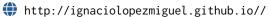
Ignacio David Lopez Miguel

ignacio.lopez@tuwien.ac.at









Formal Verification Engineer, CERN	Geneva, Switzerland	
- Development and maintenance of the tool PLCverif to formally verify PLC programs.		
- Optimization of model-checking algorithms.		
Model Validation Specialist, Deutsche Bank - Validation of machine-learning models for credit scoring, incluse assumption validation, sensitivity testing, robustness checks, and bit - Validation of models for credit scoring of enterprises based on nate. - Participation in Data Science competitions.	ias assessment	
Quantitative Consultant, Management Solutions - Development of supervised and unsupervised machine-learning machine-learning machine and development of VBA-based prototypes to automate prototypes.		
Research Engineer, Ifak e.V - Analysis of empirical data to characterize fluids via acoustic wave	Magdeburg, Germany S.	
LEGO Robotics Teacher, San Jose School	Valladolid, Spain	
	 Development and maintenance of the tool PLCverif to formally very continuous of model-checking algorithms. Model Validation Specialist, Deutsche Bank From Validation of machine-learning models for credit scoring, include assumption validation, sensitivity testing, robustness checks, and bignored by Validation of models for credit scoring of enterprises based on nature Participation in Data Science competitions. Quantitative Consultant, Management Solutions Mades Development of supervised and unsupervised machine-learning in Design and development of VBA-based prototypes to automate processing of empirical data to characterize fluids via acoustic wave 	

Education

2022 – present	 Ph.D. Logic in Computer Science, TU Wien Explanation of black-box machine-learning models via rule learning. Rule-guided deep reinforcement learning (neuro-symbolic AI). 	Vienna, Austria
2024 – 2024	 Visiting researcher, NII Logic reasoning with answer set programming. Ethical AI applied to autonomous driving cars, including reasoning about 	Tokyo, Japan
2019 – 2021	 M.Sc. Artificial Intelligence Research, UIMP GPA: 9.5/10 Including a course on deep learning applied to computer vision. 	Spain
2016 – present	B.Sc. Mathematics , National Univ. of Distance Education GPA: 8.7/10 - Including courses on algebra, probability, and optimization.	Spain
2015 – 2017	M.Sc. Business Consulting, ICADE Business School GPA: 8.4/10 Thesis title: Machine Learning Applied to Credit Scoring.	Madrid, Spain
2011 – 2015	■ B.Sc. Ind. Electronics and Automation Eng., UVa GPA: 8.7/10 - Including a course on classical computer vision.	Valladolid, Spain

Selected Research Publications

- **Lopez-Miguel, I. D.**, Adiego, F. et al. (2025). Formal Verification of PLCs as a Service: A CERN-GSI Safety-Critical Case Study. In 17th NASA Formal Methods Symposium.
- Tappler, M., **Lopez-Miguel, I. D.** et al. (2025). Rule-Guided Reinforcement Learning Policy Evaluation and Improvement (under review). In 34th International Joint Conference on Artificial Intelligence.
- Soldà, D., **Lopez-Miguel, I. D.** et al. (2023). Progression for Monitoring in Temporal ASP. In *26th European Conference on Artificial Intelligence*.
- **Lopez-Miguel, I. D.** et al. (2023). Verification of neural networks meets PLC code: An LHC cooling tower control system at CERN. In *24th Int. Conf. on Engineering Applications of Neural Networks*.

- Ádám, Z., **Lopez-Miguel, I. D.** et al. (2023). From Natural Language Requirements to the Verification of PLCs: Integrating FRET into PLCverif. In 15th NASA Formal Methods Symposium.
- Lopez-Miguel, I. D. (2023). Stop at red? Engineering meets ethics. In Int. Conf. on Computer Ethics.

Skills

Languages Spanish (mother tongue), English (fluent), German (intermediate), French (basic).

Coding Python, Java, C, R, sql, vba

References

Borja Fernandez Adiego, Automation Engineer at CERN

Juan A. Rodriguez-Aguilar, Research Professor at Artificial Intelligence Research Institute (IIIA-CSIC)
Jean-Charles Tournier, Software Engineer at CERN and Lecturer at EPFL

Ezio Bartocci, Full Professor at TU Wien