# Luca Bortolussi

## Curriculum Vitae

February 2025

## Biographic Data

**Name:** Luca Bortolussi.

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## Qualifications

**1/11/2003–31/10/2006:** PhD in Computer Science from University of Udine, Italy, with PhD thesis titled: "Constraint-based approaches to stochastic dynamics of biological systems".

**01/09/1999–09/07/2003:** graduated on 9 July 2003 in Mathematics cum laude and Excellence award, University of Trieste, Italy. Thesis: "Possibilities as coherent previsions. Tecniques of representation and management of incomplete knowledge".

**01/09/1994–14/07/1999:** diploma di liceo scientifico (scientific high school degree), with evalutation of 100/100, granted by Liceo scientifico "XXV Aprile" Portogruaro (VE), Italy.

## Employment

**Current**

**From 1/10/2021:** Full Professor of Computer Science, University of Trieste, Italy.

**Past**

**From 1/11/2015-30/09/2021:** Associate Professor of Computer Science, University of Trieste, Italy.

**01/11/2018-31/10/2021:** Mercator fellow and visiting guest professor of Modelling and Simulation, Department of Informatics, Saarland University, Germany (within a DFG research project).

**01/04/2016-31/12/2016:** Visiting guest professor of Modelling and Simulation, Department of Informatics, Saarland University, Germany.

**15/12/2006–31/10/2015:** Ricercatore (Assistant Professor) of computer science, University of Trieste, Italy.

**01/06/2014–31/05/2015:** Gastprofessor (guest professor) of Modelling and Simulation, temporary coordinator of the Modelling and Simulation group, Department of Informatics, Saarland University, Germany.

**From 01/04/2012:** Associate Researcher at CNR/ISTI, Pisa (National research council, Institute of Information Science and Technology).

**From 01/01/2013:** Honorary fellow of the School of Informatics, University of Edinburgh.

**01/01/2013-31/12/2014:** Visiting professor at IMT, Lucca.

**1/11/2011–30/10/2012:** Visiting researcher at the Laboratory for the Foundations of Computer Science, School of Informatics, University of Edinburgh.

**15/01/2005–14/07/2005:** visiting PhD Student at Dept. of Computer Science, Imperial College, London, UK, under the supervision of Chris Hankin and Herbert Wiklicky.

**1/11/2003–31/10/2006:** PhD fellow of computer science, University of Udine, Italy.

**01/10/2002–09/07/2003:** tutor of Mathematical Analysis and Physics for the undergraduate course of mathematics, University of Trieste, Italy.

# Awards

- Best paper award at QEST 2013 (Learning and Designing Stochastic Processes from Logical Constraints, with Guido Sanguinetti).
- Best paper award at QEST 2011 (Hybrid Limits of Continuous Time Markov Chains).
- Best paper award at ASMTA 2010 (Limit behavior of the hybrid approximation of Stochastic Process Algebras).
- Premio Marco Reni 2006, for the excellence of the master thesis, awarded by Dipartimento di Matematica ed Informatica, Università di Trieste.

# Research Summary and Interests

**Keywords**: Machine Learning; Modelling and Simulation; Explainable Artificial Intelligence; Neuro-symbolci Artificial Intelligence Quantitative Formal Methods; Cyber-Physical Systems; Applications of AI.

My publications are predominantly at the intersection between *computational modelling*, *machine learning*, and *quantitative formal methods*. In the recent years, the activity is decliend mostly in the fields of explainable and neuro-symbolic artificial intelligence, with applications ranging from industry, cyber-physical systems, climate, and medicine. I also have few papers in fields such as bioinformatics, string algorithms, fuzzy theory, statistics for medicine, and computational linguistic.

## Bilbiometrics

Data from February 5, 2025

| Source | Citations | h-index | i10 index | Documents |
|---|---|---|---|---|
| Google Scholar | 3538 | 33 | 89 | n/a |
| Scopus | 1931 | 24 | n/a | 180 |

## Linguistic skills

**Italian:** mother tongue.

**English:** fluent level (written and spoken).

**French:** school level (written and spoken).

**German, Spanish, Slovenian, Russian:** survival level (spoken).

## Grants and fundings

**Current grants**:

- Internal grant Call for Ideas, on generative AI for medicine and fishing, PI, funding: 30k
- Research Contract with Beantech on generative AI for industry, PI, Funding: 10k.
- Research Contract with SBE- Varvit, Monfalcone, on generative AI technology for industry. PI. Funding: 20k euro
- EU PNRR iNEST: Nord-Est InnovationEcosystem. PI of the Trieste Unit of Spoke 9 (MEthods for Digital Twins), Leader of Research Tark 9.3 (AI for digital twins); deputy leader of Reseatch Topic 8.5 (digital twin of the noth Adriatic sea). Funding (UNITS spoke 9): $\tilde{8}$00k euro
- Research Contract with INFINEON, Villach, on automatic layout design of analog circuits. PI. Funding: 180k euro

**Past Grants**:

- Contract with MIB (International Business School) for formation of Data Science Business TRanslators. Coordinator. Funding: 65k.
- Research Contract with Generali Invest, Trieste, on machine leaarning for asset risk precition. PI. Funding: 100k euro
- PRIN 2017 SEDUCE: Designing Spatially Distributed Cyber-Physical Systems under Uncertainty. PI of Trieste unit, starting spring 2019. Funding: 208.5k euro (TS units).
- DFG grant 391984329 - MULTIMODE: Methodologies and Tools for the Analysis and Design of Multimodal Stochastic Systems. Co-PI and Mercator Fellow, together with Verena Wolf, started November 2018, duration 3 years. Funding: 300.000 euro.
- FRB (Fondo per la Ricerca di Base) 2018 - MIUR.
- University of Trieste, FRA 2016 (Local Research Grant - coordinator).
- EU FP7 grant "QUANTICOL" (Strep project, FOCAS ICT call, `www.quanticol.eu`). From April 2013, 48 months (member of CNR unit, co-coordinator of Work Package 2 on Spatial Modelling).
- University of Trieste, FRA 2011 (Local Research Grant - coordinator).
- GNCS, Progetto Giovani Ricercatori 2009 (individual grant).
- GNCS, Progetto Giovani Ricercatori 2010 (individual grant).
- Royal Society Exchange Program 2010-2011 with the University of Edinburgh (coordinator together with prof. Jane Hillston).
- University of Trieste, FRA 2009 (Local Research Grant - coordinator).

- Firb 2003 RBLA039M7M, LiBI. (National Laboratory for Bioinformatics, Italian National grant for Base Research). From 2004 to 2008, 48 months (member of Trieste unit).
- Firb 2003 RBNE03B8KK,"Il riconoscimento molecolare nelle interazioni proteina-ligando, proteina-proteina e proteina superficie: sviluppo di approcci sperimentali e computazionali integrati per lo studio di sistemi di interesse farmaceutico". (Molecular recognition of protein-ligand, protein-protein, and protein-surface interactions. Italian National grant for Base Research). From 2004 to 2007, 36 months (member of Udine unit).
- Prin 2005 2005015491, "Vincoli e preferenze come formalismo unificante per l'analisi di sistemi informatici e la soluzione di problemi reali" (Constraints and preferences as a unifying formalism for the analysis of computer systems and the solution of real-life problems, Italian Research Projects of National Relevance) (member of Udine unit).
- Prin 2006 2006011235, "BiSCA — Bio-Inspired Systems and Calculi with Applications" (Italian Research Projects of National Relevance). From 2007 to 2009, 24 months (member of Udine unit).
- Regional project FVG (L.R. 11/2003 project), 2007. BIOcheck A Scalable Computational Tool for Building and Checking Biological Models (member of Udine unit).

**Other funds**:

- Raised about 400.000 euros for the master program in Data Science and Artificial Intelligence, from companies and institutions.

# PhD Students and Post-Docs

**PhD boards**:

- **From 2021**: Member of the scientific board of the PhD in Applied Data Science and Artificial Intelligence of the University of Trieste.
- **From 2018 to 2021**: Member of the scientific board of the PhD in Earth Science, Fluid Dynamics, and Mathematics. Interactions and Methods of the University of Trieste, ICTP, and OGS.
- **From 2013 to 2017**: Member of the scientific board of the FVG PhD in Molecular Biology, joint between SISSA, ICGEB, University of Trieste, and University of Udine.

**Current PhD students** (all in ADSAI phd program):

- Sara Candussio
- Romina Doz
- Nicholas Pearson
- Ilaria Vascotto
- Valentina Blasone
- Francesco Giacomarra
- Davide Basso
- Davide Scassola
- Nicoals Milton Plasencia
- Irene Ferfoglia

- Emanuele Ballarin

**Former PhD students**:

- Lorenzo Basile, currently post doc at Area Science Park
- Federico Camerota, currently post doc at UNITS
- Gaia Saveri (national phd in AI) - currently research collaborator at UNITS
- Stefano Alberto Russo (Univ. of Trieste) - currently post doc at INAF
- Ginevra Carbone (Univ. of Trieste) - currently data scientist at Generali
- Francesca Cairoli (Univ. of Trieste) - currently Associate Researcher at UNITS
- Laura Nenzi (IMT Lucca), currently Associate Professror at UNITS. .
- Roberta Lanciani (IMT Lucca), currently business analyst at Gucci (fashion company).
- Simone Silvetti (Univ. of Udine), currently Post-doc at UNITS, previouasly working for Esteco SpA (software company).

**Previous Post-Docs**:

- Enrico Regolin (PRIN SEDUCE project).
- Marco Pandolfi (Department of Excellence framework)
- Laura Nenzi (2016-2017, co-supervised with Michele Loreti within QUANTICOL project at IMT Lucca).
- Rytis Paŝkauskas (2013-2015, co-supervised with Mieke Massink within QUANTICOL project at ISTI CNR, Pisa)

# Community Service

**Chairing of conferences and schools**

- PC Chair and local organizer of the 17th International Conference on Computational Methods in Systems Biology, CMSB 2019, September 2019, Trieste.
- PC Chair of the Fourteenth International Conference on Quantitative Evaluation of SysTems, QEST 2017, Berlin, Germany, September 5-7, 2017 .
- PC Chair of the Twelfth International Workshop on Quantitative Aspects of Programming Languages and Systems, co-located with ETAPS 2014, Grenoble, March 2014.
- PC Chair of the Eleventh International Workshop on Quantitative Aspects of Programming Languages and Systems, co-located with ETAPS 2013, Rome, March 2013.
- PC Chair of the Third International Workshop on Hybrid Autonomous Systems, co-located with ETAPS 2013, Rome, March 2013.
- PC Chair of the First International Workshop on Hybrid Systems and Biology, co-located with CONCUR 2012, Newcastle-upon-Tyne, September 2012.
- Scientific Co-Director of the Bioinformatics section of the CODATA-RDA Research Data Science Summer School, ICTP, Trieste, July 24-27, 2017.

- Co-Director of the joint 2st FVG International Summer School on Bioinformatics — 7th International School on Biology, Computation, and Information (BCI 2012), 2012, Udine, Italy.
- Co-Director of the 1st FVG International Summer School on Bioinformatics, July 4–8, 2011, Trieste, Italy.
- Co-Director of the 6th International School on Biology, Computation, and Information (BCI 2010), September 20–24, Dobbiaco, Italy (http://www.dmi.units.it/bci2010/)
- Co-Director of the 5th International School on Biology, Computation, and Information (BCI 2008), September 8–12, Trieste, Italy (http://bci2008.cbm.fvg.it)

**Steering committees and editorial boards.**

- Member of the editorial board of *Information and Computation*, since July 2014.
- Member of the editorial board of *ACM Transactions of Modelling and Simulation*, since 2017.
- Guest editor of a special issue on the Quantitative Evaluation of Systems of *ACM Transactions of Modelling and Simulation*, 2017-2018.
- Guest editor of a special Issue on "Quantitative Aspects of Programming Languages and Systems' of *Theoretical Computer Science*, 2014-2015.
- Guest editor of a special Issue on "Hybrid Systems and Biology" of *Information and Computation*, 2013.
- (Founding) member of the steering committee of HSB (Hybrid Systems and Biology), since 2012.
- Member of the steering committee of QAPL (Quantitative Aspects of Programming Languages and Systems), since 2013.
- Elected member of the steering committee of QEST (Quantitative Evaluation of SysTems), 2014-2016, and 2018-2020.

**Program committees.** **AAAI 2022** (AAAI Conference on Artificial Intelligence), **AAAI 2021** (AAAI Conference on Artificial Intelligence), **ATVA 2021** (International Symposium on Automated Technology for Verification and Analysis), **QEST 2021** (International Conference on Quantitative Evaluation of SysTems), **CMSB 2021** (International Conference on Computational Methods in Systems Biology), **IJCAI 2020** (International Joint Conference on Artificial Intelligence and European Conference on Artificial Intelligence), **VALUETOOLS 2020** (International Conference on Performance Evaluation Methodologies and Tools), **HSB 2020** (International Workshop on Hybrid Systems and Biology), **CMSB 2020** (International Conference on Computational Methods in Systems Biology), **ATVA 2020** (International Symposium on Automated Technology for Verification and Analysis) **IJCAI 2019** (International Joint Conference on Artificial Intelligence and European Conference on Artificial Intelligence), **ICPE 2020** (ACM/SPEC International Conference on Performance Engineering), **AAAI 2020** (AAAI Conference on Artificial Intelligence), **ATVA 2019** (International Symposium on Automated Technology for Verification and Analysis), **IJCAI-ECAI 2019** (International Joint Conference on Artificial Intelligence and European Conference on Artificial Intelligence), **CMSB 2019** (International Conference on Computational Methods in Systems Biology), **QEST 2019** (International Conference on Quantitative Evaluation of SysTems), **HSB 2019** (International Workshop on Hybrid Systems and Biology), **SIGSIM-PADS'19** (ACM SIGSIM Conference on Principles of Advanced Discrete Simulation), **VALUETOOLS 2019** (International Conference on Performance Evaluation Methodologies and Tools), **IJCAI-ECAI 2018** (International Joint Conference on Artificial Intelligence and European Conference on Artificial Intelligence), **QAPL 2018** (Sixteenth International Workshop on Quantitative Aspects of Programming Languages and Systems), **CMSB 2018** (16th International Conference on Computational Methods in Systems Biology), **ICTCS 2018** (19th Italian Conference on Theoretical Computer Science), **MedCPS 2018** (Medical Cyber Physical Systems Workshop 2018), **ADHS 2018** (IFAC Conference on Analysis and Design of Hybrid Systems), **BIOINFORMATICS 2018** (International Joint

Conference on Biomedical Engineering Systems and Technologies), **VALUETOOLS 2017** (International Conference on Performance Evaluation Methodologies and Tools), **CMSB 2017** (International Conference on Computational Methods in Systems Biology), **DataMod 2017** (International Symposium "From Data to Models and Back"), **BIOINFORMATICS 2017** (International Joint Conference on Biomedical Engineering Systems and Technologies), **eCAS2016** (eCAS Workshop on Engineering Collective Adaptive Systems) **INSCI2016** (International Conference on Internet Science) **FORECAST 2016** (Workshop on FORmal methods for the quantitative Evaluation of Collective Adaptive SysTems) **MEMICS 2016** (Doctoral Workshop on Mathematical and Engineering Methods in Computer Science) **QEST 2016** (International Conference on Quantitative Evalution of SysTems), **HSB 2016** (International Workshop on Hybrid Systems and Biology), **CMSB 2016** (International Conference on Computational Methods in Systems Biology), **Medical CPS 2016** (International Workshop on Medical Cyber-Physical Systems), **DataMod 2016** (International Symposium "From Data to Models and Back"), **FORECAST 2016** ( Workshop on FORmal methods for the quantitative Evaluation of Collective Adaptive SysTems), **HSB 2015** (International Workshop on Hybrid Systems and Biology), **FORMATS 2015** (International Conference on Formal Modelling and Analysis of Timed Systems), **RV 2015** (International Conference on Runtime Verification), **QEST 2015** (International Conference on Quantitative Evalution of SysTems), **SCOPES 2015** (International Workshop on Spatial and COllective PErvasive Computing Systems), **QAPL 2015** (International Workshop on Quantitative Aspects of Programming Languages and Systems), **MoKMaSD 2015** (International Symposium on Modelling and Knowledge Management applications: Systems and Domains), **IFIP PERFORMANCE 2014** (International Symposium on Computer Performance, Modeling, Measurements and Evaluation), **PDP 2014** (International Conference on Parallel and Distributed Computing - Advances in High-Performance Bioinformatics, Systems and Synthetic Biology), **FORMATS 2014** (International Conference on Formal Modelling and Analysis of Timed Systems), **QEST 2014** (International Conference on Quantitative Evalution of SysTems), **HSB 2014** (International Workshop on Hybrid Systems and Biology), **DCPerf14** (International Workshop on Data Center Performance), **COMPMOD 2013** (International Workshop on Computational Models for Cell Processes), **HSB 2013** (International Workshop on Hybrid Systems and Biology), **QAPL 2012** (International Workshop on Quantitative Aspects of Programming Languages and Systems), **FBTC 2012** (International Workshop "From Biology to Concurrency and Back"), **NETTAB 2009** (Network Tools and Applications in Biology).

**Organising committees.** Member of the organization and scientific committee of the following international schools and conferences: **BCI 2007** (Fourth Int. School on Biology, Computation and Information, July 2–6, 2007, Trieste, Italy, http://bci2007.cbm.fvg.it), **BCI 2006** (Third Int. School on Biology, Computation and Information, September 11–16, 2006, Dobbiaco (BZ), Italy, http://bioinf.dimi.uniud.it/bci), **RCRA 2006** (Italian Conference on Knowledge representation and Automated Reasoning), **BCI 2005** (Second Int. School on Biology, Computation and Information, September 11–16, 2005, Dobbiaco, Italy), **BCI 2004** (First Int. School on Biology, Computation and Information, September 19–25, 2004, Dobbiaco, Italy, http://bioinf.dimi.uniud.it/bci).

**Reviewer Activity.** I reviewed papers for the major journals and conferences in my area, including Theoretical Computer Science, Transactions in Computational Systems Biology, Information and Computation, Performance Evaluation, Theory and Practice of Logic Programming, BCM Bioinformatics, IEEE Bioinformatics.

## Administrative Activities

- Deputy coordinator of the phd program in "Applied Data Science and Artificial Intelligence", University of Trieste, from March 2021.
- Coordinator of the bachelor program in "Artificial Intelligence and Data Analytics", University of Trieste, from April 2021.
- Coordinator of the master program in "Data Science and Scientific Computing", of the University of Trieste, jointly organised with University of Udine, SISSA, and ICTP, from September 2016.

- Member of the directive board of CINI and local responsible of the CINI unit of Trieste (2020-2022).
- Rector Delegate on the CINECA Board (since 2021)
- Member of the "giunta di dipartimento" (Departmental executive board) of the Department of Mathematics and Geosciences, University of Trieste, Italy, from 2013 to June 2014 and from November 2015 to 2019.
- Member of the Open Access commission of the University of Trieste, Italy.
- Member of the administration board of the University of Trieste, Italy, from July 2009 to October 2011, as representative of Associate Researchers.
- Member of the administration board of the University of Trieste, Italy, from May 2002 to July 2003, as representative of Students.

### Membership of Scientific Societies

- Member of INFORMS SIMULATION (Modelling and Simulation Society), from 2018.
- Member of INdAM GNCS (National Institute of High Mathematics - Scientific Computing Group), from 2004 to 2019.
- Member of INFORMS APS (Applied probability society), 2013-2015.

## Invited Talks at Conferences and Workshops

**November 2022:** Overlay workshop, invited talk on"stlv2vec: semantic-preserving embeddings of signal temporal logic", Udine, Italy

**December 2018:** WSC 2018, Winter Simulation Conference, invited tutorial on 'Bayesian Statistical Parametric Verification and Synthesis by Machine Learning', Goteborg, Sweden.

**November 2018:** DYNET 2018, Stochastic Dynamics on Large Networks, Prediction and Inference, Max Plank for Complex Systems, Dresden, Germany: "Bayesian Verification of Behavioural Properties".

**September 2018:** CAP Workshop, organized within the sino-german CAP project, Beijing, China: "Parametric Verification and Synthesis: the Bayesian Machine Learning Way".

**October 2016:** MEMICS 2016, Doctoral Workshop on Mathematical and Engineering Methods in Computer Science, Telc, Czeck Republic: "The Machine Learning Way to Formal Verification".

**September 2016:** RiSE Workshop, Pöllenberg, Austria: "Mean-Field Approximation for Stochastic Verification".

**September 2016:** 7th International Symposium on Games, Automata, Logics and Formal Verification (GandALF 2016), Catainia, Italy: "Machine Learning Meets Formal Verification".

**June 2016:** 16th edition of the Schools on Formal Methods (SFM) on Dynamical Systems, Bertinoro, Italy: "Introduction to Mean Field".

**October 2014:** 6th International Symposium On Leveraging Applications of Formal Methods, Verification and Validation (ISoLA 2014), Corfu, Greece.

**September 2014:** 11th European Workshop on Performance Engineering (EPEW), Firenze, Italy.

**July 2013:** 18th INFORMS Applied Probability Society Conference (APS), Costa Rica.

**June 2013:** 13th edition of the Schools on Formal Methods (SFM) on Dynamical Systems, Bertinoro, Italy.

**March 2012:** 2nd international workshop on Hybrid Autonomous Systems, Tallinn, Estonia.

**September 2011:** Third annual meeting of the MLQA ERCIM working group, Aachen, Germany.

**May 2011:** International Workshop on Quantitative Modelling and Formal Analysis IMT, Lucca.

**February 2011:** Scimmie parlanti: linguistiche e altre scienze naturali, Modena and Reggio Emilia, Italy.

**September 2010:** Ravenna 2010: rifiuti, acqua, energia, buone pratiche, economia ambientale. Ravenna, Italy.

**April 2010:** 1st international workshop on Modeling and Verification of Uncertain Hybrid Systems, Stockholm, Sweden.

**August 2009:** 8th international workshop on Process Algebras and Stochastically Timed Activities, PASTA 2009, Edinburgh, UK.

## Invited Seminar Talks

- "Robustness of Bayesian Neural Networks to Gradient-Based Attacks", University of Venice, January 29, 2021.
- "Machine Learning and Logic for Model-Based Testing and Design", Royal Holloway, University of London, Trieste, January 26, 2020.
- "Combining Machine Learning and Logics for Complex Systems", ICTP Condensed Matter Seminars, Trieste, February 28, 2019.
- "Bayesian Verification of Behavioural Properties", Ca Foscari University, Venice, January 11, 2019.
- "Combining Machine Learning and Logics for Complex Systems", SISSA, November 30, 2018
- "Bayesian Statistical Parameter Synthesis", PEPA club, Edinburgh, June 8, 2018.
- "Statistical Parametric Verification of Stochastic Models", Dagstuhl seminar on Machine Learning and Model Checking Join Forces, March 18-23, 2018
- "Machine Learning for Model Abstraction", Ecole Centrale, Paris, July 3, 2017.
- "Statistical Learning and the Analysis of Stochastic Models", TU Wien, January 19, 2017.
- "Monitoring Spatio-Temporal Properties", TU Wien, University of Trieste, January 17, 2017.
- "Introduction to Computational Systems Biology", Life Science Department, University of Trieste, November 24, 2016.
- "Statistical Learning and the Analysis of Stochastic Models", ICTP, Trieste, October 18, 2016.
- "Logic-based design of Spatio-Temporal Behaviours", Max Plank for Software Systems, Kaiserslautern, February 4, 2016.
- "Stochastic Approximation for Stochastic Model Checking", Dagstuhl Seminar, December 2, 2015.
- "Machine Learning Meets Formal Verification", INRIA, Rennes, June 25, 2015.
- "U-check: statistical model checking under uncertainty", MAS, Ecole Centrale Paris, June 24, 2015.
- "Machine Learning Meets Formal Verification", RWTH Aachen, March 25, 2015.
- "Machine Learning Meets Formal Verification", University of Rostock, March 5, 2015.
- "Data-driven Statistical Learning of Temporal Logic Properties", University of Edinburgh, November 21, 2014.

- "Stochastic Approximations For Model Checking", AVACS Meeting, Saarland University, September 25, 2014.
- "A Statistical Approach For Computing Reachability Of Non-Linear And Stochastic Dynamical Systems", PEPA Club, University of Edinburgh, August 8, 2014.
- "Stochastic Approximation Of Global Reachability Probabilities Of Markov Population Models", PEPA Club, University of Edinburgh, August 1, 2014.
- "Smoothed Model Checking for Uncertain CTMC", Univ. of Camerino, March 24, 2014.
- "Learning Stochastic Processes From Qualitative Data", SISSA, Trieste, January 23, 2014.
- "Parameter Identification and Synthesis from Qualitative Data and Behavioural Constraints", Dagstuhl Seminar on Randomized Timed and Hybrid Models for Critical Infrastructures, Dagstuhl, Germany, January 14, 2014.
- "Learning Stochastic Processes From Qualitative Data", Trieste, Department of Physics, December 18, 2013.
- "Mean Field Approximation For Stochastic Model Checking", Venice, May 29, 2013.
- "Hybrid Modelling of Biological Systems", Torino, PhD program in Complex Systems, March 13, 2013.
- "Learning and Designing stochastic processes from logical constraints", Torino, March 12, 2013.
- "Steady-State Bounds on the Deviation of Discrete-Time Markov Chains from their Mean Field Model", PEPA club, Edinburgh, February 1, 2013.
- "Fluid Approximation And Stochastic Model Checking", University of Twente, January 25, 2013.
- "Fluid Approximation And Stochastic Model Checking", Computing Laboratory, Oxford, January 21, 2013.
- "From Boolean To Reals: Quantitative Temporal Logic for Real-Valued Systems", PEPA club, Edinburgh, August 10, 2012.
- "Fluid Model Checking", Imperial College, London, June 19, 2012.
- "Hybrid Performance Modelling of Opportunistic Networks", PEPA Club, Edinburgh, May 18, 2012.
- "Towards Fluid Model Checking", ISAB, SynthSys, Edinburgh, May 15, 2012.
- "On Constraints, Energy, and Hybrid Systems", SynthSys, Modelling Reading Group Edinburgh, March 8, 2012.
- "Hybrid Fluid Limits", ERGO seminars, Edinburgh, February 15, 2012.
- "Towards Fluid Model Checking", PEPA Club meeting, Edinburgh, December 2, 2011.
- "Hybrid Limits of Continuous Time Markov Chains", PEPA Club meeting, Edinburgh, December 2, 2011.
- "Can Fluid Ants Eat Solid Food?" LFCS Lab Lunch, Edinburgh, November 22, 2011.
- "Stochastic Concurrent Constraint Programming: an overview" IMT, Lucca, 25th May 2011.
- "Hybrid approximation of stochastic process algebra models of biological systems" Dagstuhl meeting on Formal Methods in Molecular biology, 13th April 2011.
- "Comparing Fluid and Mean Field Approximations on Markov Chains", 19th October 2010, ISTI CNR, Pisa.

- "Fluid and Mean Field Salad". PEPA club meeting, 10th September 2010, Edinburgh, UK.
- "Hybrid Semantics of Stochastic Programs: Potentials and Challenges", PEPA club meeting, 5th June 2009, Edinburgh, UK.
- "Hybrid Dynamics of Stochastic Programs", 4th May 2009, Camerino, Italy.
- "Discreteness in Systems Biology", GNCS meeting, 4th February 2009, Montecatini, Italy.
- "Hybrid Models of Biological Systems: Discreteness, Stochasticity, and Robustness", 3rd April 2008, Dortmund, Germany.
- "Constraint-Based Modeling and Analysis of Biological Systems", 29th February 2008, Udine, Italy.
- "Hybridizing stochastic Concurrent Constraint Programming", 18th June 2007, PEPA Club meeting, Edinburgh, UK.
- "Biochemical simulation by stochastic concurrent constraint programming and hybrid systems", 20th April 2007, PRIN meeting, Siena, Italy.
- "Computation and Proteins", 16th June 2006, SISSA, Trieste, Italy.
- "From Process Algebras to Differential Equations and Return", 21st April 2006, Dagsthul, Germany.
- "Stochastic Concurrent Constraint Programming", 10th April 2006, PRIN meeting, Padova, Italy.
- "Fuzzy Codebooks and Fuzzy Channels", 15th February 2006, GNCS meeting, Milano, Italy.
- "Multi-Agent Simulation of Protein Folding", 13th December 2005, FIRB meeting, Verona, Italy.
- "Perspectives on concurrency and Biological Systems", 12th December 2005, SISSA, Trieste, Italy.
- "Multi-Agent Simulation of Protein Folding", 16th September 2005, student session at BCI 2005, Dobbiaco, Italy.
- "Multi-Agent Simulation of Protein Folding", 20th July 2005, student session at EASSS 2005, Utrecht, NL.
- "Multi-Agent Simulation of Protein Folding", 8th July 2005, EBI, Cambridge, UK.
- "Protein Folding Simulation in CCP", 3rd June 2004, student session at 1st International School on Advanced BioMedicine and BioInformatics, Lipari, Italy.

## Dissemination Activities

- **2022-current** - Several invited talks at dissemination events on Artificial Intelligence in television programs, Trieste Next, and other events.
- **2021** - Organization and discussant of the panel "Quando le Macchine Pensano Troppo" , Museo Revoltella, Trieste Next.
- **2022** - Organization and panel moderator of the dissemination event "Scienza, Gioco, Funetto" by The Coding Box, Knulp, Trieste.
- **2021** - Invited workshop "Intelligenza Artificiale" by gruppo78, Urban Center, Trieste.
- **2021** - Seminars on "Introduction to Deep Learning" for the Generali Academy "Actuary of the future", organized by MiB- Trieste.
- **2021** - Organization of the panel "Big Data tre volte al giorno", Trieste Next, 2021.

- **2021** - Participation as a panelist to "From High Performance Computing to Artificial Intelligence: University education" at "EuroBioHighTech 2021".
- **2021** - Participation to AI2S Research Fair - organized by the Artificial Intelligence Student Society.
- **2021** - Article on Agenda Digitale (online) on "La via italiana all?intelligenza artificiale? Servono più fondi all?università"
- **2020** - Seminars on "Introduction to Deep Learning" for the Generali Academy "Actuary of the future", organized by MiB- Trieste.
- **2020** - Interview at Buongiorno Regione FVG (local RAI TV program) on Artificial Intelligence.
- **2020** - Participation as a panelist to "La Libertà al tempo dell?Intelligenza Artificiale", part of the journalism festival "Dialoghi"
- **2020** - Participation as a panelist to "Artificial Intelligence Education in Trieste" part of Big Bang Data 2020 at ESOF 2020.
- **2020** - Participation as a panelist to "From High Performance Computing to Artificial Intelligence: University education" at "EuroBioHighTech 2020", part of ESOF 2020.
- **2020** - Interview at Buongiorno Regione FVG (local RAI TV program) on the new bachelor program in Artificial Intelligence and Data Analytics.
- **2020** - Participation to the TV program "TG-COM24 - La città della scienza" on Artificial Intelligence.
- **2020** - Participation to AI2S Research Fair - organized by the Artificial Intelligence Student Society.
- **2020** - Participation to "Orientamento peer to peer" for high school pupils.
- **2019** - Participation to Magazzino 26, episode 3, a RAI Scuola National TV program on scientific dissemination. Interview on big data and artificial intelligence.
- **30 December 2019** - Interview in Buongiorno Regione (local RAI TV program) on Artificial Intelligence.
- **September 2019** - Discussant in the panel for Trieste Next: "Quali regole per l'intelligenza artificiale?".
- **September 2019** - Proponent of the conference for Trieste Next: "Fake news e polarizzazione: come cambia l'informazione ai tempi di internet" - a dialogue between Fabiana Zollo (computer scientist) and Davide Casali (Journalist).
- **18 April 2019** - Discussant in the panel with Fabrizio Barca on the programmatic document of the forum in Inequalities and Diversities.
- **28-30 September 2018** - Proponent of the dissemination laboratory for Trieste Next: "Intelligenza Artificiale - tra arte ed immaginazione" (with A. Ansuini).
- **29th September 2018** - Proponent of the conference for Trieste Next: "L'uomo e le macchine intelligenti: come l'intelligenza artificiale sta cambiando le nostre vite" - a dialogue between Marcello Pelillo (computer scientist) and Simone Arnoldi (Sociologist).
- **23rd May 2018** - Lecture at Formindustria Mechanics 4.0 formation course on "An Introduction to Deep Learning".
- **8th-10th March 2018** - Participation to EDUfair - Belgrade, as delegate of University of Trieste.
- **28th February 2018** - Presentation at Liceo Scientifico Duca D'Abruzzi, Gorizia, on "How Artificial Intelligence is Changing the World".

- **20th February 2018** - Seminar on "Science meets humanities - discussion between a computer scientist and an historian", with Tullia Catalan, Humanities Department, University of Trieste.
- **16th January 2018** - Lecture at Confindustria formation course on "How Artificial Intelligence is Changing the World".
- **13th December 2017** - Lecture at Formindustria Health 4.0 formation course on "An Introduction to Deep Learning".
- **15th March 2016** - "CLERICI VAGANTES: giovani scienziati dell'Italia che invecchia", organised by Circolo della Cultura e delle Arti of Trieste, at the Public Library Largo Papa Giovanni XXIII Trieste.

# Patents

- U. Lucangelo, L. Bortolussi, A. Casagrande, F. Fabris, M. Borelli, F. Quintavalle (2016). Apparatus and method for control of parameters of an assisted ventilation machine. International patent number 102016000103298. University of Trieste.

# Teaching Activity

## Invited Lectures

- Scientific Programming and Algorithms, January-February 2021, SISSA, Italy. Nine hours on algorithms for data science.
- Fluid and Mean Field Approximation. September-October 2013, IMT Lucca, Italy. Six hours lectures, to to PhD students in computer science.
- Formal Methods for Complex Systems. May 2012, Mazarik University, Brno, Czech Republic. Fifteen hours lectures, to PhD students.

## Courses Taught

- Introduzione al Machine Lerning, AA. 2022-2023, Bachelor Program in Artificial Intelligence and Data Analytics, University of Trieste.
- Algoritmi e Strutture Dati, from AA. 2021-2022, Bachelor Program in Artificial Intelligence and Data Analytics, University of Trieste.
- Probabilistic Machine Learning, from AA. 2023-2024, Master Program in Data Science and Artificial Intelligence, University of Trieste.
- Explainable Artificial Intelligence, AA 2021-2022, 2022-2023, phD program in Applied Data Science and AI, University of Trieste.
- Explainable Artificial Intelligence, from AA 2024-2025,Master Program in Data Science and Artificial Intelligence, University of Trieste.
- Probabilistic Machine Learning, AA. 2020-2021, 2021-2022, 2022-2023, Master Program in Data Science and Scientific Computing, University of Trieste.
- Informatica, AA. 2020-2021, Laurea Triennale in Matematica, Universitá di Trieste (24 ore).
- Stochastic Modelling and Simulation, AA. 2020-2021, Master Program in Data Science and Scientific Computing, University of Trieste.
- Statistical Machine Learning, AA. 2019-2020, Master Program in Data Science and Scientific Computing, University of Trieste.

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- Stochastic Modelling and Simulation, AA. 2017-2018, Master Program in Data Science and Scientific Computing, University of Trieste.
- Modelli Computazionali, AA. 2016/2017, Laurea Magistrale in Matematica, Università di Trieste.
- Statistica Computazionale, AA. 2016/2017, Laurea Magistrale in Matematica, Università di Trieste.
- Modelli Computazionali, AA. 2015/2016, Laurea Magistrale in Matematica, Università di Trieste.
- Statistica Computazionale, AA. 2015/2016, Laurea Magistrale in Matematica, Università di Trieste.
- Modelling and Simulation, Winter Semester 2014/2015, Master in Computer Science, Saarland University.
- Computational Modelling of Complex Networks, Block Course, September 2014, Master in Computer Science, Saarland University.
- Metodi Formali in Informatica, AA. 2013/2014, Laurea Magistrale in Matematica, Università di Trieste.
- Metodi Formali in Informatica, AA. 2012/2013, Laurea Magistrale in Matematica, Università di Trieste.
- Algoritmi Avanzati. AA. 2010/2011, Laurea Triennale in Informatica, Università di Trieste.
- Algoritmi e Strutture Dati. AA. 2010/2011, Laurea Triennale in Ingegneria dell'Informazione, Università di Trieste (con A. Sgarro).
- Informatica (modulo in corso integrato). AA. 2010/2011, Laurea Triennale in Tecnico di Laboratorio, Universitá di Trieste.
- Algoritmi e Strutture Dati. AA. 2009/2010, Laurea Triennale in Informatica, Università di Trieste.
- Informatica 2. AA. 2009/2010, Laurea Specialistica in Infermieristica ed Ostetricia, Università di Trieste.
- Informatica (modulo in corso integrato). AA. 2009/2010, Laurea Triennale in Tecnico di Laboratorio, Universitá di Trieste.
- Algoritmi Avanzati (modulo A). AA. 2009/2010, Laurea magistrale in Informatica, Universitá di Trieste.
- Algoritmi e Strutture Dati. AA. 2008/2009, Laurea Triennale in Informatica, Università di Trieste.
- Logica e Linguaggi (in collaborazione con il prof. Andrea Sgarro), AA. 2008/2009, Laurea Triennale in Informatica, Università di Trieste.
- Sistemi Informativi I e II. AA. 2007/2008, Laurea Specialistica in Infermieristica ed Ostetricia, Università di Trieste.
- Algoritmi e Strutture Dati. AA. 2007/2008, Laurea Triennale in Informatica, Università di Trieste.
- Algoritmi e Strutture Dati. AA. 2006/2007, Laurea Triennale in Informatica, Università di Trieste.

- A Short course in Computational Systems Biology. AA 2006-2007, PhD in Genomics, SISSA (Institute for Advanced Studies), Trieste.
- Bioinformatica — Computational Systems Biology. AA. 2006-2007, Laurea Specialistica in Biotecnologie Sanitarie, Università di Udine.
- Fondamenti Logici dell'Informatica — Logics for Computer Science. AA. 2006-2007, Laurea Triennale in Informatica, Università di Trieste.
- Fondamenti Logici dell'Informatica — Logics for Computer Science. AA. 2005-2006, Laurea Triennale in Informatica, Università di Trieste.
- Laboratorio di Algoritmi e Strutture Dati — Exercitations of Algorithms and Data Structures. AA. 2005-2006, Laurea Triennale in Informatica, Università di Udine.
- Teoria dell 'Informazione- Information Theory (Second Module- Channel Codes). AA. 2004-2005, Laurea Specialistica in Informatica, Università di Udine.

### Supervisor of the dissertations

Supervisors of more than 50 bachelor and master thesis.

## Publications

Updated publication list can be found on my google scholar page at: `https://scholar.google.com/citations?user=p5ynADcAAAAJ&hl=it`

Luca Bortolussi