

Part A. PERSONAL INFORMATION

CV date	15/4/2026
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First and Family name	Montserrat Hermo Huguet		
Social Security, Passport, ID number			
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0001-5627-501X	
	SCOPUS Author ID (*)	6507084998	
	WoS Researcher ID (*)	GAF-1774-2022	

A.1. Current position

Name of University/Institution	University of the Basque Country (UPV/EHU)		
Department	Computer Systems and Languages		
Address and Country			
Phone number			
Current position	Titular de Universidad	From	15/07/2000
Key words	Logic, Automated Reasoning, Model Checking, Complexity Theory, Computational Learning Theory		

A.2. Education

PhD, Licensed, Graduate	University	Year
Degree in Mathematics	Universidad Complutense de Madrid	1988
PhD in Computer Sciences	UPV/EHU	1996

Part B. CV SUMMARY

This summary focuses on the lines of research in which I am involved: Logic, Automated Reasoning, Model Checking, and Computational Learning Theory.

Computational Learning Theory is closely linked to Artificial Intelligence. Its aim is to learn, more or less automatically, a model from sample data. In this area we have developed several learning algorithms. The latest one resulted in the publication *Exact Learning: On the Boundary between Horn and CNF*, in ACM Trans. Comput. Theory 12(1): 4:1-4:25 (2020). This work was carried out in collaboration with Ana Ozaki, University of Bergen.

I belong to the UPV/EHU research group called LoRea (<https://www.ehu.eus/en/web/lorea/>). We have made contributions in Temporal Logic (TL) such as a sequences calculus and a method of tableaux that facilitate automatic reasoning in TL. One of them was recently published in the J. Log. Algebraic Methods Program, in 2023, in an article entitled *Dual Systems of Tableaux and Sequents for PLTLTableaux and sequent calculi for CTL and ECTL: Satisfiability test with certifying proofs and models*. In this area, we work with Alexander Bolotov from the University of Westminster and in collaboration with the Ikerlan Technology Centre (<https://www.ikerlan.es/>).

TL has become an essential element for system specification and verification. The Model Checking problem analyzes whether a given system specification satisfies a

specific temporal property of the system, providing either a positive answer or a counterexample. At the same time, it is often useful to have an explicit proof that certifies the satisfiability of the property (certificates). As an example, we have the paper *Verified Model Checking for Conjunctive Positive Logic*. SN Computer Science 2(5): 344 (2021). In this work, we automatically produce certificates invoking Dafny, which is used as a theorem prover. The Lorea group has considerable experience in the use of automated theorem provers.

Lately, I have been interested in the problem of TL realizability and synthesis. This problem is often posed as a two-player game between a system and its environment. Each player has a disjoint set of variables, and the goal is to synthesise a strategy so that the system's variables guarantee a given TL specification, regardless of how the environment sets its variables. We recently started collaborating with César Sánchez from IMDEA institute (<http://www.imdea.org/>) and the company Developair (<https://www.developair.tech/>) due to their interest in this problem. As a result of this collaboration we presented the paper *Tableaux for Realizability of Safety Specifications*, at the Formal Methods conference (2023).

Part C. RELEVANT MERITS (from 2026 to 2015)

C.1. Publications

Javier Álvarez, Alejandro Pérez, Montserrat Hermo, Jose A. Pascual. *Massive Unification*. Journal of Logic and Algebraic Methods in Programming. Submitted on January 10, 2026.

Ander Alonso, Montserrat Hermo, Josu Oca. *Towards an efficient implementation of a tableau method for reactive safety specifications*. Journal of Logic and Algebraic Methods in Programming. Vol 142: 101003 (2025). <https://doi.org/10.1016/j.jlamp.2024.101003>

Noel Arteche and Montserrat Hermo. *Towards the exact complexity of realizability for Safety LTL*. Journal of Logic and Algebraic Methods in Programming. Vol 141: 101002 (2024). <https://doi.org/10.1016/j.jlamp.2024.101002>

Montserrat Hermo, Josu Oca and Alexander Bolotov. *A Sound and Complete Algorithm to Identify Independent Variables in a Reactive System Specification*. Accepted in Design, Automation and Test in Europe Conference DATE 2024. <https://ieeexplore.ieee.org/document/10546630>

Alex Abuin, Alexander Bolotov, Montserrat Hermo, and Paqui Lucio. *Tableaux and sequent calculi for CTL and ECTL: Satisfiability test with certifying proofs and models*. Journal of Logical and Algebraic Methods in Programming, Vol. 130 (2023). <https://doi.org/10.1016/j.jlamp.2022.100828>

Montserrat Hermo, Paqui Lucio, and César Sánchez. *Tableaux for Realizability of Safety Specifications*. International Symposium on Formal Methods FM 2023. Lecture Notes in Computer Science 495-513 (2023). https://link.springer.com/chapter/10.1007/978-3-031-27481-7_28



Alex Abuin, Unai Díaz-de-Cerio, Montserrat Hermo, and Paqui Lucio. *Verified Model Checking for Conjunctive Positive Logic*. SN Computer Science, Vol. 2, Núm. 5:344 (2021). <https://link.springer.com/article/10.1007/s42979-020-00417-3>

Montserrat Hermo and Ana Ozaki. *Exact Learning: On the Boundary between Horn and CNF*. ACM Transactions on Computation Theory 12(1): 4: 1-25 (2020). <https://doi.org/10.1145/3369930>

Alexander Bolotov, Montserrat Hermo, and Paqui Lucio. *Branching-time logic ECTL# and its tree-style one-pass tableau: Extending fairness expressibility of ECTL+*. Theoretical Computer Science, Vol. 813: 428-451 (2020). <https://doi.org/10.1016/j.tcs.2020.02.015>

Alex Abuin, Alexander Bolotov, Unai de Cerio, Montserrat Hermo, and Paqui Lucio. *One-pass context-based tableaux systems for CTL and ECTL*. International Symposium on Temporal Representation and Reasoning TIME 2020. Leibniz International Proceedings in Informatics, LIPIcs, Vol. 178: 1-14 (2020). <https://doi.org/10.4230/LIPIcs.TIME.2020.14>

Javier Álvarez, Montserrat Hermo, Paqui Lucio, and German Rigau. *Automatic white-box testing of first-order logic ontologies*. Journal of Logic and Computation 29(5): 723-751 (2019). <https://doi.org/10.1093/logcom/exz001>

Alex Abuin, Alexander Bolotov, Unai de Cerio, Montserrat Hermo, and Paqui Lucio. *Towards Certified Model Checking for PLTL Using One-Pass Tableaux*. International Symposium on Temporal Representation and Reasoning TIME 2019. Leibniz International Proceedings in Informatics, LIPIcs, Vol. 147: 1-12: (2019). <https://doi.org/10.4230/LIPIcs.TIME.2019.12>

Montserrat Hermo and Ana Ozaki. *Exact learning of multivalued dependency formulas*. Theoretical Computer Science, Vol. 716: 4-14 (2018). <https://doi.org/10.1016/j.tcs.2017.11.018>

Alexander Bolotov, Montserrat Hermo, and Paqui Lucio. *Extending Fairness Expressibility of ECTL+: A Tree-Style One-Pass Tableau Approach*. International Symposium on Temporal Representation and Reasoning TIME 2018. Leibniz International Proceedings in Informatics, LIPIcs, Vol. 120: 1-22 (2018). <https://doi.org/10.4230/LIPIcs.TIME.2018.5>

Montserrat Hermo, and Ana Ozaki. *Exact Learning of Multivalued Dependencies*. International Conference on Algorithmic Learning Theory ALT 2015. Lecture Notes in Computer Science Vol. 9355: 73-88 (2015). <https://www.comp.nus.edu.sg/~fstephan/alt/alt2015/id.html>

C.2. Research projects (from 2026 to 2015)

Participation as IP in the following project

Title: MOTION: Modelos y Técnicas para el Procesamiento de Información a Gran Escala.

Funded by: MINECO (ref. PID2020-112581GB-C22)

Duration: 2020 – 2026



Grant: 119.000 €
PI: Montserrat Hermo
Number of researchers involved: 5

Title: LoRea: Logic and Reasoning
Funded by: UPV/EHU (ref. GIU21/044)
Duration: 2022 – 2025
Grant: 29.204 €
PI: Montserrat Hermo
Number of researchers involved: 3

Title: Lenguajes y Sistemas Informáticos
Funded by: UPV/EHU (ref. DEP20/22)
Duration: 2020 – 2023
Grant: 12.714 €
PI: Montserrat Hermo

Participation as a researcher in the following projects

Title: Las GPU H100 permitirán acelerar significativamente el entrenando de redes neuronales profundas
Funded by: UPV/EHU (ref. INF25/18)
Duration: 2025 - 2025
Grant: 31.486€
PI: Jose A. Pascual
Number of researchers involved: 19

Title: GRAMM Modelos y Métodos Basados en Grafos para la Computación en Gran Escala
Funded by: MINECO (ref. TIN2017-86727-C2-2-R)
Duration: 2018 - 2021
Grant: 78.800 €
PI: Paqui Lucio
Number of researchers involved: 4

Title: COMMAS Modelos y Métodos Computacionales para Datos Masivos Estructurados
Funded by: MINECO (ref. TIN2013-46181-C2-2-R)
Duration: 01/01/2014 - 31/12/2017
Grant: 70.201 €
PI: Paqui Lucio
Number of researchers involved: 6

Others

Four six-year research periods that include 1990/1995, 1996/2001, 2002/2009, and 2010-2023. The National Commission for the Evaluation of Research Activity granted the last six-year term in May 2023.



Research stay at the University of Westminster (London) from 08/29/2014 to 01/21/2015.

Director of the Thesis entitled *Certificates for decision problems in temporal logic using context-based tableaux and sequential calculus*. Alex Abuin Yepes UPV/EHU (2023).