

Juan Manuel COPIA

PhD Student

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EMPLOYMENT HISTORY

- SINCE 2021 **Research Assistant**
IMDEA Software Institute, Madrid, Spain.
- 2019 - 2020 **Research Scholarship**
Department of Computer Science, University of Río Cuarto, Argentina.
- SUMMER 2019 **Summer Internship**
McAfee, Argentina.
- 2018 - 2019 **Student Teaching Assistant**
Department of Computer Science, University of Río Cuarto, Argentina.

EDUCATION

- SINCE 2021 **Ph.D. in Computer Science**
Universidad Politécnica de Madrid, Madrid, Spain.
- 2015 - 2020 **Undergraduate degree in Computer Science** (5-year + thesis)
Department of Computer Science, University of Río Cuarto, Argentina. GPA: 9.02.
- 2015 - 2018 **Undergraduate degree in Computer Science** (3-year + final project)
Department of Computer Science, University of Río Cuarto, Argentina. GPA: 8.81.

PUBLICATIONS

- MAY 2024 **Improving Patch Correctness Analysis via Random Testing and Large Language Models.**
F. Molina, J. M. Copia, A. Gorla.
IEEE International Conference on Software Testing, Verification and Validation ICST 2024, Toronto, Canada, to appear.
- OCTOBER 2023 **Precise Lazy Initialization for Programs with Complex Heap Inputs**
J. M. Copia, F. Molina, N. Aguirre, M. Frias, A. Gorla, P. Ponzio.
IEEE International Symposium on Software Reliability Engineering, ISSRE 2023, Florence, Italy, pp. 752-762.
- OCTOBER 2022 **LISSA: Lazy Initialization with Specialized Solver Aid**
J. M. Copia, P. Ponzio, N. Aguirre, A. Gorla, M. Frias.
IEEE/ACM International Conference on Automated Software Engineering, ASE 2022, Rochester, MI, USA, Article 67, 1-12.
- MAY 2022 **Use of Test Doubles in Android Testing: An In-Depth Investigation**
M. Fazzini, C. Choi, J. M. Copia, G. Lee, Y. Kakehi, A. Gorla, A. Orso.
ACM/IEEE International Conference on Software Engineering, ICSE 2022, Pittsburgh, USA, pp. 2266-2278.

DEVELOPED OPEN-SOURCE SOFTWARE ARTIFACTS

[LISSA AND PLI](#) Symbolic execution techniques for programs with complex heap.

[SYMSOLVE](#). A solver for structural constraints of heap-allocated objects.

[PYSEAT](#). A symbolic execution engine for python programs.

PUBLIC TALKS

APRIL 2024 **Precise Lazy Initialization for Programs with Complex Heap Inputs.**
Workshop, [KLEE WORKSHOP ON SYMBOLIC EXECUTION](#), Lisbon, Portugal.

OCTOBER 2023 **Precise Lazy Initialization for Programs with Complex Heap Inputs.**
Research Track, [ISSRE 2023](#), Florence, Italy.

OCTOBER 2022 **LISSA: Lazy Initialization with Specialized Solver Aid.**
Research Track, [ASE 2022](#), Oakland Center, Michigan, USA.

SEPTEMBER 2022 **LISSA: Lazy Initialization with Specialized Solver Aid.**
Oral communication, [IMDEA SOFTWARE S3 SEMINAR SERIES](#), Madrid, Spain.

MARCH 2022 **A Satisfiability Solver for Symbolic Structures with Complex Representation Invariants.**
Oral communication, [FACAS 2022](#), La Falda, Córdoba, Argentina.

OTHERS

RESEARCH TOPICS My research focuses on **Software Engineering**, particularly, on **Symbolic Execution**. I tackle challenges related to symbolic execution when dealing with heap-allocated objects with complex constraints. My work also includes **automated test case generation**, **automatic detection of incorrect software patches**, and **automatic inference of class invariants and method preconditions**.
I am passionate about solving challenging problems and transforming them into practical solutions in code.

PROGRAMMING LANGUAGES Proficient in **Java** and **Python**.

SPOKEN LANGUAGES Fluent in **Spanish**, **English**, and **French**.

CULTURAL EXPERIENCES 5-month academic exchange at **Universidad de Tarapacá**, Arica, Chile.
4-month cultural immersion in **France**.