

Laura Nenzi

Curriculum Vitae

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Personal Information

Date of Birth December 10, 1984
Citizenship Italian
Languages Italian (mothertongue), English (fluent), German (basic)

Academic Appointments

- Aug. 2019 - **Project Assistant (part-time)**, *Faculty of informatics, Institute of Computer Engineering*, Vienna University of Technology, Austria.
- Nov. 2018 - **Assistant Professor**, *Department of Mathematics and Geoscience*, University of Trieste, Italy.
- 2017-2018 **Project Assistant**, *Faculty of informatics, Institute of Computer Engineering*, Vienna University of Technology, Austria.
- 2016-2017 **Research collaborator**, *System Modelling and Analysis Group*, IMT School of Advanced Studies Lucca, Italy.

Education

- 2013-2016 **PhD in Computer Science (XVIII Cycle)**, *IMT School of Advanced Studies Lucca, Italy*, Thesis: "A logic-based approach to specify and design spatio-temporal behaviours of complex system", **Marks: Excellent (the highest mark)**.
- 2010-2012 **Master Degree in Mathematics**, *University of Trieste, Italy*, Thesis: "A logic-based approach to determine the connection between biological modules and their behavioral properties", **Marks: 110/110**.
- 2006-2010 **Bachelor Degree in Mathematics**, *University of Padova, Italy*, Thesis: Biomechanical models for pattern formation, **Marks: 98/110**.
- 2003-2006 **Bachelor Degree in Biotechnology**, *University of Padova, Italy*, Thesis: Adult stem cells in the tissue engineering: epithelium reconstruction., **Marks: 105/110**.

Visiting Positions

- 2014-2015 **Research visit (7 months) in the MoSi (Modelling and Simulation) group**, at the **Saarland University**, Saarbrücken, Germany.
- 2012 **Research visit (3 months) in the PEPA (Performance Evaluation Process Algebra) group**, at the **School of Informatics**, University of Edinburgh, Edinburgh, United Kingdom.

2008-2009 **Student visit (9 months) at the University of Warwick**, Coventry, United Kingdom.

Current Projects and Grants

Principal Investigator

Aug. 2019- **High-dimensional statistical learning: new methods to advance economic and sustainability policies (Total Funding ~2 Mio Euro, ~400 k Euro to TU Wien)**, *Funded by Austrian FWF within the YIRG programme, Project Leader for TU Wien.*

Member

Nov. 2018- **Cyber-Physical Safety: coexistence of humans and robots (Total Funding ~150 k Euro)**, *Funded by Programma Triennale MIUR 2016-2018.*

Past Projects and Grants

Principal Investigator

2017-2018 **Christiana HÖRBIGER Preis**, *grant by the TU Wien for the promotion of international mobility of young scientists. .*

2017 **STSM: Short Term Scientific Mission**, *grant by the COST Action IC1402 to collaborate with the University of Trieste on Monitoring of mobile and spatially distributed Cyber-Physical Systems..*

2014-2015 **Erasmus Mobility for Traineeship**, *IMT Lucca-Saarland University.*

2012 **International Mobility Scholarship**, *University of Trieste-University of Edinburgh.*

2008-2009 **Erasmus Mobility Scholarship**, *University of Padova-University of Warwick.*

Member

2017-2018 **RISE: Rigorous Systems Engineering**, *member of the TU Wien unit.*

2013-2017 **EU FP7 QUANTICOL**, *member of the IMT Lucca unit..*

Community Service

Organisation of International Events

2020 **PC co-Chair of HSB 2020**, *the 7th International Workshop on Hybrid Systems and Biology, April, Vienna, Austria.*

2019 **Local Organisation co-Chair of CMSB 2019**, *the 17th International Conference on Computational Methods in Systems Biology, Vienna, Austria.*

2018 **Co-Organizer of AVM 2018**, *Alpine Verification Meeting , 24-27 September, Wagrain, Austria.*

Program Committee Member of

- 2019 **CMSB 2019, DataMod 2019, CSBio2019, CIBCB 2019, ICTCS 2019, HSB 2019.**
- 2018 **CMSB 2018, DataMod 2018, COMPUTATION TOOLS 2018.**
- 2017 **CILC 2017, DataMod 2017.**

Journal Reviewer for

Formal Methods in System Design, Theoretical Computer Science, Annals of Mathematics and Artificial Intelligence.

Subreviewer for

SIGSIM-PADS'19, ATVA 2019, SAC 2018, InfQ 2017, VALUETOOLS 2017, ALPA 2017, QEST 2017, ENASE 2017, ICTS 2016, QEST 2016, CONCUR 2016, HSCC 2016, RV 2015, FoCAS 2014. .

Teaching

- 2019 **Cyber-Physical Systems**, (6 ECTS/CFU - Summer Semester), Master Program in Data Science and Scientific Computing, University of Trieste, Italy.
- 2019 **Laboratorio di Programmazione**, (3 ECTS/CFU - Summer Semester (together with Simone Silvetti), Bachelor Program in Mathematics.
- 2018 **Laboratorio di Programmazione**, (3 ECTS/CFU - Summer Semester (together with Simone Silvetti), Bachelor Program in Mathematics.
- 2017 **Laboratorio di Programmazione**, (3 ECTS/CFU - Summer Semester, Bachelor Program in Mathematics.

Supervision

Supervision of Master Students

- 2019 **Giuseppe Gallo**, Topic: *a behavioural kernel-based distance between stochastic models..*

Supervision of Bachelor Students

- 2017 **Davide Prandini**, Topic: *Robust Monitoring of Imprecise Signals.*

Invited Talks

- Apr. 6, 2019 **Invited speakers at SynCoP 2019: the 6th Workshop on Synthesis of Complex Parameters**, Prague, Poland.
Title: *Parametric Verification and Synthesis based on Gaussian Processes*
- Dec. 13, 2018 **Seminar at NII, National Institute of Informatics**, in the Mathematical and Metamathematical Modelling Group, Hasuo-Lab, Tokyo, Japan.
Title: *Specification formalisms and learning techniques for Cyber-Physical Systems*
- Oct. 12, 2018 **Seminar at UC, University of California**, in the group of Sanjit Seshia at the department of Electrical Engineering and Computer Science, Berkeley, USA.
Title: *A Robust Genetic Algorithm for Learning Temporal Specifications from Data*
- Oct. 10, 2018 **CS Colloquium at USC, University of Southern California**, in the Viterbi School of Engineering, Los Angeles, USA.
Title: *System Design of Stochastic Models using Robustness of Temporal Properties*

- Jul. 04, 2018 **Seminar at the University of Camerino**, Camerino, Italy.
 Title: *A Robust Genetic Algorithm for Learning Temporal Specifications from Data*
- Dec. 15, 2017 **Seminar at Masaryk University**, Brno, Czech Republic.
 Title: *System design of stochastic models using robustness of temporal properties*
- Dec. 02, 2016 **Seminar at the PEPA club meeting, Informatics Forum, University of Edinburgh**, Edinburgh, United Kingdom.
 Title: *A logic-based approach to specify and design spatio-temporal behaviours of complex systems*
- Nov. 22, 2016 **Seminar at the University of Trieste**, Trieste, Italy.
 Title: *Monitoring Spatio-Temporal Properties*
- Jan. 12, 2016 **Seminar at the University of Trieste**, Trieste, Italy.
 Title: *Reinforcement Learning in Quantitative Formal Methods*
- May. 25, 2015 **Seminar at Saarland University**, Saarbrücken, Germany.
 Title: *Qualitative and Quantitative Monitoring of Spatio-Temporal Properties*
- May. 28, 2013 **Seminar at ISTI**, Pisa, Italy.
 Title: *A temporal logic approach to modular design of synthetic biological circuits*

List of Publications

Journal Papers

- [1] L. L. Vissat, M. Loreti, L. Nenzi, J. Hillston and G. Marion, **Analysis of spatio-temporal properties of stochastic systems using TSTL**, Transactions on Modeling and Computer Simulation (To be published).
- [2] L. Bortolussi, R. Lanciani, L. Nenzi, **Model checking Markov population models by stochastic approximations**, Information and Computation, vol. 262, pp. 189-220 (2018), DOI: 10.1016/j.ic.2018.09.004
- [3] L. Nenzi, L. Bortolussi, V. Ciancia, M. Loreti, M. Massink, **Qualitative and Quantitative Monitoring of Spatio-Temporal Properties with SSTL**, Logical Methods in Computer Science, vol. 14(4) (2018), DOI: 10.1016/j.ic.2018.09.004
- [4] E. Bartocci, L. Bortolussi, L. Nenzi, G. Sanguinetti, **System Design of Stochastic Models using Robustness of Temporal Properties**, Theoretical Computer Science, vol. 587, pp. 3-25 (2015), DOI: 10.23638/LMCS-14(4:2)2018

Peer-Reviewed Conference and Workshop Papers

- [5] J. Lamp, S. Silveti, L. Nenzi, L. Feng, **A Logic-Based Learning Approach to Explore Diabetes Patient Behaviors**, CMSB 2019: The 17th International Conference on Computational Methods in Systems Biology,
- [6] C. Tsigkanos, L. Nenzi, M. Loreti, M. Garriga, S. Dustdar, C. Ghezzi, **Inferring Analyzable Models from Trajectories of Spatially-Distributed Internet of Things**, SEAMS 2019: The 14th International Symposium on Software Engineering for Adaptive and Self-Managing Systems,
- [7] S. Silveti, L. Nenzi, E. Bartocci, L. Bortolussi, **Signal Convolution Logic**, ATVA 2018: The 16th International Symposium on Automated Technology for Verification and Analysis, vol. 11138, pp. 267–283, Springer, LNCS, DOI: 10.1007/978-3-030-01090-4_16

- [8] L. Nenzi, S. Silvetti, E. Bartocci, L. Bortolussi, **A Robust Genetic Algorithm for Learning Temporal Specifications from Data**, QEST 2018: The 15th International Conference on Quantitative Evaluation of SysTems, vol. 11024, pp. 323–338, Springer, LNCS, DOI: 10.1007/978-3-319-99154-2_20
- [9] L. L. Vissat, J. Hillston, M. Loreti, L. Nenzi, **Automatic verification of reliability requirements of spatio-temporal analysis using Three-Valued Spatio-Temporal Logic**, VALUETOOLS 2017: The 11th EAI International Conference on Performance Evaluation Methodologies and Tools, pp. 74–79, ACM, DOI: 10.1145/3150928.3150961
- [10] E. Bartocci, L. Bortolussi, M. Loreti, L. Nenzi, **Monitoring Mobile and Spatially Distributed Cyber-Physical Systems**, MEMOCODE 2017: The 15th ACM-IEEE International Conference on Formal Methods and Models for System Design, pp. 146–155, ACM, DOI: 10.1145/3127041.3127050
- [11] L. L. Vissat, M. Loreti, L. Nenzi, J. Hillston and G. Marion, **Three-Valued Spatio-Temporal Logic: a further analysis on spatio-temporal properties of stochastic systems**, QEST 2017: The 14th International Conference on Quantitative Evaluation of SysTems, vol. 10503 pp. 317–332, Springer, LNCS, DOI: 10.1007/978-3-319-66335-7_22
- [12] L. Bortolussi, M. Loreti, L. Nenzi, **jSSTL - A Tool to Monitor Spatio-Temporal Properties**, VALUETOOLS 2016: The 10th EAI International Conference on Performance Evaluation Methodologies and Tools, pp. 74–79, ACM, DOI: 10.4108/eai.25-10-2016.2266978
- [13] E. Bartocci, L. Bortolussi, L. Nenzi, D. Milios, G. Sanguinetti, **Studying Emergent Behaviours in Morphogenesis using Signal Spatio-Temporal Logic**, HSB 15: the 4th International Workshop on Hybrid Systems Biology, vol. 9271, pp. 156–172, 2015, Springer DOI: 10.1007/978-3-319-26916-0_9
- [14] L. Nenzi, L. Bortolussi, V. Ciancia, M. Loreti, M. Massink, **Qualitative and Quantitative Monitoring of Spatio-Temporal Properties with SSTL**, RV 15: The 15th International Conference on Runtime Verification, vol. 9333, pp. 21–3, 2015, Springer, LNCS DOI: 10.1007/978-3-319-26916-0_9
- [15] L. Bortolussi, L. Nenzi, **Specifying and monitoring properties of stochastic spatio-temporal systems in signal temporal logic**, VALUETOOLS 2014: The 8th International Conference on Performance Evaluation Methodologies and Tools, pp. 66–73, ACM, DOI: 10.4108/icst.valuetools.2014.258183
- [16] E. Bartocci, L. Bortolussi, L. Nenzi, **A temporal logic approach to modular design of synthetic biological circuits**, CMSB 2013: The 11th International Conference on Computational Methods in Systems Biology, IST Austria, Klosterneuburg, Austria, September 23–25, 2013, LNCS 8130, pp. 164–178, Springer DOI: 10.1007/978-3-642-40708-6_13
- [17] E. Bartocci, L. Bortolussi, L. Nenzi, G. Sanguinetti, **On the Robustness of Temporal properties for Stochastic Models**, HSB 2013: The 2nd International Workshop on Hybrid Systems and Biology, September 2013, Taormina, Italy, 2013, EPTCS 125, pp. 3–19 DOI: 10.4204/EPTCS.125.1