

Curriculum Vitae

Luca Geretti

1. Career summary

September 1998 - October 2005

Masters Degree in Electronics Engineering at University of Udine, Italy, specialization in Microelectronics, score 107/110. Thesis on “Theoretical analysis and FPGA synthesis of feed-forward stochastic neural networks”.

January 2006 - June 2009

PhD in EECS at the Department of Electric, Business and Mechanics Engineering of the University of Udine. Thesis on “Autonomy and collaboration in mobile ad-hoc networks”.

January 2009 – December 2010

Research assistant at the Computer Science Department of the University of Verona, Italy.

January 2011 – October 2015

Research assistant at the Department of Electric, Business and Mechanics Engineering of the University of Udine.

November 2015 – September 2017

Research assistant at the Computer Science Department of the University of Verona.

October 2017 – September 2022

Assistant professor at the Computer Science Department of the University of Verona.

July 2018 – October 2018

Visiting researcher at the Department of Data Science and Knowledge Engineering of Maastricht University (NL).

October 2022 – December 2023

Research scholar at the Department of Electrical and Computer Engineering of the University of Southern California (CA, USA).

March 2023 – February 2024

Research assistant at the Computer Science Department of the University of Verona.

June 2023

Obtains from the Italian MIUR the habilitation for an associate professor position in 01/B1 INFORMATICA (valid till 21/07/2034) and in 09/H1 SISTEMI DI ELABORAZIONE DELLE INFORMAZIONI (valid till 15/06/2034).

October 2024 – Now

Tenure tracked research assistant at the Computer Science Department of the University of Verona.

2. Teaching activities

2012/13, 2013/14, 2014/15

At: University of Udine, Engineering Faculty

Degree: Electronics Engineering (Master)

Teaching: Electronic System Design (60 hrs theory)

2017/18, 2018/19, 2019/20, 2020/21, 2021/22

At: University of Verona, Computer Science Department

Degree: Computer Science (Bachelor)

Teaching: Computer Architecture (7 CFU theory)

2019/20, 2020/21

At: University of Verona, Computer Science Department

Degree: Computer Science (PhD)

Teaching: Numerical Verification of Nonlinear Hybrid Automata (2 CFU theory)

2021/22

At: University of Verona, Computer Science Department

Degree: Computer Engineering for Robotics and Smart Industry (Master)

Teaching: System Design Laboratory (2.5 CFU laboratory)

2022/23

At: University of Southern California, Department of Electronic and Computer Engineering

Degree: Computer Engineering (Master)

Teaching: Nonlinear and Hybrid Systems (6 hrs theory) within the EE581 course

2024/25, 2025/26

At: University of Verona, Computer Science Department

Degree: Computer Science (Bachelor)

Teaching: Topics on Computer Architecture and Operating Systems (3 CFU theory, 2 CFU exercises, 3 CFU laboratory)

At: University of Verona, Computer Science Department

Degree: Computer Science (Bachelor)

Teaching: Operating Systems II (3 CFU theory, 1 CFU exercises, 2 CFU laboratory)

2026/27

At: University of Verona, Computer Science Department

Degree: Computer Science (Bachelor)

Teaching: Topics on Computer Architecture and Operating Systems (6 CFU theory, 3 CFU exercises)

At: University of Verona, Computer Science Department

Degree: Computer Science and Engineering (Master)

Teaching: Neurosymbolic Systems (4 CFU theory, 2 CFU laboratory)

3. Various participations

European projects

COCONUT: “A CORrect-by-CONstrUcTion Workbench for Design and Verification of Embedded Systems” FP7-2007-IST-1-217069

C4C: “Control for coordination of distributed systems” FP7-2007-ICT-2-223844

E2SG: “Energy to Smart Grid” ENIAC JU Grant Agreement n. 296131-1

nSHIELD: “new embedded Systems archItecturE for multi-Layer Dependable solutions”
ARTEMIS JU Grant Agreement n. 269317

National research projects

“Wireless sensors and system integration for ubiquitous applications in healthcare” PRIN 2005090428

Regional projects

TechUP: “Engineering laboratory for ubiquitous and pervasive technologies” Friuli Venezia Giulia region, LR 11/03, art. 11, 2005

EasyHome: “User-friendly domotic systems via efficient and intelligent lighting devices” Friuli Venezia Giulia region, POR FESR 2007 – 2013

OPERA4.0: “Monitoring for automated error/risk prevention, with privacy concerns, for Industry 4.0”, Veneto region, Fondazione Cariverona

PhD schools

2017 “Summer School on Formal Methods for Cyber-Physical Systems”, First Edition, 12-18

September, Verona (IT), member of the organizing committee

2019 “Summer School on Formal Methods for Cyber-Physical Systems”, Second Edition, 3-7 June, Verona (IT), technical chair and organizing chair

Presentations at conferences

[c03, c09, c11, c15, c16, c19, c22]

4. Reviewing activities

International conferences (guest reviewer)

2007 American Control Conference (ACC)
2009 IFAC Conference Series on Analysis and Design of Hybrid Systems (ADHS)
2009 Design Automation Conference (DAC)
2010 American Control Conference (ACC)
2010 Design, Automation and Test in Europe (DATE)
2016 Euromicro Conference on Digital System Design (DSD)
2017 Euromicro Conference on Digital System Design (DSD)
2018 Euromicro Conference on Digital System Design (DSD)
2020 IEEE Control Systems Society Conference (CDC)
2022 Design Automation Conference (DAC)
2022 International Conference on Formal Methods for System Design (MEMOCODE)
2026 Neuro-symbolic Intelligence for LLMs and Autonomous Agents (NILA) workshop @ IJCAI-ECAI 2026

International conferences (technical program committee)

2015 International Conference on Internet and Distributed Computing Systems (IDCS)
2016 International Conference on Internet and Distributed Computing Systems (IDCS)
2019 Design Automation and Test in Europe (DATE)
2019 Workshop on Artificial Intelligence and Formal Verification, Logic, Automata and Synthesis (OVERLAY)
2020 Workshop on Artificial Intelligence and Formal Verification, Logic, Automata and Synthesis (OVERLAY)
2025 Design Automation and Test in Europe (DATE)
2026 Design Automation and Test in Europe (DATE)
2027 Design Automation and Test in Europe (DATE)

International journals (guest reviewer)

IEEE Transactions on Neural Networks
IEEE Transactions on Mobile Computing
Springer Software Quality Journal

Nonlinear Analysis: Hybrid Systems
Robotics and Autonomous Systems
IEEE Transactions on Automatic Control
Automatica

5. Managing activities

International workshops and competitions

Since 2020, track leader of the NLN (Nonlinear continuous and hybrid dynamics) category in the annual ARCH-COMP international competition on formal verification tools

Since 2026, publication chair and proceedings editor of the annual ARCH workshop on formal verification tools (<https://cps-vo.org/group/ARCH>)

International conferences (chair)

2020 OVERLAY workshop on Formal Verification, Logic, Automata and Synthesis, co-chair;
22 September 2020, Bolzano (IT)

International journals (guest editor)

Information and Computation, special issue on “Formal verification of cyber-physical systems”, managing guest editor <https://www.sciencedirect.com/journal/information-and-computation/special-issue/10961SQK9QH>

6. Various competences

Foreign languages

English: C2
Portuguese: C1
French: B1
Spanish: B1

Programming languages

General purpose: C, C++, C#, Java, Python
Web-oriented: Java EE, Javascript, HTML+CSS
Hardware-oriented: VHDL, Verilog, Arduino, SystemC, CUDA

7. Publications

International journals

- [a01] Abramo, A.; Blanchini, F.; Geretti, L.; Savorgnan, C. "A mixed convex/nonconvex distributed localization approach for the deployment of indoor positioning services", IEEE Transactions on Mobile Computing, Volume 7, Issue 11, Nov. 2008, pg. 1325-1337, ISSN: 1536-1233, DOI: 10.1109/TMC.2008.59
- [a02] Geretti, L.; Abramo, A. "The correspondence between deterministic and stochastic digital neurons: analysis and methodology", IEEE Transactions on Neural Networks, Volume 19, Issue 10, Oct. 2008, pg. 1739-1752, ISSN: 1045-9227, DOI: 10.1109/TNN.2008.2001775
- [a03] Geretti, L.; Abramo, A. "Distributed multi-level hierarchic strategy for broadcast collaborative mobile networks", IEEE Transactions on Mobile Computing, Volume 9, Issue 9, Sep. 2010, pg. 1255-1266, ISSN: 1536-1233, DOI: 10.1109/TMC.2010.97
- [a04] Muradore, R.; Bresolin, D.; Geretti, L.; Fiorini, P.; Villa, T. "Robotic surgery – Formal verification of plans", IEEE Robotics and Automation Magazine, Volume 18, Sep. 2011, pg. 24-32, ISSN: 1070-9932, DOI: 10.1109/MRA.2011.942112
- [a05] Benvenuti, L.; Bresolin, D.; Collins, P.; Ferrari, A.; Geretti, L.; Villa, T. "Assume-guarantee verification of nonlinear hybrid systems with Ariadne", International Journal of Robust and Nonlinear Control, Volume 24, Issue 4, Mar. 2014, pg. 699-724, ISSN: 1049-8923, DOI: 10.1002/RNC.2914
- [a06] Nuzzo, P.; Sangiovanni-Vincentelli, A.L.; Bresolin, D.; Geretti, L.; Villa, T. "A platform-based design methodology with contracts and related tools for the design of cyber-physical systems", Proceedings of the IEEE, Volume 103, Issue 11, 2015, pg. 2104-2132, DOI: 10.1109/JPROC.2015.2453253
- [a07] Bresolin, D.; Geretti, L.; Muradore, R.; Fiorini, P.; Villa, T. "Formal verification of robotic surgery tasks by reachability analysis", Microprocessors and Microsystems, Volume 39, Issue 8, November 2015, pg. 836-842, DOI: 10.1016/j.micpro.2015.10.006
- [a08] Geraldès, A.; Geretti, L.; Muradore, R.; Fiorini, P.; Mattos, L.S.; Villa, T.; "Formal Verification of Medical CPS: a Laser Incision Case Study", ACM Transactions on Cyber-Physical Systems, Volume 2, Issue 4, September 2018, 35:1-35:29, ISSN: 2378-962X, DOI: 10.1145/3140237
- [a09] Zivanovic, S.G.; Geretti, L.; Bresolin, D.; Villa, T.; Collins, P. "A higher order method for input-affine uncertain systems", Nonlinear Analysis: Hybrid Systems, Volume 47, pg. 101266, 2023, ISSN 1751-570X, DOI: 10.1016/j.nahs.2022.101266
- [a10] Bresolin, D.; Collins, P.; Geretti, L.; Segala, R.; Villa, T. "A computable and compositional semantics for hybrid systems", Information and Computation, pg. 105189, 2024, ISSN 0890-5401, DOI: 10.1016/j.ic.2024.105189
- [a11] Geretti, L.; Collins, P.; Nuzzo, P.; Villa, T. "Constraint-driven nonlinear reachability analysis with automated tuning of tool properties", Nonlinear Analysis: Hybrid Systems, Volume 54, pg. 101532, 2024, ISSN: 1751-570X, DOI: 10.1016/j.nahs.2024.101532

[a12] Cunico, F. et al., "Enhancing Safety and Privacy in Industry 4.0: The ICE Laboratory Case Study," in IEEE Access, vol. 12, pp. 154570-154599, 2024, doi: 10.1109/ACCESS.2024.3479411

[a13] Collins, P.; Geretti, L.; Zivanovic, S.G.; Bresolin, D.; Villa, T. "Rigorous function calculi in Ariadne", Logical Methods in Computer Science, Volume 21, Issue 3, 2025, pp.28:1-28:32, DOI: 10.46298/LMCS-21(3:28)2025

[a14] Geretti, L.; Centomo, S.; Boldo, M.; Martini, E.; Bombieri, N.; Quaglia, D.; Villa, T. "Collision prediction using plan learning in mixed human-robot work cells", Robotics and Autonomous Systems, Volume 197, pg.105292, 2026, ISSN: 0921-8890, DOI: <https://doi.org/10.1016/j.robot.2025.105292>

International conferences

[c01] Abramo, A.; Blanchini, F.; Geretti, L.; Savorgnan, C. "Mixed convex/non-convex distributed localization algorithm for the deployment of indoor positioning services", American Control Conference 2007 (ACC'07), 9-13 July 2007, pg. 3967-3972, ISSN: 0743-1619, Print ISBN: 1-4244-0988-8, DOI: 10.1109/ACC.2007.4282529

[c02] Bresolin, D.; Di Guglielmo, L.; Geretti, L.; Villa, T. "Correct-by-construction code generation from hybrid automata specification", Proc. Of the 7th International Wireless Communication and Mobile Computing Conference (IWCMC'11), Jul. 2011, pg. 1660-1665, Print ISBN: 978-1-4244-9539-9, DOI: 10.1109/IWCMC.2011.5982784

[c03] Collins, P.; Bresolin, D.; Geretti, L.; Villa, T. "Computing the evolution of hybrid systems using rigorous function calculus", 4th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS'12), June 2012, pg. 284-290, DOI: 10.3182/20120606-3-NL-3011.00046

[c04] Bresolin, D.; Di Guglielmo, L.; Geretti, L.; Muradore, R.; Fiorini, P.; Villa, T. "Open problems in verification and refinement of autonomous robotic systems", 15th Euromicro Conference on Digital System Design (DSD'12), September 2012, pg. 469-476, DOI: 10.1109/DSD.2012.96

[c05] Benvenuti, L.; Bresolin, D.; Collins, P.; Ferrari, A.; Geretti, L.; Villa, T. "Ariadne: dominance checking of nonlinear hybrid automata using reachability analysis", 6th International Workshop on Reachability Problems (RP'12), September 2012, pg. 79-91, Print ISSN: 0302-9743, Print ISBN: 978-3-642-33511-2, DOI: 10.1007/978-3-642-33512-9_8

[c06] Guerrieri, A.; Geretti, L.; Fortino, G.; Abramo, A. "A service-oriented gateway for remote monitoring of building sensor networks", IEEE 8th International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD'13), September 2013, pg. 139-143, DOI: 10.1109/CAMAD.2013.6708105

[c07] Bresolin, D.; Geretti, L.; Muradore, R.; Fiorini, P.; Villa, T. "Verification of robotic surgery tasks by reachability analysis: a comparison of tools", 17th Euromicro Conference on Digital System Design (DSD'14), September 2014, pg. 659-662, DOI: 10.1109/DSD.2014.55

[c08] Geretti, L.; Muradore, R.; Bresolin, D.; Fiorini, P.; Villa, T. "Parametric formal verification: the robotic paint spraying case study", 20th World Congress of the International Federation of Automatic Control (IFAC 2017), 9-14 July 2017, pg. 9248-9253, DOI: 10.1016/j.ifacol.2017.08.1287

- [c09] Geretti, L.; Bresolin, D.; Collins, P.; Zivanovic, S.; Villa, T. "Ongoing work on automated verification of noisy nonlinear systems with Ariadne", 29th IFIP International Conference on Testing Software and Systems (ICTSS 2017), 9-11 October 2017, pg. 313-319, DOI: 10.1007/978-3-319-67549-7_19
- [c10] Collins, P.; Bresolin, D.; Zivanovic, S.; Geretti, L.; Villa, T. "Semantics and computation of the evolution of hybrid systems with Ariadne", 14th International Conference on Computability and Complexity in Analysis, 24-27 July 2017, pg. 22-23
- [c11] Immler, F.; Althoff, M.; Benet, L.; Chapoutot A.; Chen, X.; Forets, M.; Geretti, L.; Kochdumper, N.; Sanders, D.P.; Schilling, C. "ARCH-COMP19 Category Report: Continuous and Hybrid Systems with Nonlinear Dynamics", 6th International Workshop on Applied Verification of Continuous and Hybrid Systems, Vol 61, pg. 41-61, 15 April 2019, DOI: 10.29007/m75b
- [c12] Geretti, L.; Zivanovic, S.; Collins, P.; Bresolin, D.; Villa, T. "Rigorous Continuous Evolution of Uncertain Systems", 12th International Workshop on Numerical Software Verification, 13-14 July 2019, pg. 60-75, DOI: 10.1007/978-3-030-28423-7_4
- [c13] Bresolin, D.; Geretti, L.; Villa, T.; "Automated verification of noisy nonlinear cyber-physical systems with ariadne", 1st Workshop on Artificial Intelligence and Formal Verification, Logic, Automata, and Synthesis, OVERLAY 2019; Rende; Italy; 19-20 November 2019, CEUR Workshop Proceedings Volume 2509, 2020, pg. 29-34
- [c14] Bresolin, D.; Collins, P.; Geretti, L.; Segala, R.; Villa, T.; Zivanovic, S. "A computable and compositional semantics for hybrid automata", 23rd ACM International Conference on Hybrid Systems: Computation and Control (HSCC '20), April 22–24, 2020, Sydney, Australia, pg. 1-11, DOI: 10.1145/3365365.3382202
- [c15] Geretti, L.; Dit Sandretto, J.A.; Althoff, M.; Benet, L.; Chapoutot A.; Chen, X.; Collins, P.; Forets, M.; Freire, D.; Immler, F.; Kochdumper, N.; Sanders, D.P.; Schilling, C. "ARCH-COMP20 Category Report: Continuous and Hybrid Systems with Nonlinear Dynamics", 7th International Workshop on Applied Verification of Continuous and Hybrid Systems, Vol 75, pg. 49-75, 13 July 2020
- [c16] Geretti, L.; Dit Sandretto, J.A.; Althoff, M.; Benet, L.; Chapoutot A.; Collins, P.; Duggirala, P.; Forets, M.; Kim, E.; Linares, U.; Sanders, D.P.; Schilling, C.; Wetzlinger, M. "ARCH-COMP21 Category Report: Continuous and Hybrid Systems with Nonlinear Dynamics", 8th International Workshop on Applied Verification of Continuous and Hybrid Systems, Brussels, Vol 80, pg. 32-54, 09 July 2021
- [c17] Geretti, L.; Centomo, S.; Boldo, M.; Martini, E.; Bombieri, N.; Quaglia, D.; Villa, T. "Process-driven Collision Prediction in Human-Robot Work Environments," 2022 IEEE 27th International Conference on Emerging Technologies and Factory Automation (ETFA), September 2022, pp. 1-8, doi: 10.1109/ETFA52439.2022.9921732
- [c18] Boldo, M.; Bombieri, N.; De Marchi, M.; Geretti, L.; Germiniani, S.; Pravadelli, G. "Risk Assessment and Prediction in Human-Robot Interaction Through Assertion Mining and Pose Estimation," 2022 IEEE 23rd Latin American Test Symposium (LATS), September 2022, pp. 1-5, doi: 10.1109/LATS57337.2022.9936899.
- [c19] Geretti, L.; Dit Sandretto, J.A.; Althoff, M.; Benet, L.; Collins, P.; Duggirala, P.; Forets, M.; Kim, E.; Mitsch, S.; Schilling, C.; Wetzlinger, M. "ARCH-COMP22 Category Report: Continuous and Hybrid

Systems with Nonlinear Dynamics”, Proc. of the 9th International Workshop on Applied Verification of Continuous and Hybrid Systems (ARCH22), Volume 90, pg. 86-112

[c20] Geretti, L.; Collins, P.; Bresolin, D.; Villa, T. “Automating Numerical Parameters Along the Evolution of a Nonlinear System”, 22nd International Conference on Runtime Verification, LNCS, Vol 13498, pg. 336-345, 30 September 2022

[c21] Capogrosso, L.; Geretti, L.; Cristani, M.; Fummi, F.; Villa, T. "HermesBDD: A Multi-Core and Multi-Platform Binary Decision Diagram Package," 2023 26th International Symposium on Design and Diagnostics of Electronic Circuits and Systems (DDECS), Tallinn, Estonia, 2023, pp. 87-90.

[c22] Geretti, L.; Dit Sandretto, J.A.; Althoff, M.; Benet, L.; Collins, P.; Forets, M.; Ivanova, E.; Li, Y.; Mitra, S.; Mitsch, S.; Schilling, C.; Wetzlinger, M.; Zhuang, D. “ARCH-COMP23 Category Report: Continuous and Hybrid Systems with Nonlinear Dynamics”, Proc. of the 10th International Workshop on Applied Verification of Continuous and Hybrid Systems (ARCH23), Volume 96, pg. 61-88

[c23] Geretti, L.; Dit Sandretto, J.A.; Althoff, M.; Benet, L.; Collins, P.; Forets, M.; Mitsch, S.; Schilling, C.; Tiller, J.; Wetzlinger, M. “ARCH-COMP24 Category Report: Continuous and Hybrid Systems with Nonlinear Dynamics”, Proc. of the 11th International Workshop on Applied Verification of Continuous and Hybrid Systems (ARCH24), Volume 103, pg. 39-63

[c24] Abate, A.; Althoff, M.; Bu, L.; Ernst, G.; Frehse, G.; Geretti, L.; Johnson, T.T.; Menghi, C.; Mitsch, S.; Schupp, S.; Soudjani, S. “The ARCH-COMP Friendly Verification Competition for Continuous and Hybrid Systems”, 3rd International TOOLympics Challenge (ETAPS 2023), 22-27 April 2023, Volume 14550 LNCS, 2025, pg. 1-37

[c25] Bresolin, D.; Collins, P.; Geretti, L.; Segala, R.; Villa, T. “Recent results on computable and compositional semantics for hybrid systems”, 6h International Workshop on Artificial Intelligence and Formal Verification, Logic, Automata and Synthesis (OVERLAY 2024), CEUR Workshop Proceedings Volume 3904, 2025, pg. 23-29

[c26] Geretti, L.; Dit Sandretto, J.A.; Althoff, M.; Benet, L.; Collins, P.; Forets, M.; Mitsch, S.; Patel, I.; Perschl, M.; Schilling, C.; Tiller, J. “ARCH-COMP25 Category Report: Continuous and Hybrid Systems with Nonlinear Dynamics”, Proc. of the 12th International Workshop on Applied Verification of Continuous and Hybrid Systems (ARCH25), Volume 108, pg. 39-70

[c27] Geretti, L.; Dit Sandretto, J.A.; Althoff, M.; Benet, L.; Collins, P.; Forets, M.; Mitsch, S.; Perschl, M.; Schilling, C.; Tiller, J.; Wooding, B. “ARCH-COMP26 Category Report: Continuous and Hybrid Systems with Nonlinear Dynamics”, Proc. of the 13th International Workshop on Applied Verification of Continuous and Hybrid Systems (ARCH26), Volume 110, pg. 52-84

Chapters in volume

[b01] Geretti, L.; Abramo, A. “The synthesis of a stochastic artificial neural network application using a genetic algorithm approach”, Advances in Imaging and Electron Physics, Volume 168, Aug. 2011, pg. 1-64, Waltham: Academic Press, Elsevier, Print ISBN: 978-0-12-385983-9, DOI: 10.1016/B978-0-12-385983-9.00001-6

[b02] Bresolin, D.; Geretti, L.; Villa, T.; Collins, P. “An introduction to the verification of hybrid systems

using Ariadne”, Coordination Control of Distributed Systems, LNCS Volume 456, 2015, pg. 339-346, DOI: 978-3-319-10406-5

[b03] Bresolin, D.; Geretti, L.; Muradore, R.; Fiorini, P.; Villa, T. “Formal verification applied to robotic surgery”, Coordination Control of Distributed Systems, LNCS Volume 456, 2015, pg. 347-355, DOI: 978-3-319-10406-5

[b04] Azzoni, P.; Rantos, K.; Geretti, L.; Abramo, A.; Gosetti, S.; “Biometric security domain”, in Measurable and Composable Security, Privacy and Dependability for Cyberphysical Systems, ISBN 9781138042759, CRC Press, 2017

[b05] Azzoni, P.; Geretti, L.; Abramo, A.; Stefanidis, K.; Gialelis, J.; Papalambrou, A.; Serpanos, D.; Rantos, K.; Toma, A.; Tassadaq, N.; Dabcevic, K.; Regazzoni, C.; Marcenaro, L.; Traversone, M.; Cesena, M.; Mignanti, S.; “Security, privacy and dependability technologies”, in Measurable and Composable Security, Privacy and Dependability for Cyberphysical Systems, ISBN 9781138042759, CRC Press, 2017

I declare that the information above is true and correct and I am aware that I shall be liable to prosecution if any statement to a public officer is found to be false, under articles 46 e 47 of the D.P.R. 445/2000.

Verona (IT), July the 8th, 2026

A handwritten signature in black ink, appearing to read 'Luca Geretti', with a stylized flourish at the end.