Laura Nenzi

Curriculum Vitae

PERSONAL DETAILS

Birth	December 10, 1984
Address	Am Modenapark 8-9/4/9, Wien, Austria
Mail	laura.nenzi@gmail.com
Home Page	https://lauranenzi.github.io/

RESEARCH INTERESTS

My research interests are focused on formal methods applied to design and analysis of complex systems. I worked in the development of original formal frameworks to control and optimise the behaviour of such systems, keeping track of their spatio-temporal dynamics. In particular, I developed a spatio-temporal logic to express formal requirements on the performance of the system, and scalable model checking algorithms to validate them. I am also familiar with the analysis of stochastic systems and statistical verification routines; in particular, I worked in the design of a methodology for parameter estimation and synthesis that combines formal methods and machine learning techniques. At the moment, I am working on distributed monitoring algorithms for the verification of spatio-temporal properties of cyber physical systems, trying also to integrate the distributed monitoring procedure into statistical verification routines. I am interested also in the investigation of non-deterministic imprecisions in spatio-temporal logics, both from the point of view of samples imprecision and parameter formula imprecision.

EMPLOYMENT

Research Assistant June 2017-
TU Wien, Wien, Austria

Research Collaborator Sept. 2016-May 2017
IMT, Lucca, Italy

Research Project Fellowship Holder March-July/2016
IMT, Lucca, Italy

EDUCATION

PhD in Computer Science (XVIII Cycle) 2013-2016
IMT, Lucca, Italy

Final grade: Excellent

Thesis: A logic-based approach to specify and design spatio-temporal behaviours of complex systems.

Supervisors: Prof. Luca Bortolussi and Prof. Rocco De Nicola.

Master of Science degree in Mathematics 2010-2012

University of Trieste, Italy

Final grade: 110/110

Thesis: Characterization of motif behaviors by quantitative temporal logic.

Supervisor: Prof. Luca Bortolussi.

Bachelor of Science degree in Mathematics 2006-2010

University of Padova, Italy

Thesis: Modelli biomeccanici per la formazione di pattern (Biomechanical models for pattern formation).

Supervisors: Prof. Francesco Fassò and Prof. Marco Favretti.

Bachelor of Science degree in Biotecnology 2003-2006

University of Padova, Italy

Final grade: 105/110

Thesis: Cellule staminali adulte nell'ingegneria tissutale: la ricostruzione epiteliale (Adult stem cells in the tissue engineering: epithelium reconstruction).

Supervisor: Prof. Lucia Celotti.

High School 1998-2003

Liceo Scientifico G.B.Benedetti, Venezia, Italy

Final grade: 98/100

GRANTS AND FUNDING

Erasmus Mobility for Traineeship 2014/2015

IMT Lucca-Saarland University

From October 2014 until May 2015, I was a visiting researcher at the Saarland University, in the MoSi (Modelling and Simulation) group.

International Mobility Scolarship 08-10/2012

University of Trieste-University of Edinburgh

I worked on my thesis as a visitor student at the School of Informatics of the University of Edinburgh under the supervision of Luca Bortolussi and Jane Hillston.

Erasmus Mobility Scolarship 2008-2009

University of Padova-University of Warwick

I passed 9 months at the University of Warwick where I took several exams for my Bachelor in Mathematics.

SKILLS

Languages	Italian (mother tongue) English (fluent) German (basic)
Software	MATLAB, PYTHON, JAVA, C, MATHEMATICA, LaTeX, EXCEL

COMMUNITY SERVICE

- PC member and reviewer of CILC 2017, DataMod 2017
- Reviewer for the journals: *Formal Methods in System Design*, *Theoretical Computer Science*

- Subreviewer for FoCAS 2014, RV 2015, HSCC 2016, CONCUR 2016, QEST 2016, ICTS 2016, ENASE 2017, VALUETOOLS 2017.

PUBLICATIONS

E. Bartocci, L. Bortolussi, M. Loreti, L. Nenzi, **Monitoring Mobile and Spatially Distributed Cyber-Physical Systems**, in Proc. of *MEMOCODE 2017: the 10th International Conference on Formal Methods and Models for System Design*, Vienna, Austria, 2017.

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**, in Proc. of *QEST 2017: the 14th International Conference on Quantitative Evaluation of SysTems*, Berlin, Germany, 2017.

L. Bortolussi, M. Loreti, L. Nenzi, **jSSTL - A Tool to Monitor Spatio-Temporal Properties**, in Proc. of *VALUETOOLS 2016: the 10th International Conference on Performance Evaluation Methodologies and Tools*, Taormina, Italy, 2016.

E. Bartocci, L. Bortolussi, L. Nenzi, D. Milios, G. Sanguinetti, **Studying Emergent Behaviours in Morphogenesis using Signal Spatio-Temporal Logic**, in Proc. of *HSB 2015: the 4nd Intern. Workshop on Hybrid Systems and Biology*, Madrid, Spain, 2015.

L. Nenzi, L. Bortolussi, V. Ciancia, M. Loreti, M. Massink, **Qualitative and Quantitative Monitoring of Spatio-Temporal Properties**, in Proc. of *Runtime Verification 2015: The 15th International Conference on Runtime Verification*, Vienna, Austria, 2015.

L. Bortolussi, L. Nenzi, **Specifying and monitoring properties of stochastic spatio-temporal systems in signal temporal logic**, in Proc. of *VALUETOOLS 2014: the 8th International Conference on Performance Evaluation Methodologies and Tools*, Bratislava, Slovakia, pp. 66-73, 2014.

E. Bartocci, L. Bortolussi, L. Nenzi, G. Sanguinetti, **System Design of Stochastic Models using Robustness of Temporal Properties**, in *Theoretical Computer Science*, vol. 587, pp. 3-25, 2015.

E. Bartocci, L. Bortolussi, L. Nenzi, G. Sanguinetti, **On the robustness of temporal properties for stochastic models**, in Proc. of *HSB 2013: the 2nd Intern. Workshop on Hybrid Systems and Biology*, Taormina, Italy, vol. 125(1), pp. 3-19, 2013.

E. Bartocci, L. Bortolussi, L. Nenzi, **A temporal logic approach to modular design of synthetic biological circuits**, in Proceedings of *CMSB 2013: the 11th International Conference on Computational Methods in Systems Biology*, Austria, Springer-Verlag, Lecture Notes in Computer Science, vol. 8130, pp. 164-178, 2013 .

CONFERENCES AND SCHOOLS ATTENDED

VALUETOOLS 2016 25-28/10/2016
Taormina, Italy

10th International Conference on Performance Evaluation Methodologies and Tools

RV 2015 22-25/09/2015
Vienna, Austria
15th International Conference on Runtime Verification

HSB 2015 04-05/09/2015
Madrid, Spain
4th International Workshop on Hybrid Systems and Biology

Dagstuhl Seminar 14521 14-19/12/2014
Dagstuhl, Germany
Collective Adaptive Systems: Qualitative and Quantitative Modelling and Analysis

VALUETOOLS 2014 08-10/12/2014
Bratislava, Slovakia
8th International Conference on Performance Evaluation Methodologies and Tools

QEST 2014 08-10/09/2014
Florence, Italy
11th International Conference on Quantitative Evaluation of SysTems

MOVEP 2014 07-13/07/2014
Nantes, France
11th Summer School on Modelling and Verification of Parallel Processes

HSB 2013 02/09/2013
Taormina, Italy
Second International Workshop on Hybrid Systems and Biology

PhD Summer School 10-14/09/2012
Udine, Italy
Biology, Computation and Information

MLQA Workshop 09/08/2012
School of Informatics, Edinburgh
Compositional Modelling and Analysis of Quantitative Systems

CONFERENCE AND WORKSHOP TALKS

28/10/2016: *"jSSTL - A Tool to Monitor Spatio-Temporal Properties"*, 10th International Conference on Performance Evaluation Methodologies and Tools, Taormina, Italy.

24/09/2015: *"Qualitative and Quantitative Monitoring of Spatio-Temporal Properties"*, 15th International Conference on Runtime Verification,Vienna, Austria.

05/09/2015: *"Studying Emergent Behaviours in Morphogenesis using Signal Spatio-Temporal Logic"*, 4th International Workshop on Hybrid Systems and Biology,Madrid, Spain.

09/12/2014: *"Specifying and Monitoring Properties of Stochastic Spatio-Temporal Systems in Signal Temporal Logic"*, 8th International Conference on Performance Evaluation Methodologies and Tools, Bratislava, Slovakia.

02/09/2013: *" On the Robustness of Temporal Properties for Stochastic Models"*, 2nd International Workshop on Hybrid Systems and Biology, Taormina, Italy

INVITED SEMINAR TALKS

02/12/2016: *"A logic-based approach to specify and design spatio-temporal behaviours of complex systems"*, University of Edinburgh, Edinburgh, United Kingdom.

22/11/2016: *"Monitoring Spatio-Temporal Properties"*, University of Trieste, Trieste, Italy.

12/01/2016: *"Reinforcement Learning in Quantitative Formal Methods"*, University of Trieste, Trieste, Italy.

24/05/2015: *"Qualitative and Quantitative Monitoring of Spatio-Temporal Properties"*, Saarland University, Saarbrüchen, Germany.

28/05/2013: *"A temporal logic approach to modular design of synthetic biological circuits"*, ISTI, Pisa, Italy.

OTHER TALKS

13/07/2016: *"A Logic-Based Approach to Specify and Design Spatio-Temporal Behaviours of Complex Systems"*, Thesis defense, Lucca, Italy.

15/12/2015: *"Qualitative and Quantitative Monitoring of Spatio-Temporal Properties"*, QUANTICOL plenary meeting, Lucca, Italy.

05/02/2015: *"Specifying and Monitoring Properties of Stochastic Spatio-Temporal Systems in SSTL"*, QUANTICOL plenary meeting, Grenoble, France.

14/11/2014: *"Specifying and Monitoring Properties of Stochastic Spatio-Temporal Systems in Signal Temporal Logic"*, Lucca, Italy.

11/07/2014: *"Verification of stochastic and spatial behaviours of complex systems"*, 11th Summer School on Modelling and Verification of Parallel Processes, Nantes, France.

24/06/2014: *"SSTL: The Signal Spatio-Temporal Logic,"*, QUANTICOL scientific meeting, Lucca, Italy.

06/02/2014: *"Spatio-Temporal logics for CAS"*, Thesis Proposal, Lucca, Italy.

30/10/2013: *"Modelling bike sharing in StoKlaim"*, QUANTICOL Space Workshop, Informatics Forum, Edinburgh.

21/02/2013: *"Signal Temporal Logic: a good logic for quantitative analysis"*, QUANTICOL pre kick-off meeting, Lucca, Italy.

27/10/2012: *"A logic-based approach to determine the connection between modules and their behavioral properties"*, Informatics Forum, Edinburgh.

[1] Autorizzo il trattamento dei miei dati personali ai sensi del Dlgs 196 del 30 giugno 2003