Facundo MOLINA

Postdoctoral Researcher
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EMPLOYMENT HISTORY

SINCE 2022 **Postdoctoral Researcher**
IMDEA Software Institute, Madrid, Spain.

2018 - 2022 **Teaching Assistant**
Department of Computer Science, University of Río Cuarto, Argentina.

2014 - 2017 **Student Teaching Assistant**
Department of Computer Science, University of Río Cuarto, Argentina.

EDUCATION

2017 - 2022 **Ph.D., Computer Science**
Dissertation: Techniques based on Learning and Search for Specification Inference
Faculty of Mathematics, Astronomy, Physics and Computing - FaMaF
University of Córdoba - Argentina

2012 - 2017 **Computer Science Licenciate**
(5-year + thesis undergraduate program of study)
Department of Computer Science - FCEFQyN
University of Río Cuarto - Argentina
THESIS PROJECT: Automatic Learning of Relational Specifications using
Evolutionary Computation
AVERAGE SCORE: 9.43 out of 10

2012 - 2014 **B.S. in Computer Science**
Department of Computer Science - FCEFQyN
University of Río Cuarto - Argentina
THESIS PROJECT: Project in the course of Distributed and Outsourced
Software Engineering
AVERAGE SCORE: 9.33 out of 10

PUBLICATIONS

APRIL 2023 **Efficient Bounded Exhaustive Input Generation from Program APIs**
Mariano Politano, Valeria Bengolea, Facundo Molina, Marcelo F. Frias,
Nazareno Aguirre, and Pablo Ponzio.
26th International Conference on Fundamental Approaches to Software Engineering,
FASE 2023, Paris, France, April 22 - 27, 2023.

NOVEMBER 2022 **Learning to Prune Infeasible Paths in Generalized Symbolic Execution**
Facundo Molina, Pablo Ponzio, Nazareno Aguirre and Marcelo F. Frias.
IEEE 33rd International Symposium on Software Reliability Engineering,
ISSRE 2022, Charlotte, NC, USA, October 31 - Nov. 3, 2022.

MAY 2022 **Fuzzing Class Specifications**

Facundo Molina, Marcelo d'Amorim and Nazareno Aguirre.
Proceedings of the 44th ACM/IEEE International Conference
on Software Engineering, ICSE 2022, Pittsburgh, USA, May 22-27 2022.

MAY 2021   **EvoSpex: An Evolutionary Algorithm for Learning Postconditions**
Facundo Molina, Pablo Ponzio, Nazareno Aguirre and Marcelo Frias.
Proceedings of the 43rd ACM/IEEE International Conference
on Software Engineering, ICSE 2021, Madrid, Spain, May 23-29 2021.

SEPTEMBER 2020   **Applying Learning Techniques to Oracle Synthesis**
Facundo Molina
Doctoral Symposium, Proceedings of the 35th IEEE/ACM International Conference
on Automated Software Engineering, ASE 2020, Australia, September 21-25, 2020.

JULY 2019   **An Evolutionary Approach to Translating Operational Specifications**
into Declarative Specifications - Facundo Molina, César Cornejo, Renzo
Degiovanni, Germán Regis, Pablo Castro, Nazareno Aguirre and Marcelo Frias
Science of Computer Programming, Volume 181, Pages 47-63, 2019.

MAY 2019   **Training Binary Classifiers as Data Structure Invariants**
Facundo Molina, Pablo Ponzio, Renzo Degiovanni, Germán Regis,
Nazareno Aguirre and Marcelo Frias
Proceedings of the 41th International Conference on Software Engineering,
ICSE 2019, Montreal, Canada, May 25-31, 2019.

SEPTEMBER 2018   **A Genetic Algorithm for Goal-Conflict Identification**
Renzo Degiovanni, Facundo Molina, Germán Regis and Nazareno Aguirre
Proceedings of the 33rd ACM/IEEE International Conference on Automated
Software Engineering, ASE 2018, Montpellier, France, September 3-7, 2018.

MAY 2018   **From Operational to Declarative Specifications using a Genetic**
Algorithm - Facundo Molina, Renzo Degiovanni, Germán Regis, Pablo Castro,
Nazareno Aguirre and Marcelo Frias
Proceedings of the 11th International Workshop on Search-Based Software Testing,
SBST@ICSE 2018, Gothenburg, Sweden, May 28-29, 2018.

NOVEMBER 2016   **An Evolutionary Approach to Translate Operational Specifications**
into Declarative Specifications - Facundo Molina, César Cornejo, Renzo
Degiovanni, Germán Regis, Pablo Castro, Nazareno Aguirre and Marcelo Frias
Proceedings of the 19th Brazilian Symposium on Formal Methods
SBMF 2016, Natal, Brazil, November 22-25, 2016.

SERVICES

2023   **Program Committee**
International Working Conference on Source Code Analysis and Manipulation, SCAM 2023.

2023   **Artifact Evaluation Committee**
International Symposium on Software Testing and Analysis, ISSTA 2023.

2021   **Program Committee**
International Workshop on Test Oracles, TORACLE 2021 (at ESEC/FSE 2021).

2017 - 2022   **Student Volunteer**

International Conference on Software Engineering, ICSE 2022.
International Conference on Software Engineering, ICSE 2021.
International Conference on Software Engineering, ICSE 2019.
International Conference on Automated Software Engineering, ASE 2018.
International Conference on Software Engineering, ICSE 2017.

Awards & Distinctions

2020   **Latin America PhD Award**
A research award for PhD students in computing related fields in their 3rd year
or beyond at universities in Latin America, and granted by Microsoft Research.

2018   **Best Paper Award**
From Operational to Declarative Specifications using a Genetic Algorithm
11th International Workshop on Search-Based Software Testing, SBST 2018.

2016   **Best Paper Award**
An Evolutionary Approach to Translate Operational Specifications into
Declarative Specifications, 19th Brazilian Symposium on Formal Methods, SBMF 2016.

2016   **University of Rio Cuarto flag bearer for a 1-year period**
Traditional honour in educational institutions in Argentina to the three top students
in the institution.

Grants & Scholarships

2017   **Doctoral Scholarship**
5-year Scholarship granted by Argentina's National Scientific and Technical Research
Council (CONICET) to fund doctoral students.

2016   **EVC-CIN Scholarship**
1-year Scolarship granted by the argentinian National Inter University Council (CIN)
to encourage undergraduate students to pursue scientific vocations.

Teaching Background

MARCH 2018
- PRESENT   **Teaching Assistant**
COURSES: Computability and Complexity, Distributed and Outsourced
Software Engineering, Introduction to Programming.
Department of Computer Science - FCEFQyN
University of Río Cuarto - Argentina

AUGUST 2014
- JUNE 2017   **Student Teaching Assistant**
COURSES: Data Structures and Algorithms, Algorithms Design Techniques,
Programming Paradigms, and System Design and Analysis.
Department of Computer Science - FCEFQyN
University of Río Cuarto - Argentina

Extracurricular Courses Taken

OCTOBER 2019
Neural Networks and Deep Learning - Adjunct Professor Andrew Ng
Foundations of Deep Learning
An online non-credit course authorized by deeplearning.ai
Coursera

MARCH 2019
Introduction to Data Science in Python - Christopher Brooks
Introduction to data manipulation and cleaning techniques using pandas
An online non-credit course authorized by University of Michigan
Coursera

AUGUST 2018
NOVEMBER 2018
Neural Networks - Dr. Francisco Tamarit
Mathematical Foundations of Artificial Neural Networks
Postgraduate courses
University of Córdoba - Argentina

AUGUST 2017
NOVEMBER 2017
Text Mining - Dr. Laura Alonso Alemany
Text Mining techniques applied to Natural Language Processing problems (Word similarity, Document clustering, Sense discrimination, Machine translation)
Postgraduate courses
University of Córdoba - Argentina

AUGUST 2017
NOVEMBER 2017
Information and its Demons - Dr. Javier Blanco
Information Philosophy
Postgraduate courses
University of Río Cuarto - Argentina

FEBRUARY 2017
Human Dynamics: Data, Networks and Modelling - Dr. Márton Karsai
Summer School of Computer Science RIO 2017
University of Río Cuarto - Argentina

MARCH 2016
JUNE 2016
Software Testing - Dr. Renzo Degiovanni
Main software testing techniques using state-of-the-art tools
Postgraduate courses
University of Río Cuarto - Argentina

FEBRUARY 2016
Systematic Test Case Generation - Prof. Sarfraz Khurshid
Summer School of Computer Science RIO 2016
University of Río Cuarto - Argentina

FEBRUARY 2016
Symbolic Program Analysis - Prof. Willem Visser
Summer School of Computer Science RIO 2016
University of Río Cuarto - Argentina

FEBRUARY 2015
Description Logic Reasoning - Dr. Anni-Yasmin Turhan
Summer School of Computer Science RIO 2015
University of Río Cuarto - Argentina

FEBRUARY 2015
Fundamentals of Quantum Programming Languages - Dr. Alejandro Díaz-Caro
Summer School of Computer Science RIO 2015
University of Río Cuarto - Argentina

Languages

SPANISH: Mother tongue
ENGLISH: Fluent