

# Curriculum Vitae: Omar Al-Bataineh

## Contact Information

- **Research Scientist**, Gran Sasso Science Institute, Italy
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## Research Interests

Automated Program Repair, Fault Localization, Software Verification, Formal Methods

## Education

- **PhD**, *School of Computer Science and Software Engineering, and School of Electrical, Electronic, and Computer Engineering, University of Western Australia*, 2015.  
*Thesis: Verifying Worst Case Execution Time of Timed Automata Models with Cyclic Behavior.*  
Advisors: Prof. Mark Reynolds, Dr. Tim French.
- **M.Sc.**, *School of Computer Science and Engineering, University of New South Wales*, 2011.  
*Thesis: Model Checking of Knowledge in Unconditionally Secure Cryptographic Protocols.*  
Advisors: Prof. Ron van der Meyden, Dr. Kai Engelhardt.
- **B.Sc.**, *Department of Computer Engineering, Jordan University of Science and Technology*, 2005.

## Professional Experience

- **Research Scientist**, Simula Research Laboratory, Norway (July 2021–Jan 2023).
- **Senior Research Fellow**, National University of Singapore (November 2019–June 2021).
- **Research Fellow**, National University of Singapore (November 2017–October 2019).
- **Research Fellow**, Nanyang Technological University, Singapore (October 2015–October 2017).
- **Research Assistant**, University of Western Australia (January 2015–July 2015).
- **Intern**, NICTA Research Center, Australia (October 2010–February 2011).

## Teaching Experience

- **Teaching Assistant**, *University of Western Australia* (2012–2014).  
Courses: *Discrete Mathematics, Algorithms and Data Structures.*
- **Guest Lecturer**, *University of New South Wales* (2010–2011).  
Courses: *Cryptography, Computer Security.*
- **Teaching Assistant**, *University of New South Wales* (2009–2010).  
Courses: *Operating Systems, Software Engineering.*

## Selected Projects

- **National Research Foundation, Prime Minister’s Office, Singapore** (NRF2014NCR-NCR001-30, 2015–2017).
- **ARC Discovery Project, University of Western Australia** (2011–2014): Automation of Metric Temporal Reasoning.
- **US Air Force, Asia Office of Research and Development Grant 2009/10**: Security Protocol Optimization and Verification by Epistemic Model Checking.

## Publications

- Omar Al-Bataineh, Mark Reynolds, Tim French. *Accelerating Worst Case Execution Time Analysis of Timed Automata Models with Cyclic Behavior*. *Proceedings of FORMATS 2014*.
- Omar Al-Bataineh, Ron van der Meyden. *Epistemic Model Checking for Knowledge-Based Program Implementation: An Application to Anonymous Broadcast*. *Proceedings of SecureComm 2010*, Singapore, September 7–9, 2010.
- Omar Al-Bataineh, Ron van der Meyden. *Abstraction for Epistemic Model Checking of Dining Cryptographers-based Protocols*. *Proceedings of TARK 2011*, Groningen, Netherlands, July 12–14, 2011.
- Omar Al-Bataineh, Tim French, Terry Woodings. *Formal Modeling and Analysis of a Distributed Transaction Protocol in UPPAAL*. *Proceedings of TIME 2012*, Leicester, United Kingdom.
- Omar Al-Bataineh, Mark Reynolds. *A Comparative Study of Decision Diagrams for Real-time Model Checking*. *Proceedings of SPIN 2018*, Spain, June 20–22, 2018.
- Omar Al-Bataineh, Mark Reynolds, Tim French. *Finding Best and Worst Case Execution Times of Systems Using Difference-Bound Matrices*. *Proceedings of FORMATS 2014*, Florence, Italy, September 8–10, 2014.
- Omar Al-Bataineh, Mark Reynolds. *Accelerating Worst Case Execution Time Analysis of Timed Automata Models with Cyclic Behaviour*. *Formal Aspects of Computing (FAOC)*, 2015.
- Omar Al-Bataineh, Mark Reynolds, Tim French. *Finding Minimum and Maximum Termination Time of Timed Automata Models with Cyclic Behaviour*. *Theoretical Computer Science (TCS)*, 2016.
- Omar Al-Bataineh, David S. Rosenblum, Mark Reynolds. *Efficient Decentralized LTL Monitoring Framework Using Tableau Approach*. *ACM Transactions on Embedded Computing Systems (TECS)*, 2019.
- Omar Al-Bataineh, Abhik Roychoudhury. *Smart Contract Repair*. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 2020.
- Omar Al-Bataineh, Anastasiia Grishina, Leon Moonen. *Towards More Reliable Automated Program Repair by Integrating Static Analysis Techniques*. *Proceedings of QRS 2021*, IEEE.

- Umair Ahmed, Zhiyu Fan, Jooyong Yi, Omar Al-Bataineh, Abhik Roychoudhury. *Verifix: Verified Repair of Programming Assignments*. *ACM TOSEM*, 2021.
- Omar Al-Bataineh, Leon Moonen. *Towards Extending the Range of Bugs that Automated Program Repair Can Handle*. *Proceedings of QRS 2022 (Best Paper Award)*.
- Omar Al-Bataineh, Leon Moonen, Linas Vidziunas. *Extending the Range of Bugs that Automated Program Repair Can Handle*. *Journal of Systems and Software (JSS)*, 2024.
- Omar Al-Bataineh. *Invariant-based Program Repair*. *Proceedings of FASE 2024*.
- Omar Al-Bataineh, Leon Moonen. *Towards Developing Effective Fault Localization Techniques for Termination Bugs in Loop Programs*. *Proceedings of APR@ICSE 2024*.
- Omar Al-Bataineh. *Automated Repair of Multi-fault Programs: Obstacles, Solutions, and Prospects*. *Proceedings of ASE 2024*.
- Omar Al-Bataineh. *A Formal Treatment of Performance Bugs*. *Proceedings of ASE 2024*.
- Omar Al-Bataineh. *Towards Developing Effective Oracles to Reduce Patch Overfitting in Automated Program Repair*. *Proceedings of SANER 2025*.
- Omar Al-Bataineh. *Reduce Before You Repair: Advantages of Combining Program Slicing with Automated Program Repair*. *Proceedings of SANER 2025*.
- Omar Al-Bataineh. *Current Challenges in Automated Multi-fault Program Repair*. *Proceedings of APR@ICSE 2025*.

## Awards and Honors

- **Best Paper Award**, *QRS 2022*.
- **Four-Year Fellowship**, *University of Western Australia*, 2011–2015.
- **Two-Year Fellowship**, *University of New South Wales*, 2009–2011.
- **Travel Awards**: *SecureComm 2010*, *TIME 2012*, *FORMATS 2014*, *ASE 2024*, *SANER 2024* .

## References

- Prof. David Rosenblum, *National University of Singapore*, dsr@gmu.edu.
- Dr. Leon Moonen, *Simula Research Laboratory*, leon@simula.no.
- Prof. Mark Reynolds, *University of Western Australia*, mark.reynolds@uwa.edu.au.
- Dr. Tim French, *University of Western Australia*, tim.french@uwa.edu.au.