

Matías Martínez

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PhD in Computer Sciences

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Objective

My objective is to apply all my knowledge on Artificial Intelligence (AI)/Machine Learning (ML) and Software Engineering acquired as a researcher and software engineer to build high-quality intelligent software systems.

Experience

- Distinguished Researcher “Ramon y Cajal” at the Universitat Politècnica de Catalunya (UPC), Barcelona, Spain. (Jan. 2023 - now). Research on AI for software engineering. Grant from the Spanish Ministry of Science and Innovation.
- Associate professor at the University of Polytechnique Hauts-de-France & CNRS, France (Sept. 2016 - 2022). Research based on AI-based approaches for software evolution, migration and maintenance (incl. code repair).
- Researcher at KTH, Sweden (part-time) (Jan 2021 - Dec. 2022). Research on neural network based program repair.
- Postdoc at University of Lugano, Switzerland (Jan. 2016 - Jul. 2016). Research focused on software testing.
- Postdoc at Inria & Univ. of Lille, France (Nov. 2014 - Dec. 2015). Research focuses on Automated Program Repair.
- PhD student at Inria & Univ. of Lille, France (Oct. 2011 - Oct. 2014). Research focused on bugs and fixes analysis.
- Software engineer at Baufest, Argentina. (March 2009 - Sept. 2011). Java backend developer.
- Software developer at EDSA, Argentina. (Sept. 2006 - Dec. 2007). Java backend developer.

Education

- PhD in Computer Science, 2014, University of Lille & INRIA, France.
- Degree in Software Engineering, 2008, UNICEN, Argentina.

Languages:

- Spanish, English, French.

Skills & Tools

- Agile methodology (Scrum Master certification).
- Java & Python programming.
- Software Architecture (Microservices, SOA).
- Databases (Relational, Non-relational, Vector), SQL.
- Green AI and Software sustainability expertise.
- Experiences on AI includes: Transformers, LLMs, Classification and Learning-to-ranking approaches, Hyperparameter optimisation, Code translation, LLM-based Agent systems.
- Agent-based system for software engineering.
- ML tools (PyTorch, Pandas, HuggingFace libraries).
- CI/CD (Github Actions, Jenkins, Travis).
- Deployment (Docker).
- Services (Spring Boot -Java-, FastAPI, Django -Python-).
- LLM inference (vLLM, HuggingFace accelerate).
- RAG (LangChain).
- System monitoring and visualization (Prometheus, Grafana).
- High Performance Computing (HPC).

Achievements

- Supervision of three PhD theses in Computer Science (defended in 2021, 2023 and 2024).
- Scientific articles published at top software engineering journals and conferences. # citations: 5178 ([Google scholar](#)).
- Research transferred to industry (e.g., SAP [[8](#), [9](#), [10](#)]).
- I have created and developed several open-source projects including the program repair framework [Astor](#) (208 stars), [Coming](#) (92 stars), [gumtree-spoon-ast-diff](#) (152 stars), [Flacoco](#) (27 stats), [RTj](#). Contributions to [GumTree](#) (also author of the tool's [scientific articles](#)) and Facebook/Meta CodeLlama: new features ([PR-143](#)) and bug-fixings ([PR-168](#)).
- Associate Editor of Automated Software Engineering Journal [[source](#)].

Awards and recognitions

- Second place on the ranking of ‘Most Impactful Early-stage Software Engineering Researchers’ and Nineteenth place on the ranking of ‘Most Active Early-stage Software Engineering Researchers in Top-Quality journals’ (2021) [[source](#)]
- Most Influential Paper in ASE conference: Fine-grained and accurate source code differencing (2024) [[source](#)].
- HACKBCN - AI edition (Barcelona). “Best developer solution” award (2024) [[source](#)].