

Curriculum Vitæ

Carlos E. Budde



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Personal information	Key performance indicators
Full name: Carlos Esteban Budde	Publications (p. 5): 35
Birth date: January 15 th , 1988	Citations (Scholar / Scopus): 509 / 239
Homepage: webapps.unitn.it/du/en/Persona/PER0235360	H-index (Scholar / Scopus): 13 / 9
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Tel: +39 046 128 2098	Project funds raised: €237964

Employment

Research assistant professor (RTDa) in the [Dept. of CS and Engineering](#). **2021**–today
[University of Trento](#) in Trento, Italy.
Manager: [Prof. Fabio Massacci](#).

Post-doctoral fellow (researcher) in the [Formal Methods & Tools group](#), **2017**–**2021**
including collaboration with Maintenance-devel. Dept. of the [Dutch Railways](#).
[University of Twente](#) in Enschede, The Netherlands.
Manager: [Prof. Mariëlle Stoelinga](#).

Education

PhD in Computer Science, National University of Córdoba ([UNC](#)), AR **2012**–**2017**
(second largest university in Argentina; [top 30 in Latin America](#)).
Thesis: [Automation of Importance Splitting Techniques for Rare Event Simulation](#).
Supervisor: [Prof. Pedro R. D'Argenio](#) (UNC, Argentina).
Co-supervisor: [Prof. Holger Hermanns](#) (Uni. Saarland, Germany).

MSc in Computer Science, UNC. **2010**–**2012**
Final project: [Fully measurable non-determinism in continuous probabilistic processes](#).
Grade point average: 9.74 / 10 (highest university-wide).

Interests

I work at the interface of Security, Software Engineering, and Formal Methods. I develop and apply state-of-the-art static and dynamic analyses—probabilistic and statistical model checking—on formal models of industrial case studies, to quantify their safety and security. For instance, the probabilities of rare critical failures in fault-tolerant systems, or security compromises in hardened environments, e.g. modelled as dynamic fault and attack trees.

My techniques have demonstrated good performance for general stochastic models—i.e. any distribution you like—taking minimal user input based on the model and property queries. I intend to extend the automated application of importance splitting to rare event analysis on hybrid systems, where currently only ad hoc approaches are applicable

Keywords: • Rare Event Simulation • Cyber security • RAMS • Formal Methods in Computer Science • Statistical Model Checking • Stochastic Automata • Process semantics

Publications summary

# publications (all): 35	# pub. (journal): 9	# pub. (conference): 26
# citations: 509	of which SJR Q1: 3	of which CORE A/A*: 7
H-index: 13		

Scientific projects**Principal Investigator**

- PRIN/PNRR 2022 (IT) — Local unit responsible (UniTN) 2023–2025
Smartitude: automated testing and security assessment of smart contracts
Funding: €65214, by NextGenerationEU (code: D53D23008400006)
- MSCA postdoctoral fellowship (EU) — Fellowship beneficiary 2022–2024
Projection of Security Vulnerabilities caused by Exploits in dependencies
Funding: €172750, by MSCA Horizon Europe (GA. 101067199).

Work Package Leader

- [CS4E: Cyber Security for Europe](#) 2021–2022
WP 6: Cybersecurity Skills and Capability Building
Funded by H2020, grant 830929 (EU).
- [SEQUOIA: Smart maintenance optim. via big data & fault tree analysis](#) 2017–2021
WP 2: Risk prediction via fault trees
Funded by [NWO](#), [ProRail](#), [NS](#), project nr. 15474 (NLD)

Participant

- [SUCCESS: SecUre aCCESSibility for the Internet of things.](#) 2019.03–2019.11
Funded by [CHIST-ERA](#) (EU)
- *Foundations, algorithms and tools for the development of dependable distributed systems.* 2013–2016
Funded by FONCYT-ANPCyT: PICT 2012-1823 (ARG)
- [MEALS: Mobility between Europe and Argentina applying Logics to Systems.](#) 2011–2015
Funded by 7FP, grant 295261 (EU)

Scholarships & grants

- **National PhD scholarship** 2012.04–2017.04
[CONICET](#) (top two institution for South America in the [natureINDEX](#))
- **Intel Grant to Academic Excellency** 2010.01–2011.12
Intel® Argentina Software Development Center (ASDC)

Honors & awards

- **Best short-paper award** in [QEST 2020](#) 2020
Contribution: *The Dynamic Fault Tree Rare Event Simulator.*
- **National University of Córdoba** 2012
Best grade point average of the UNC, year 2011.
- **National University of Córdoba** 2011
Premio Universidad (national “Cum Laude”, in virtue of the grade point average)

Open source software tools

- **Finite Improbability Generator (FIG)** [main-dev]: statistical model checker developed in my PhD, that implements rare event simulation via importance splitting. The importance function is *automatically and compositionally derived* from the model and properties, specified as an [Input/Output Stochastic Automata](#), or in the [JANI Specification format](#).
- **The Dynamic Fault Tree Rare Event Simulator (DFTRES)** [contributor]: statistical model checker that implements rare event simulation via importance sampling on Markovian systems. The change of measure is *automatically computed* from the model and properties, specified as a [Fault Maintenance Tree](#) in Galileo, or in the [JANI Specification format](#).
- **Bluemoon** [main-dev]: prototype developed in my PhD, which uses RESTART to simulate rare events. The importance function is *automatically derived* from the model and properties

analyzed, which must be a continuous- or discrete-time Markov chain in [PRISM](#) syntax.

All my tools are (and will be) open source:

[FIG](#), [DFTRES](#), and [Bluemoon](#) are distributed under the [GNU General Public License \(ver. 3\)](#).

Invited seminars and talks

Main events

- Lorentz workshop “[Predictive maintenance](#)” (Leiden, NL) 2023
- [Vuln4Cast Technical Colloquium—FIRST group](#) (Cardiff, UK) 2023
- [SFSCON: South Tyrol Free Software Conference](#) (Bolzano, IT) 2023
- Lorentz workshop “[Safety of Future Systems](#)” (Leiden, NL) 2018

N.B. Lorentz Workshops are the Dutch equivalent of the German Dagstuhl seminars.

Other international events and conferences

- [Intl. Conf. Tools Algo. Constr. Anal. Syst.](#) (TACAS: 2020 online; 2018 GR) • [IEEE Comp. Security Found. Symp.](#) (CSF: 2021 online) • [Intl. Symp. on Comp. Perf. Model. Meas. and Eval.](#) (Performance: 2021 IT)
- [Intl. Conf. Quant. Eval. Syst.](#) (QEST: 2021 online; 2013 AR) • [Privacy Symposium](#) (2022 IT) • [Stoch. Hybrid Syst.](#) (2019 DE) • [Eur. Conf. Progn. Health Mgmt.](#) (PHME: 2018 NL) • [Euro. Work. Perf. Eng.](#) (EPEW: 2018 FR; 2015 ES) • [Rigor. Depend. Anal. Model Check. Tech.](#) (ROCKS: 2018, 2017 DE) • [CTIT symposium “IoT is ready. What about us?”](#) (2017 NL) • [Symp. on Depend. Sw. Eng.: Theo. Tools and Appl.](#) (SETTA: 2017 CN) • [ExploRail symposium](#) (EXPLORAIL: 2017 NL) • [Intl. Conf. Perf. Eval. Method. Tools](#) (VALUETOOLS: 2016 IT) • [Intl. Conf. Concur. Theory](#) (CONCUR: 2015 ES; 2013 AR)

Contributions to scientific community

Program Chairs & Committees (14)

- Co-organiser of the [PM 2021 workshop @ QONFEST’21](#). 2021
- Artifact evaluation co-chair of [FM 2024](#). 2024
- Artifact evaluation co-chair of [QEST 2023](#). 2023
- Artifact evaluation chair of [FormaliSE 2022](#). 2022
- Artifact evaluation co-chair of [QEST 2022](#). 2022
- Publicity chair of [QEST 2020](#). 2020
- Artifact evaluation committee member of [TACAS 2020](#). 2020
- Program committee member of [SENSEI 2024 ’23 ’22](#). 2022–2024
- Program committee member of the [Commit2Data](#) paper collection. 2023
- Program committee member of [GramSec 2020](#). 2020
- Program committee member of [QEST 2020](#). 2020
- Program committee member of [FMICS 2020](#). 2020

PhD theses committees & panels

- Roberto Casaluce (PhD panel committee member) 2022.06–today
Process Mining meets Statistical Model Checking to Explain Threat Models: A Novel Approach to Model Validation and Enhancement
Università di Pisa, Italy.
- Livinus Obiora Nweke (PhD final examination committee member) 2022.05
Using formal methods for modelling CPS security.
Norwegian University of Science and Technology (NTNU), Norway.

Work visits & collaborations

Formal Methods and Tools group, University of Twente (NL) Prof. Marieke Huisman (≥ 2018) and Jaco van de Pol (≤ 2018).	2023, 2022, 2016
Software Modeling and Verification group, RWTH Aachen University (DE) Prof. Joost-Pieter Katoen.	2019, 2015
LIPN , Université Sorbonne Paris 13 (FR) Prof. Laure Petrucci.	2019, 2018
Dependable Systems & Software group, Saarland University (DE) Prof. Holger Hermanns.	2019, 2015–2013
Software Technologies Lab , University of Florence (IT) Prof. Enrico Vicario.	2018
Department of applied mathematics, Politechnic University of Madrid (ES) Prof. José Villén-Altamirano	2016

Peer reviewing**Journals** (13)

- [IEEE Transactions on Software Engineering](#) (IEEE).
- [Journal of Systems and Software](#) (Elsevier).
- [ACM Transactions on Modeling and Computer Simulation](#) (ACM).
- [Science of Computer Programming](#) (Elsevier).
- [Reliability Engineering & System Safety](#) (Elsevier).
- [International Journal on Software Tools for Technology Transfer](#) (Springer).
- [Progress in Nuclear Energy](#) (Elsevier).
- [Entropy](#) (MDPI).
- [Operations Research Perspectives](#) (Elsevier).
- [Informatics](#) (MDPI).
- [PeerJ Computer Science](#) (PeerJ).
- [Journal of Risk and Reliability](#) (Sage).
- [Cryptography](#) (MDPI).

Conferences (14)

- TACAS \times 2: *Intl. Conf. on Tools and Algorithms for the Construction and Analysis of Systems* (papers & artifacts). 2021,'20
- ICCPS: *ACM/IEEE Intl. Conf. on Cyber-Physical Systems*. 2021
- QEST \times 4: *Intl. Conf. on Quantitative Evaluation of SysTems*. 2022,'21,'20,'18
- FORMATS \times 2: *Intl. Conf. on Formal Modeling and Anal. of Timed Systems*. 2024,'21
- PSAM: *Probabilistic Safety Assessment and Management Conference*. 2020
- ESREL: *European Safety and Reliability Conference*. 2019
- SETTA: *Symposium on Dependable Software Engineering*. 2019
- PHM: *Annual Conference of the Prognostics and Health Management Society*. 2018
- FORTE: *IFIP Intl. Conf. on Formal Techniques for Distributed Objects, Components and Systems*. 2014

Workshops (5)

- SENSEI \times 3: *Intl. Workshop on Security and Safety Interactions*. 2024,'23,'22
- GraMSec: *Intl. Workshop on Graphical Models for Security*. 2020
- MARS: *Workshop on Models for Formal Analysis of Real Systems*. 2020

Teaching

Acronym	Institute	Faculty	Country	Teaching period
UniTN	Università di Trento	DISI	Italy	2021–now
FAU	Friedrich-Alexander-Universität	INF	Germany	2023–2024
UniFI	Università di Firenze	STLab	Italy	2023
UTwente	Universiteit Twente	EEMCS	The Netherlands	2017–2021
UNC	Universidad Nacional de Córdoba	FAMAF	Argentina	2009–2016

Teaching as main lecturer

Inst.	Course	# stu.	Deg.	ECTS	Years
UniTN	<i>Cyber security risk assessment</i>	50	MSc	6	2023–now
UTwente	<i>Advanced logic</i>	30	MSc	5	2020
UniFI	<i>Systems simulation for safety and security</i>	10	PhD	1	2023
UniTN	<i>Rare Event Simulation for Software Engineering and Dynamic Fault Trees</i>	10	PhD	1	2021

Co-teaching

Inst.	Course	# stu.	Deg.	ECTS	Years
UTwente	<i>Languages & Machines</i>	80	BSc	3.5	2018–2020
UTwente	<i>Algorithms, Datastructures and Complexity</i>	150	BSc	5	2019–2020
UNC	<i>Parallel computing</i>	20	MSc	6	2016

Teaching assistantships (UNC)

- *Operating systems*×3 (BSc, 60 stu., 12 ECTS, 2009–2011)
- *Networks and distributed systems* (BSc, 40 stu., 12 ECTS, 2011)
- *Introduction to algorithms* (BSc, 200 stu., 12 ECTS, 2010)
- *Algorithms and data structures II* (BSc, 150 stu., 12 ECTS, 2009).

MSc final thesis supervision

Inst.	# stu.	Years
UniTN	3	ongoing
FAU	1	2024
UTwente	2	2020
UNC	1	2018

BSc final project supervision

Inst.	# stu.	Years
UTwente	10	2018–2022

Publications

(peer-reviewed)

Journals (sorted by quartile, then year)

N.B. The [SJR](#) quartile and *h-index* of the journal were taken when each article was published.

1. Carlos E. Budde, Anni Karinsalo et al. (2023a). “Consolidating cybersecurity in Europe: A case study on job profiles assessment”. In: *Computers & Security* 127. **SJR: Q1**, *h-idx* 102. DOI: [10.1016/j.cose.2022.103082](#)
2. Milan Lopuhaä-Zwakenberg, Carlos E. Budde and Mariëlle Stoelinga (2023). “Efficient and Generic Algorithms for Quantitative Attack Tree Analysis”. In: *IEEE Trans. Dependable Secure Comput.* 20.5. **SJR: Q1**, *h-idx* 84. DOI: [10.1109/TDSC.2022.3215752](#)
3. Félix Rojo et al. (2013). “Enhanced transport through desorption-mediated diffusion”. In: *Phys. Rev. E* 87 (1). **SJR: Q1**, *h-idx* 304, p. 012115. DOI: [10.1103/PhysRevE.87.012115](#)
4. Carlos E. Budde, Anni Karinsalo et al. (2023b). “CSEC+ framework assessment dataset: Expert evaluations of cybersecurity skills for job profiles in Europe”. In: *Data in Brief* 48. **SJR: Q2**, *h-idx* 45. DOI: [10.1016/j.dib.2023.109285](#)
5. Carlos E. Budde, Pedro R. D’Argenio, Raúl E. Monti and Mariëlle Stoelinga (2022). “Analysis of non-Markovian repairable fault trees through rare event simulation”. In: *Int. J. Softw. Tools Technol. Transfer*. **SJR: Q2**, *h-idx* 56. DOI: [10.1007/s10009-022-00675-x](#)

6. Bart Verkuil, Carlos E. Budde and Doina Bucur (2022). “Automated fault tree learning from continuous-valued sensor data: a case study on domestic heaters”. In: *Int. J. Progn. Health Manag.* 13.2. SJR: **Q2**, h-idx 22. DOI: <https://doi.org/10.36001/ijphm.2022.v13i2.3160>
7. Carlos E. Budde, Pedro R. D’Argenio, Arnd Hartmanns and Sean Sedwards (2020). “An efficient statistical model checker for nondeterminism and rare events”. In: *International Journal on Software Tools for Technology Transfer* 23 (6). SJR: **Q2**, h-idx 55, pp. 759–780. DOI: [10.1007/s10009-020-00563-2](https://doi.org/10.1007/s10009-020-00563-2)
8. Carlos E. Budde (2022). “FIG: The Finite Improbability Generator v1.3”. In: *SIGMETRICS Perform. Eval. Rev.* 49.4. (links to [TOSME website with demo](#) and the [presentation video in YouTube](#)) SJR: **Q3**, h-idx 79, pp. 59–64. DOI: [10.1145/3543146.3543160](https://doi.org/10.1145/3543146.3543160)
9. Carlos E. Budde, Pedro R. D’Argenio and Arnd Hartmanns (2019). “Automated compositional importance splitting”. In: *Sci. Comput. Program.* 174. SJR: **Q3**, h-idx 64, pp. 90–108. DOI: [10.1016/j.scico.2019.01.006](https://doi.org/10.1016/j.scico.2019.01.006)

Ranked Conferences (sorted by rank, then year)

- N.B. The [GGS](#) and [CORE](#) ranking of the conference were taken when each article was published.*
10. Carlos E. Budde and Arnd Hartmanns (2021). “Replicating RESTART with Prolonged Retrials: An Experimental Report”. In: *TACAS*. vol. 12652. LNCS. CORE: **A**, GGS: **A+**. Springer, pp. 373–380. DOI: [10.1007/978-3-030-72013-1_21](https://doi.org/10.1007/978-3-030-72013-1_21)
 11. Carlos E. Budde (2020). “FIG: The Finite Improbability Generator”. In: *TACAS*. vol. 12078. LNCS. CORE: **A**, GGS: **A+**. DOI: [10.1007/978-3-030-45190-5_27](https://doi.org/10.1007/978-3-030-45190-5_27)
 12. Carlos E. Budde, Marco Biagi et al. (2020). “Rare Event Simulation for Non-Markovian Repairable Fault Trees”. In: *TACAS*. vol. 12078. LNCS. CORE: **A**, GGS: **A+**. Springer, pp. 463–482. DOI: [10.1007/978-3-030-45190-5_26](https://doi.org/10.1007/978-3-030-45190-5_26)
 13. Carlos E. Budde, Pedro R. D’Argenio, Arnd Hartmanns and Sean Sedwards (2018). “A Statistical Model Checker for Nondeterminism and Rare Events”. In: *TACAS*. vol. 10806. LNCS. CORE: **A**, GGS: **A+**. DOI: [10.1007/978-3-319-89963-3_20](https://doi.org/10.1007/978-3-319-89963-3_20)
 14. Carlos E. Budde, Christian Dehnert et al. (2017). “JANI: Quantitative Model and Tool Interaction”. In: *TACAS*. vol. 10206. LNCS. CORE: **A**, GGS: **A+**. Springer, pp. 151–168. DOI: [10.1007/978-3-662-54580-5_9](https://doi.org/10.1007/978-3-662-54580-5_9)
 15. Carlos E. Budde and Mariëlle Stoelinga (2021). “Efficient Algorithms for Quantitative Attack Tree Analysis”. In: *34th Computer Security Foundations Symposium*. CORE: **A**, GGS: **A**. IEEE Computer Society, pp. 501–515. DOI: [10.1109/CSF51468.2021.00041](https://doi.org/10.1109/CSF51468.2021.00041)
 16. Raúl E. Monti, Carlos E. Budde and Pedro R. D’Argenio (2020). “A compositional semantics for Repairable Fault Trees with general distributions”. In: *LPAR*. vol. 73. EPiC Series in Computing. CORE: **A**, GGS: **B**. EasyChair, pp. 354–372. DOI: [10.29007/p16v](https://doi.org/10.29007/p16v)
 17. Jaime Arias et al. (2020). “Hackers vs. Security: Attack-Defence Trees as Asynchronous Multi-Agent Systems”. In: *ICFEM*. vol. 12531. LNCS. CORE: **B**, GGS: **B-**. Springer, pp. 3–19. DOI: [10.1007/978-3-030-63406-3_1](https://doi.org/10.1007/978-3-030-63406-3_1)
 18. Carlos E. Budde, Christina Kolb and Mariëlle Stoelinga (2021). “Attack Trees vs. Fault Trees: two sides of the same coin from different currencies”. In: *QEST*. vol. 12846. LNCS. GGS: **B-**. Springer, pp. 457–467. DOI: [10.1007/978-3-030-85172-9_24](https://doi.org/10.1007/978-3-030-85172-9_24)
 19. Carlos E. Budde, Enno Ruijters and Mariëlle Stoelinga (2020). “The Dynamic Fault Tree Rare Event Simulator”. In: *QEST*. vol. 12289. LNCS. GGS: **B-**. Springer, pp. 233–238. DOI: [10.1007/978-3-030-59854-9_17](https://doi.org/10.1007/978-3-030-59854-9_17)

20. Carlos E. Budde, Arnd Hartmanns et al. (2021). “On Correctness, Precision, and Performance in Quantitative Verification”. In: *ISoLA*. vol. 12479. LNCS. CORE: C. Springer, pp. 216–241. DOI: [10.1007/978-3-030-83723-5_15](https://doi.org/10.1007/978-3-030-83723-5_15)

Book Chapters

21. Carlos E. Budde (2023). “Using Statistical Model Checking for Cybersecurity Analysis”. In: *Digital Sovereignty in Cyber Security: New Challenges in Future Vision*. Vol. 1807. CCIS. Springer, pp. 16–32. DOI: [10.1007/978-3-031-36096-1_2](https://doi.org/10.1007/978-3-031-36096-1_2)
22. Pedro R. D’Argenio et al. (2017). “The Road from Stochastic Automata to the Simulation of Rare Events”. In: *ModelEd, TestEd, TrustEd*. Vol. 10500. LNCS. Springer, pp. 276–294. DOI: [10.1007/978-3-319-68270-9_14](https://doi.org/10.1007/978-3-319-68270-9_14)

Other Conferences and Workshops

23. R. Andriushchenko et al. (to appear). “Tools at the frontiers of quantitative verification: QComp 2023 competition report”. In: *Toolympics*. Ed. by Springer. LNCS
24. Silvia Vidor and Carlos E. Budde (2022). “A Maturity Assessment Model for Cyber Security Education in Europe”. In: *WISE*. vol. 650. IFIPAICT. Springer, pp. 60–74. DOI: [10.1007/978-3-031-08172-9_5](https://doi.org/10.1007/978-3-031-08172-9_5)
25. Carlos E. Budde, Duncan Jansen et al. (2022). “Learning to learn HVAC failures: layering ML experiments in the absence of ground truth”. In: *RSSRail*. Ed. by Springer. Vol. 13294. LNCS, pp. 95–111. DOI: [10.1007/978-3-031-05814-1_7](https://doi.org/10.1007/978-3-031-05814-1_7)
26. Mariëlle Stoelinga et al. (2021). “The Marriage Between Safety and Cybersecurity: Still Practicing”. In: *SPIN*. vol. 12864. LNCS. Springer Nature Switzerland, pp. 3–21. DOI: [10.1007/978-3-030-84629-9_1](https://doi.org/10.1007/978-3-030-84629-9_1)
27. Carlos E. Budde and Mariëlle Stoelinga (2020). “Automated Rare Event Simulation for Fault Tree Analysis via Minimal Cut Sets”. In: *MMB*. vol. 12040. LNCS. Springer, pp. 259–277. DOI: [10.1007/978-3-030-43024-5_16](https://doi.org/10.1007/978-3-030-43024-5_16)
28. Enno Ruijters et al. (2019). “FFORT: A benchmark suite for fault tree analysis”. In: *ESREL*. Research Publishing, pp. 878–885. DOI: [10.3850/978-981-11-2724-3_0641-cd](https://doi.org/10.3850/978-981-11-2724-3_0641-cd)
29. Alessandro Abate, Carlos E. Budde, Nathalie Cauchi, Khaza Anuarul Hoque et al. (2018). “Assessment of Maintenance Policies for Smart Buildings: Application of Formal Methods to Fault Maintenance Trees”. In: *European Conference of the PHM Society*. Vol. 4. 1. PHM society. DOI: [10.36001/phme.2018.v4i1.385](https://doi.org/10.36001/phme.2018.v4i1.385)
30. Alessandro Abate, Carlos E. Budde, Nathalie Cauchi, Arnaud van Harmelen et al. (2018). “Modelling Smart Buildings Using Fault Maintenance Trees”. In: *EPEW*. vol. 11178. LNCS. Springer, pp. 110–125. DOI: [10.1007/978-3-030-02227-3_8](https://doi.org/10.1007/978-3-030-02227-3_8)
31. Carlos E. Budde, Pedro R. D’Argenio and Arnd Hartmanns (2017). “Better Automated Importance Splitting for Transient Rare Events”. In: *SETTA*. vol. 10606. LNCS. Springer, pp. 42–58. DOI: [10.1007/978-3-319-69483-2_3](https://doi.org/10.1007/978-3-319-69483-2_3)
32. Carlos E. Budde, Pedro R. D’Argenio and Raúl E. Monti (2017). “Compositional Construction of Importance Functions in Fully Automated Importance Splitting”. In: *VALUE-TOOLS*. ACM, pp. 30–37. DOI: [10.4108/eai.25-10-2016.2266501](https://doi.org/10.4108/eai.25-10-2016.2266501)
33. Carlos E. Budde, Pedro R. D’Argenio and Holger Hermanns (2015). “Rare Event Simulation with Fully Automated Importance Splitting”. In: *EPEW*. vol. 9272. LNCS. Springer, pp. 275–290. DOI: [10.1007/978-3-319-23267-6_18](https://doi.org/10.1007/978-3-319-23267-6_18)

34. Carlos E. Budde, Pedro R. D’Argenio, Pedro Sánchez Terraf et al. (2014). “A Theory for the Semantics of Stochastic and Non-deterministic Continuous Systems”. In: *ROCKS 2012*. Vol. 7453. LNCS. Springer, pp. 67–86. DOI: [10.1007/978-3-662-45489-3_3](https://doi.org/10.1007/978-3-662-45489-3_3)
35. Carlos E. Budde (2012). “A theory for the semantics of continuous systems with stochastic and structural non-determinism”. In: *YR-CONCUR*. URL: <http://dsg.famaf.unc.edu.ar/sites/default/files/pdf/papers/paper-291.pdf>

Language skills

Language: **Spanish**
 Level: Lengua madre.

Language: **English**
 Level: Advanced (professional working proficiency).
 Certification: *Certificate of Proficiency in English* (Cambridge English Language Assessment)
 Institution: University of Cambridge.

Language: **Italian**
 Level: Intermediate (B2a of the [CEFR](#))
 Institution: Centro Linguistico di Ateneo, University of Trento.

Language: **German**
 Level: Intermediate
 Certification: B1 ([CEFR](#))
 Institution: Goethe-Institut Córdoba, Argentina.

References

Prof. Fabio Massacci fabio.massacci@unitn.it
 Università di Trento (IT) <http://disi.unitn.it/~massacci/>
 Role: Manager during employment at UniTN (2021–today)

Prof. Mariëlle Stoelinga m.i.a.stoelinga@utwente.nl
 Universiteit Twente (NL) <https://wwwhome.ewi.utwente.nl/~marielle/>
 Role: Manager during employment at UTwente (2017–2021)

Prof. Pedro R. D’Argenio pedro.dargenio@unc.edu.ar
 Universidad Nac. de Córdoba (AR) <https://cs.famaf.unc.edu.ar/~dargenio/>
 Role: Supervisor of PhD studies (2012–2017)

Prof. Holger Hermanns hermanns@cs.uni-saarland.de
 Universität des Saarlandes (DE) <http://depend.cs.uni-sb.de/index.php?id=166>
 Role: Co-supervisor of PhD studies (2012–2017)

Dr. Inka Locht inka.locht@ns.nl
 Dutch Railways (NL)
 Role: Manager at Dutch Railways (2017–2021)

Dr. Nick Oosterhof nick.oosterhof@ns.nl
 Dutch Railways (NL) <https://www.linkedin.com/in/nick-oosterhof-2925a2/>
 Role: Colleague at Dutch Railways (2017–2021)

Prof. Joost-Pieter Katoen katoen@cs.rwth-aachen.de
 RWTH Aachen University (DE) <https://moves.rwth-aachen.de/people/katoen/>
 Role: High-seniority colleague at RWTH Aachen