Francisco Carlos Trucco Dalmas

Curriculum Vitae

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Profile

Formal methods researcher in the final year of my PhD in Computer Science at the University of Groningen, specializing in proof theory for logics that reason about program correctness via labelled transition systems. My doctoral work on Propositional Dynamic Logic contributed to resolving a forty-year-old open problem, recognized with a Best Student Paper Award at TABLEAUX 2025. I am currently transitioning into formal methods for hardware verification. I am broadly interested in formal analysis techniques for establishing correctness of cryptographic protocols and complex hardware designs.

Work Experience

Mar 2022 – Present **PhD Candidate**, *University of Groningen*, Fundamental Computing Group.
My work centers on Propositional Dynamic Logic, a logic interpreted over labelled transition systems. As part of this work, we resolved a long-standing open problem by proving that Propositional Dynamic Logic satisfies the Craig Interpolation Property. This result entails that specifications of certain properties of labelled transition systems admit simplification via modularity.

Feb 2021 – Jan 2022 **Researcher**, *Max Planck Institute for Security and Privacy*.
Worked on formally proving correctness of a compiler of a domain-specific languages for cross-chain smart contracts enabling secure interactions across Bitcoin-like cryptocurrencies.

Mar 2020 – Jan 2021 **Research Assistant**, *TU Wien*, Institute of Logic and Computation.
Worked on the formal modeling and verification of browser security mechanisms. Built abstract models of interacting system components and worked on verifying security properties using proof assistants and SMT-based tools, including *Rocq (Coq)*, *Tamarin*, and *EasyCrypt*.

Oct 2019 – Feb 2020 **Machine Learning Engineer**, *DeepvisionAI*.
Applied machine learning to computer vision problems, delivering client-driven solutions integrated into real world systems.

Education

Jan 2014 – Dec 2019 **Licenciatura en Ciencias de la Computación**, *Universidad Nacional de Córdoba*, Facultad de Matemática, Astronomía, Física y Computación.
Equivalent to Bachelor + Master of Computer Science
GPA: 9.9 out of 10
Coursework included formal methods, programming language theory, software engineering.

Dec 2019 **Master Thesis**, *Formal Verification of Dynamic Modal Logics*, Advisors: Beta Ziliani & Raúl Fervari.
In this thesis, I used the Rocq (Coq) proof assistant to formally verify correctness and equivalence properties for a family of modal logics that reason about operations on labeled transition systems.

Jan 2014 – Dec 2017 **Analista en Computación**, *Universidad Nacional de Córdoba*, Facultad de Matemática, Astronomía, Física y Computación.
Equivalent to Bachelor of Computer Science. GPA: 9.8 out of 10

Awards

Jan 2025 Best Student Paper Award at TABLEAUX 2025 for Interpolation for Converse Propositional Dynamic Logic. *This award reflects the relevance and quality of my research contributions on logics for reasoning about properties of labelled transition systems.*

Teaching Experience

Mar 2022 – Present **Teaching Assistant**, *MSc Course: Modal Logic and Proof Theory*, University of Groningen.
In this role, I developed presentation and interpersonal skills while facilitating learning about logics for reasoning about labelled transition systems.

Publications

2025 Kloibhofer, Trucco Dalmas, Venema *Interpolation for Converse Propositional Dynamic Logic*. International Conference on Automated Reasoning with Analytic Tableaux and Related Methods (TABLEAUX 2025), Springer.

2025 M. Borzechowski, M. Gattinger, H. Hvid Hansen, R. Ramanayake, V. Trucco Dalmas, Y. Venema. *Propositional Dynamic Logic has Craig Interpolation: a tableau-based proof*. arXiv preprint arXiv:2503.13276.

2019 R. Fervari, F. Trucco, B. Ziliani. *Mechanizing Bisimulation Theorems for Relation-Changing Logics in Coq*. DALI 2019.

2018 J. M. Scavuzzo, F. Trucco, M. Espinosa, C. B. Tauro, M. Abril, C. M. Scavuzzo, A. C. Frery. *Modeling Dengue vector population using remotely sensed data and machine learning*. Acta Tropica, Elsevier.

Programming Competitions

2015–2016 ACM ICPC Latin America Regional.

2014–2017 Torneo Argentino de Programación (ACM ICPC Argentina First Round).

Other

Nationalities Spanish, Argentinian.

Hobbies Storytelling, powerlifting, cooking, visiting museums, biking, travelling, journalling, and reading psychology, philosophy, ethics, and science fiction.

Skills

Languages Spanish (native), English (fluent), Dutch (A2)

Tools Haskell, Rocq, Lean, Tamarin, EasyCrypt, Z3, LaTeX, Linux, Python, Git, C++