

Curriculum Vitae

Maximiliano Cristiá

cristia@cifasis-conicet.gov.ar

Estudios universitarios y de posgrado

LICENCIADO EN MATEMÁTICA – Universidad Nacional de Rosario – Argentina.

MAGÍSTER EN INFORMÁTICA – Universidad de la República – Uruguay.

DOCTOR EN INFORMÁTICA – Aix-Marseille Université – Francia.

Actividad profesional

PROFESOR TITULAR a cargo de materias de Ingeniería de Software y Seguridad Informática en la Universidad Nacional de Rosario (Argentina). Docente universitario desde 1986.

INVESTIGADOR del Centro Internacional Franco-Argentino de Ciencias de la Información y de Sistemas ([CIFASIS](#)) dependiente de CONICET y UNR.

INVESTIGADOR CATEGORÍA 2 en el Programa de Incentivos a Docentes-Investigadores.

DESARROLLADOR, junto a [G. Rossi](#), del lenguaje de programación y *satisfiability solver* [{log}\(setlog\)](#).

PROFESOR INVITADO en la Universidad de Parma (Italia) en 2019 y 2020.

CREADOR DE UN [CANAL YOUTUBE para la divulgación de la Ingeniería de Software](#). Cada vídeo desarrolla un tema técnico relacionado con la Ingeniería de Software. El primer vídeo fue subido el 1/4/2017; en octubre de 2021 los números del canal son los siguientes:

+9.600 suscriptores +25.000 horas de reproducción +250.000 reproducciones 72 vídeos

OTRAS ACTIVIDADES ACADÉMICAS: jurado de tesis de grado y postgrado, de concursos docentes, miembro de comité de programa de congresos internacionales, revisor técnico para revistas indexadas internacionales, evaluador de programas de investigación.

Áreas de interés

Resolución de restricciones conjuntistas, verificación de software, testing basado en especificaciones formales, notaciones formales para describir software, desarrollo de herramientas para asistir y semi-automatizar el desarrollo de sistemas de software, diseño y arquitectura de software e ingeniería de requerimientos.

Publicaciones

En revistas con referato

- [1] Maximiliano Cristiá, Andrea Fois, and Gianfranco Rossi. Declarative programming with intensional sets in Java using JSetL. *The Computer Journal*, 02 2022. ISSN 0010-4620. doi: 10.1093/comjnl/bxab195. URL <https://doi.org/10.1093/comjnl/bxab195>. bxab195.
- [2] Maximiliano Cristiá and Gianfranco Rossi. $\{\log\}$: Set formulas as programs. *Rend. Ist. Mat. Univ. Trieste*, 53:1–24, 2021. ISSN 0049-4704. doi: 10.13137/2464-8728/33309. URL <https://rendiconti.dmi.units.it/volumi/fa/023.pdf>.
- [3] Gustavo Betarte, Maximiliano Cristiá, Carlos Luna, Adrián Silveira, and Dante Zanarini. Set-based models for cryptocurrency software. *CLEI Electron. J.*, 24(3), 2021. doi: 10.19153/cleiej.24.3.0. URL <https://doi.org/10.19153/cleiej.24.3.0>.
- [4] Maximiliano Cristiá and Gianfranco Rossi. Integrating cardinality constraints into constraint logic programming with sets. *Theory and Practice of Logic Programming*, pages 1–33, 2021. URL <https://doi.org/10.1017/S1471068421000521>.
- [5] Adrián Silveira, Gustavo Betarte, Maximiliano Cristiá, and Carlos Luna. A formal analysis of the MibleWimble cryptocurrency protocol. *Sensors*, 21(17):5951, 2021. doi: 10.3390/s21175951. URL <https://doi.org/10.3390/s21175951>.
- [6] Maximiliano Cristiá and Gianfranco Rossi. An automatically verified prototype of the Tokeneer ID station specification. *J. Autom. Reason.*, 65(8):1125–1151, 2021. doi: 10.1007/s10817-021-09602-2. URL <https://doi.org/10.1007/s10817-021-09602-2>.
- [7] Maximiliano Cristiá and Gianfranco Rossi. Automated reasoning with restricted intensional sets. *J. Autom. Reason.*, 65(6):809–890, 2021. doi: 10.1007/s10817-021-09589-w. URL <https://doi.org/10.1007/s10817-021-09589-w>.
- [8] Maximiliano Cristiá, Ricardo D Katz, and Gianfranco Rossi. Proof Automation in the Theory of Finite Sets and Finite Set Relation Algebra. *The Computer Journal*, 05 2021. ISSN 0010-4620. doi: 10.1093/comjnl/bxab030. URL <https://doi.org/10.1093/comjnl/bxab030>. bxab030.
- [9] Maximiliano Cristiá and Gianfranco Rossi. Automated proof of Bell-LaPadula security properties. *J. Autom. Reason.*, 65(4):463–478, 2021. doi: 10.1007/s10817-020-09577-6. URL <https://doi.org/10.1007/s10817-020-09577-6>.
- [10] Maximiliano Cristiá and Gianfranco Rossi. Solving quantifier-free first-order constraints over finite sets and binary relations. *J. Autom. Reason.*, 64(2):295–330, 2020. doi: 10.1007/s10817-019-09520-4. URL <https://doi.org/10.1007/s10817-019-09520-4>.
- [11] Maximiliano Cristiá, Diego A. Hollmann, and Claudia S. Frydman. A multi-target compiler for CML-DEVS. *Simulation*, 95(1), 2019. doi: 10.1177/0037549718765080. URL <https://doi.org/10.1177/0037549718765080>.
- [12] Carlos Luna, Gustavo Betarte, Juan Diego Campo, Camila Sanz, Maximiliano Cristiá, and Felipe Gorostiaga. A formal approach for the verification of the permission-based security model of Android. *CLEI Electron. J.*, 21(2), 2018. doi: 10.19153/cleiej.21.2.3. URL <https://doi.org/10.19153/cleiej.21.2.3>.

- [13] Maximiliano Cristiá, Joaquín Cuenca, and Claudia S. Frydman. Coverage criteria for set-based specifications. *RITA*, 22(2):316–335, 2015. URL <http://www.seer.ufrgs.br/index.php/rita/article/view/RITA-VOL22-NR2-316>.
- [14] Maximiliano Cristiá, Gianfranco Rossi, and Claudia S. Frydman. Adding partial functions to constraint logic programming with sets. *Theory Pract. Log. Program.*, 15(4-5):651–665, 2015. doi: 10.1017/S1471068415000290. URL <https://doi.org/10.1017/S1471068415000290>.
- [15] Diego A. Hollmann, Maximiliano Cristiá, and Claudia S. Frydman. CML-DEVS: A specification language for DEVS conceptual models. *Simul. Model. Pract. Theory*, 57:100–117, 2015. doi: 10.1016/j.simpat.2015.06.007. URL <https://doi.org/10.1016/j.simpat.2015.06.007>.
- [16] Maximiliano Cristiá and Claudia S. Frydman. Formal and semi-formal verification of a web voting system. *Int. J. Web Inf. Syst.*, 11(2):183–204, 2015. doi: 10.1108/IJWIS-11-2014-0042. URL <https://doi.org/10.1108/IJWIS-11-2014-0042>.
- [17] Diego A. Hollmann, Maximiliano Cristiá, and Claudia S. Frydman. A family of simulation criteria to guide DEVS models validation rigorously, systematically and semi-automatically. *Simul. Model. Pract. Theory*, 49:1–26, 2014. doi: 10.1016/j.simpat.2014.07.003. URL <https://doi.org/10.1016/j.simpat.2014.07.003>.
- [18] Maximiliano Cristiá, Pablo Albertengo, Claudia S. Frydman, Brian Plüss, and Pablo Rodríguez Monetti. Tool support for the Test Template Framework. *Softw. Test., Verif. Reliab.*, 24(1):3–37, 2014.
- [19] Alejandro Sartorio and Maximiliano Cristiá. First approximation to DHD design and implementation. *CLEI Electron. J.*, 12(3), 2009.

Capítulos de libros

- [1] Norbert Giambiasi, Diego Llarrull, and Maximiliano Cristiá. Discrete-event modeling and simulation: Theory and applications. chapter System State Identification Using DEVS, pages 85–108. Taylor & Francis, 2010.

En reuniones científicas internacionales con referato

- [1] Gustavo Betarte, Maximiliano Cristiá, Carlos Daniel Luna, Adrián Silveira, and Dante Zanarini. Towards a formally verified implementation of the MimbleWimble cryptocurrency protocol. In Jianying Zhou, Mauro Conti, Chuadhry Mujeeb Ahmed, Man Ho Au, Lejla Batina, Zhou Li, Jingqiang Lin, Eleonora Losiouk, Bo Luo, Suryadipta Majumdar, Weizhi Meng, Martín Ochoa, Stjepan Picek, Georgios Portokalidis, Cong Wang, and Kehuan Zhang, editors, *Applied Cryptography and Network Security Workshops - ACNS 2020 Satellite Workshops, AIBlock, AIHWS, AIoTS, Cloud S&P, SCI, SecMT, and SiMLA, Rome, Italy, October 19-22, 2020, Proceedings*, volume 12418 of *Lecture Notes in Computer Science*, pages 3–23. Springer, 2020.

- [2] Maximiliano Cristiá and Gianfranco Rossi. A set solver for finite set relation algebra. In Jules Desharnais, Walter Guttmann, and Stef Joosten, editors, *Relational and Algebraic Methods in Computer Science - 17th International Conference, RAMiCS 2018, Groningen, The Netherlands, October 29 - November 1, 2018, Proceedings*, volume 11194 of *Lecture Notes in Computer Science*, pages 333–349. Springer, 2018.
- [3] Maximiliano Cristiá, David Delahaye, and Catherine Dubois, editors. *Proceedings of the 3rd International Workshop on Sets and Tools co-located with the 6th International ABZ Conference, SETS@ABZ 2018, Southampton, UK, June 5, 2018*, volume 2199 of *CEUR Workshop Proceedings*. CEUR-WS.org, 2018.
- [4] Maximiliano Cristiá and Gianfranco Rossi. Programming in Java with restricted intensional sets. In Cristiá et al. (3), pages 17–31.
- [5] Maximiliano Cristiá, Gianfranco Rossi, and Claudia Frydman. Using a set constraint solver for program verification. In *Proceedings 4th Workshop on Horn Clauses for Verification and Synthesis, HCVS at CADE 2017, Gothenburg, Sweden, 7th August 2017.*, 2017.
- [6] Maximiliano Cristiá and Gianfranco Rossi. A decision procedure for restricted intensional sets. In Leonardo de Moura, editor, *Automated Deduction - CADE 26 - 26th International Conference on Automated Deduction, Gothenburg, Sweden, August 6-11, 2017, Proceedings*, volume 10395 of *Lecture Notes in Computer Science*, pages 185–201. Springer, 2017.
- [7] Maximiliano Cristiá and Gianfranco Rossi. A decision procedure for sets, binary relations and partial functions. In Swarat Chaudhuri and Azadeh Farzan, editors, *Computer Aided Verification - 28th International Conference, CAV 2016, Toronto, ON, Canada, July 17-23, 2016, Proceedings, Part I*, volume 9779 of *Lecture Notes in Computer Science*, pages 179–198. Springer, 2016.
- [8] Maximiliano Cristiá, Gianfranco Rossi, and Claudia Frydman. First steps in integrating $\{log\}$ into Z/EVES. In *2nd International Workshop about Sets and Tools (SETS 2015)*, 2015.
- [9] Maximiliano Cristiá, Gianfranco Rossi, and Claudia S. Frydman. Helping programmers to adopt set-based specifications. In *Proceedings of the First Workshop on Formal Methods in Software Engineering Education and Training, FMSEE&T 2015, co-located with 20th International Symposium on Formal Methods (FM 2015), Oslo, Norway, June 23, 2015.*, pages 3–10, 2015.
- [10] Maximiliano Cristiá. Why, how and what should be taught about formal methods? In *Proceedings of the First Workshop on Formal Methods in Software Engineering Education and Training, FMSEE&T 2015, co-located with 20th International Symposium on Formal Methods (FM 2015), Oslo, Norway, June 23, 2015.*, pages 1–2, 2015.
- [11] Maximiliano Cristiá and Claudia S. Frydman. A functional verification of a web voting system. In Beniamino Murgante, Sanjay Misra, Ana Maria A. C. Rocha, Carmelo Maria Torre, Jorge Gustavo Rocha, Maria Irene Falcão, David Taniar, Bernady O. Apduhan, and Osvaldo Gervasi, editors, *ICCSA (1)*, volume 8579 of *Lecture Notes in Computer Science*, pages 640–655. Springer, 2014.
- [12] Maximiliano Cristiá and Gianfranco Rossi. Rapid prototyping and animation of Z specifications using $\{log\}$. In *1st International Workshop about Sets and Tools (SETS 2014)*, pages 4–18, 2014. Informal proceedings: <http://sets2014.cnam.fr/papers/sets2014.pdf>.

- [13] Maximiliano Cristiá, Joaquín Mesuro, and Claudia S. Frydman. Integration testing in the Test Template Framework. In Stefania Gnesi and Arend Rensink, editors, *FASE*, volume 8411 of *Lecture Notes in Computer Science*, pages 400–414. Springer, 2014.
- [14] Maximiliano Cristiá, Gianfranco Rossi, and Claudia S. Frydman. {log} as a test case generator for the Test Template Framework. In Robert M. Hierons, Mercedes G. Merayo, and Mario Bravetti, editors, *SEFM*, volume 8137 of *Lecture Notes in Computer Science*, pages 229–243. Springer, 2013.
- [15] Maximiliano Cristiá and Claudia S. Frydman. Extending the Test Template Framework to deal with axiomatic descriptions, quantifiers and set comprehensions. In John Derrick, John A. Fitzgerald, Stefania Gnesi, Sarfraz Khurshid, Michael Leuschel, Steve Reeves, and Elvinia Riccobene, editors, *ABZ*, volume 7316 of *Lecture Notes in Computer Science*, pages 280–293. Springer, 2012.
- [16] Diego Hollmann, Maximiliano Cristiá, and Claudia S. Frydman. Adapting model-based testing techniques to DEVS models validation. In Gabriel A. Wainer and Pieter J. Mosterman, editors, *SpringSim (TMS-DEVS)*, page 6. SCS/ACM, 2012.
- [17] Maximiliano Cristiá and Claudia S. Frydman. Applying SMT solvers to the Test Template Framework. In Alexander K. Petrenko and Holger Schlingloff, editors, *MBT*, volume 80 of *EPTCS*, pages 28–42, 2012.
- [18] Maximiliano Cristiá, Diego Hollmann, Pablo Albertengo, Claudia S. Frydman, and Pablo Rodríguez Monetti. A language for test case refinement in the Test Template Framework. In Shengchao Qin and Zongyan Qiu, editors, *ICFEM*, volume 6991 of *Lecture Notes in Computer Science*, pages 601–616. Springer, 2011.
- [19] Maximiliano Cristiá, Pablo Albertengo, Claudia S. Frydman, Brian Plüss, and Pablo Rodríguez Monetti. Applying the Test Template Framework to aerospace software. In James L. Rash and Christopher Rouff, editors, *SEW*, pages 128–137. IEEE Computer Society, 2011.
- [20] Maximiliano Cristiá, Pablo Albertengo, and Pablo Rodríguez Monetti. Fastest: a model-based testing tool for the Z notation. In Franco Mazzanti and Gianluca Trentani, editors, *PTD-SEFM*, pages 3–8. Consiglio Nazionale della Ricerche, Pisa, Italy, 2010.
- [21] Maximiliano Cristiá, Pablo Albertengo, and Pablo Rodríguez Monetti. Pruning testing trees in the Test Template Framework by detecting mathematical contradictions. In José Luis Fiadeiro and Stefania Gnesi, editors, *SEFM*, pages 268–277. IEEE Computer Society, 2010.
- [22] Maximiliano Cristiá and Brian Plüss. Generating natural language descriptions of Z test cases. In John D. Kelleher, Brian Mac Namee, Ielka van der Sluis, Anja Belz, Albert Gatt, and Alexander Koller, editors, *INLG*, pages 173–177. The Association for Computer Linguistics, 2010.
- [23] Maximiliano Cristiá and Pablo Rodríguez Monetti. Implementing and applying the Stocks-Carrington framework for model-based testing. In Karin Breitman and Ana Cavalcanti, editors, *ICFEM*, volume 5885 of *Lecture Notes in Computer Science*, pages 167–185. Springer, 2009.
- [24] Maximiliano Cristiá. Formalizing the semantics of modular DEVS models with temporal logic. In *7ème Conférence on Modélisation, Optimisation et Simulation des Systèmes MOSIM 08*, 2008.

- [25] Maximiliano Cristiá. A TLA+ encoding of DEVS models. In *International Modeling and Simulation Multiconference*, pages 17–22, 2007.
- [26] Maximiliano Cristiá. Teaching formal methods in a third world country: what, why and how. In *Proceedings of the 2006 conference on Teaching Formal Methods: practice and experience*, TFM'06, pages 10–10, Swinton, UK, UK, 2006. British Computer Society.

En reuniones científicas latinoamericanas con referato

- [1] Ariel Gonzalez, Maximiliano Cristiá, and Carlos Luna. Mutants for metric temporal logic formulas. In Beatriz Marín, Isabel Sofia Brito, Miguel Katrib Mora, Andreia Malucelli, Estefanía Serral, Giovanni Giachetti, João Araújo, Miguel Goulão, Claudia P. Ayala, Marcela Genero, and Vitor Silva Souza, editors, *Proceedings of the XXII Iberoamerican Conference on Software Engineering, CibSE 2019, La Habana, Cuba, April 22-26, 2019*, pages 349–362. Curran Associates, 2019.
- [2] Gustavo Betarte, Juan Campo, Maximiliano Cristiá, Felipe Gorostiaga, Carlos Luna, and Camila Sanz. Towards formal model-based analysis and testing of Android's security mechanisms. In *XLIII Latin American Computing Conference, CLEI 2017, Córdoba, Argentina, September 4-8, 2017*.
- [3] Maximiliano Cristiá, Valdivino Santiago, and N.L. Vijaykumar. On comparing and complementing two MBT approaches. In *Test Workshop (LATW), 2010 11th Latin American*, pages 1–6, 2010.
- [4] Alejandro Sartorio and Maximiliano Cristiá. Primera aproximación al diseño e implementación de los DHD. In *Anales de la XXXIV Conferencia Latinoamericana de Informática*, Santa Fe, Argentina, 2008. CLEI.
- [5] Maximiliano Cristiá. Formal verification of an extension of a secure, compatible UNIX file system. In *Anales de la XXIX Conferencia Latinoamericana de Informática*, La Paz, Bolivia, 2003. CLEI.

En reuniones científicas nacionales con referato

- [1] Adrián Silveira, Gustavo Betarte, Maximiliano Cristiá, and Carlos Luna. A range proof scheme analysis for the Mumblewimble cryptocurrency protocol. In *2021 IEEE URUCON*, pages 329–333, 2021.
- [2] Ariel Gonzalez, Maximiliano Cristiá, and Carlos Luna. Error finding in real-time systems using mutants of temporal properties. In *40th International Conference of the Chilean Computer Science Society, SCCS 2021, La Serena, Chile, November 15-19, 2021*, pages 1–8. IEEE, 2021.
- [3] Maximiliano Cristiá, Joaquín Cuenca, and Claudia Frydman. Coverage criteria for logical specifications. In *Proceedings of the 8th Brazilian Workshop on Systematic and Automated Software Testing (SAST'14)*, pages 11–20, Maceió, Brazil, 2014.

- [4] Maximiliano Cristiá and Pablo Mata. Runtime enforcement of noninterference by duplicating processes and their memories. In *Workshop de Seguridad Informática WSEGI 2009*, Mar del Plata, Argentina, 2009. SADIO.
- [5] Maximiliano Cristiá, Gisela Giusti, and Felipe Manzano. The implementation of Lisex, a MLS linux prototype. In *Proceedings of the 6th ASSE (34th JAIIO)*, Rosario, Argentina, 2005. SADIO.