile agents and local computations,” in *The 8th International Conference on Ambient Systems, Networks and Technologies (ANT 2017)*, vol. 109 of *Procedia Computer Science*, pp. 351–358, Elsevier, 2017.
- M. Boussabbeh, M. Mosbah, M. Tounsi, A. Hadj Kacem Towards a General Framework for Ensuring and Reusing Proofs of Termination Detection in Distributed Computing. In *24th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing, PDP 2016, Heraklion, Crete, Greece, February 17-19, 2016. IEEE Computer Society: 504-511 (2016)*
- M. Ktari, M.A. Haddar, M. Mosbah, A. Hadj Kacem Distributed Computation and Maintenance of a Spanning Tree in Dynamic Networks by Mobile Agents. In *30th International Conference on Advanced Information Networking and Applications Workshops, AINA 2016 Workshops, Crans-Montana, Switzerland, March 23-25, 2016. IEEE Computer Society 2016, ISBN 978-1-5090-2461-2: 331-336 (2016)*
- A. Fontaine, M. Mosbah, M. Tounsi, A. Zemmari A Fault-Tolerant Handshake Algorithm for Local Computations. In *30th International Conference*

on *Advanced Information Networking and Applications Workshops, AINA 2016 Workshops, Crans-Montana, Switzerland, March 23-25, 2016. IEEE Computer Society 2016, ISBN 978-1-5090-2461-2: 475-480 (2016)*

- M. Boussabbah, M. Mosbah, M. Tounsi, A. Hadj Kacem Formal Proofs of Termination Detection for Local Computations by Refinement-Based Compositions. in *ABZ 2016, Linz, Austria, May 23-27, 2016, Proceedings. Lecture Notes in Computer Science 9675, Springer 2016, ISBN 978-3-319-33599-5: 182-212 (2016)*
- W. Ben Jaballah, M. Conti, M. Mosbah, C. Palazzi Impact of Security threats in Vehicular Alert Messaging Systems”, in *IEEE ICC 2015 proceedings, London, UK, Juin 2015*
- W. Ben Jaballah, M. Conti, M. Mosbah, C. Palazzi A secure alert messaging system for safe driving. In *Computer Communications 46: 29-42 (2014)*
- N. Ouled Abdallah, H. Hadj Kacem, M. Mosbah, A. Zemmari Randomized broadcasting in wireless mobile sensor networks. In *Concurrency and Computation: Practice and Experience 25(2): 203-217 (2013)*
- W. Ben Jaballah, M. Conti, M. Mosbah, C. Palazzi, Fast and Secure Multihop Broadcast Solutions for Intervehicular Communication, In *IEEE Transactions on Intelligent Transportation Systems 15(1):433-450 (2014)*
- R. Echahed, A. Habel, M. Mosbah Graph Computation Models. *Electronic Communication of the European Association of Software Science and Technology ECEASST 61 (2013)*
- E. Garnaud, S. Maabout, M. Mosbah: Functional dependencies are helpful for partial materialization of data cubes. In *Ann. Math. Artif. Intell. 73(1-2): 245-274 (2015)*
- B. Derbel, M. Mosbah and Z. Zemmari Sublinear Fully Distributed Partition with Applications *Theory of Computing Systems* Volume 47, Pages : 368–404, Springer, 2010
- D. Méry, M. Mosbah and M. Tounsi Proving Distributed Algorithms by Combining Refinement and Local Computations *Electronic Communication of the European Association of Software Science and Technology, Volume 35, 2010*
- W. Ben Jaballah, M. Mosbah, H. Youssef, A. Zemmari. Lightweight Source Authentication Mechanisms for Group Communications in Wireless Sensor Networks”, in *IEEE AINA 2013, pages 598-605.*
- W. Ben Jaballah, M. Conti, R. Di Pietro, M. Mosbah, N. V. Verde. MASS : An efficient and secure broadcast authentication scheme for resource constrained devices”, in *IEEE CRiSIS 2013, pages 1-6; 2013*

- W. Ben Jaballah, M. Conti, M. Mosbah, C. E. Palazzi. Secure Verification of Location Claims on a Vehicular Safety Application in *IEEE ICCCN 2013*, pages 1-7
- W. Ben Jaballah, M. Mosbah, H. Youssef. Performance evaluation of key disclosure delay-based schemes in wireless sensor networks in *IEEE Per-ComWorkshops 2013*, pages 566-571.
- W. Ben Jaballah, M. Mosbah, H. Youssef, O. Ly, A. Meddeb. Modeling Source Authentication Protocols in Wireless Sensor Networks using HLPSL” in *IEEE SAR-SSI 2011*
- D. Méry, M. Mosbah, and M. Tounsi. Refinement-based Verification of Local Synchronization Algorithms. In *17TH International Symposium on Formal Methods, 20 - 24 June, 2011, Limerick, Irland*, Lecture Notes in Computer Science Vol. 6664, Pages 338–352. Springer, 2011.
- D. Méry, M. Mosbah, and M. Tounsi. Proving Distributed Algorithms by Combining Refinement and Local Computations. In *AVOCS 2010 10th International Workshop on Automated Verification of Critical Systems, 2010*, to appear in *Electronic Communications of the EASST*, Volume 35.
- P. Castéran, V. Filou et M. Mosbah Certifying Distributed Algorithms by Embedding Local Computation Systems in the Coq Proof Assistant, In *Proceedings of Symbolic Computation in Software Science (SCSS 2009)*, Tunisia, 2009

#### Student Research Supervision

- 2002: Nicolas Bonichon, Ph.D. 2002, university of Bordeaux 1. Thesis: ”*Algorithmic and combinatorial aspects of realizers in plane graphs*”, Best AFIT’s award.
- 2004: Afif Sellami, Ph.D. 2004, university of Bordeaux 1. Thesis “From local coputations to distributed algorithms”.
- 2006: Bilel Derbel, Ph.D., university of Bordeaux 1. Thesis “Emulating local computations on a distributed network”.
- 2005: Rodrigue Ossamy, Ph.D., university of Bordeaux 1. Thesis “A programming language for distributed computing”. Co-supervised with Yves Métivier.
- 2007: Brahim Hamid, Ph.D. University of Bordeaux 1. Thesis “Designing Fault-tolerant distributed algorithms by local computations”. Co-supervised with Yves Métivier.
- 2006: Frédéric Ferchaud, Ph.D. Eurocontrol and university of Bordeaux 1. Thesis “A model for Air traffic Management”. Co-supervised with Cyril Gavaille.

2008. Hédi Hamdi, Ph.D University of Bordeaux - SUPCOM (Tunisia). Co-supervised with A. Bouhoula. Thesis “Formal Models for Security of distributed systems”
2009. Imen Jemili, Ph.D. University of Bordeaux 1 and university of La Manouba (co-supervisor : A. Belghith). Thesis “Distributed computing for Ad hoc networks”
2008. Abbas Shehla, Ph.D. University of Bordeaux 1, co-supervised with A. Zemmari. Thesis “Random Walks and Mobile agents for distributed computing”
- 2010: Monia Loulou, Ph.D. University of Bordeaux 1 and university of Sfax (Co-supervisor, Prof. A. Hadj Kacem). Thesis “A Formal Model for Mobile Agents”
- 2011: Amine Haddar, Ph.D. University of Bordeaux 1 and university of Sfax (Co-supervised with A. HadjKacem). Thesis “Distributed Algorithms for Mobile Agents”
- 2013: Vincent Filou, Ph.D. University of Bordeaux 1, co-supervised with P. Casteran. Thesis “Proving Environment for Distributed Algorithms”
- 2013: Mohamed Tounsi, Ph.D. University of Bordeaux 1. Thesis “Refinement Development of Distributed Algorithms”
- 2014: Wafa Ben Jaballah, currently Ph.D University of Bordeaux 1. Thesis “Securing Wireless Sensor and Vehicular Networks”
- 2017 Nesrine Ouled Abdallah, PhD University of Bordeaux (co-supervised with A. Zemmari). Thesis “Computing models for networks of tiny objects”. Date of defense (22 May 2017)
- 2017 Dhoha Ghrab, PhD University Manouba (Co-supervised A. Belghith et I. Jemili). Thesis “Context-Awareness in Duty-Cycled Wireless Sensor Networks”. Date of defense (15 July 2017).
- 2017 Maha Boussabbeh, Ph.D. University of Bordeaux and university of Sfax (Co-supervised with A. HadjKacem). Thesis ”Proving Distributed Algorithms by Composition and Refinement”. Date of defense (08 December 2017).
- 2017 Matthieu Renard, Ph.D. University of Bordeaux (co-supervised with A. Rollet) “Runtime Enforcement of (Timed) Properties with Uncontrollable Events”. Date of defense (11 December 2017).

### **Other Research Activities**

Member of the steering committee of ICGT “International Conference of Graph Transformations” (since september 2006)

Co-chair or Chair of :ICTAC 2019, CRISIS 2018, SCSS 2017, OPODIS 2010, CRISIS 2008; Graph Computation Models workshop (GCM 2006, 2008, 2010, 2012 and 2014), .

Program Committe member: ICTAC 2019, ACM SAC 2019, CRISIS 2018, MEDI 2018, BiDAS 2018, SSCC18, ICGT 2018, ABZ 2018, BiDAS 2018, ANT 2018, RAMCOM 2018,NTMS 2018, CRISIS 2017, ICGT 2017,ANT 2017, AROSA 2017, ACM SAC 2017, VECoS 2017, SCSS 2017, IFIP/IEEE PEMWN 2017, SIMPDA 2017, SACLA 2017, ESBM 2017, GCM 2017, AROSA 2016, ANT 2016, SAC 2016, ICGT 2016, GCM 2016, SAC-SE 2015, SAICSAIT 2014, SAC-SE 2014, SAICSIT 2013, AROSA 2013, ICGT 2012, OPODIS 2012, SCSS 2010, SCSS 2009, SSRI 2009, SECRIPT 2009, CRISIS 2009, OPODIS 2008, SSIRI 2008, ICGT 2008, VECos 2008, NOTERE 2008, SAC-SE 2008.

Referee of many conferences and journals : Algorithmica Journal, Theoretical Computer Science Journal.

Proceedings Editor: CRISIS 2018, OPODIS 2010 (Springer), CRISIS 2008 (IEEE), GCM 2006, GCM 2008, GCM 2010, GCM 2012 and GCM 2014.

### **Recent Awards**

I am a holder of a bonus for scientific excellence (national program 2015 - 2018)

I received in 2012 and in 2018 academic palms (french academic distinction, “Chevalier” and “Officier”) for outstanding services in research and academic activities