

CURRICULUM VITAE

Matteo Giovanni Rossi, born in Manerbio (Italy) on 24 June 1973, Italian national.

STUDIES

Ph.D. in Computer Engineering and Automation, Politecnico di Milano, March 2003.

PhD thesis title: *Modeling and Analysis of CORBA-based real-time distributed systems*.

Advisor: Prof. Dino Mandrioli.

Laurea degree in Computer Engineering, Politecnico di Milano, April 1999, 100 cum laude.

Graduation thesis title: *Developing Supervision and Control Systems in an Open Distributed Environment*.

Advisor: Prof. Dino Mandrioli.

Diplôme d'ingénieur, ENSTA (Ecole Nationale Supérieure de Techniques Avancées, Parigi) received at the same time as the Italian laurea in the frame of the European TIME (Top Industrial Managers Europe) program.

WORK/RESEARCH/STUDY EXPERIENCE

- *Since January 2005*: Assistant Professor at Dipartimento di Elettronica Informazione e Bioingegneria, Politecnico di Milano
- *September – December 2004*: collaboration with Galgano Informatica s.r.l. for the “Definition of the specification and architecture of a software application for the visualization on PC clients of data from IBM servers iSeries/AS400.”
- *January 2004 – January 2005*: PostDoc at Dipartimento di Meccanica, Politecnico di Milano, within the MIUR FIRB project “Software frameworks and technologies for the development and maintenance of open-source distributed simulation code, oriented to the manufacturing field.”
- *May–November 2003*: PostDoc at Dipartimento di Elettronica e Informazione, Politecnico di Milano, funded by Dipartimento di Elettronica e Informazione, Politecnico di Milano.
- *March 2000 – March 2003*: PhD student, with scholarship from the Italian Ministry for Research, in Computer Engineering and Automation, Dipartimento di Elettronica ed Informazione, Politecnico di Milano.
- *June – September 2002*: visiting researcher at the Reliable Systems Group, University of California at Santa Barbara, under the supervision of Proff. Richard Kemmerer and Giovanni Vigna.
- *September 1992 - April 1999*: student in Computer Engineering, Politecnico di Milano.
- *September 1994 - June 1996*: first and second year at ENSTA (Ecole Nationale Supérieure de Techniques Avancées, Parigi), within the European TIME (Top Industrial Managers for Europe) program for the obtainment of a double degree (Italian and French).

AWARDS

Certificate of Appreciation, ACM (Association for Computing Machinery) and IEEE Computer Society, received at the International Conference on Software Engineering (ICSE) “for outstanding contribution to the creation and organization of the first Student Contest in Software Engineering”, 2009.

QUALIFICATIONS (ABILITAZIONE SCIENTIFICA NAZIONALE, ASN)

I received the following qualifications:

- Associate professor of Mathematical Logics (01/A1), March 2014
- Associate professor of Computer Engineering (09/H1), February 2015

TEACHING ACTIVITY

COURSES TAUGHT (LECTURER)

- **Informatica Teorica**, 5 ECTS credits, Corso di Laurea in Ingegneria Informatica (campus Cremona), Politecnico di Milano, AY from 2003-2004 to 2009-2010.
Full course (including practical classes) taught from 2006-2007 to 2008-2009.
- **Principi di Informatica per l'Automazione**, 5 ECTS credits (full course, including practical classes), Corso di Laurea Specialistica in Ingegneria dell'Automazione, Politecnico di Milano, AY from 2004-2005 to 2009-2010.
- **Informatica A (Informatica Grafica)**, later **Informatica (CIV)**, 10 ECTS credits, Corso di Laurea in Ingegneria Civile, Politecnico di Milano, AY from 2005-2006 to 2009-2010.
Full course (including practical classes) taught in 2006-2007.
- **Algoritmi e Principi dell'Informatica**, 10 ECTS credits (full course), Corso di Laurea in Ingegneria Informatica (campus Cremona), Politecnico di Milano, AY from 2010-2011 to 2018-2019.
- **Ingegneria del Software (per l'Automazione)**, 5 ECTS credits (full course), Corso di Laurea Magistrale in Ingegneria dell'Automazione, Politecnico di Milano, AY from 2010-2011 to 2014-2015.
- **Software Engineering (for Automation)**, 5 ECTS credits (full course), Corso di Laurea Magistrale in Automation and Control Engineering, Politecnico di Milano, AY from 2015-2016 to 2018-2019.
- **Software Engineering 2**, 5 ECTS credits (full course), Corso di Laurea Magistrale in Computer Science and Engineering, Politecnico di Milano, AY from 2017-2018 to 2019-2020.
- **Functional Programming Languages for Parallelism**, 5 ECTS credits, PhD in Information Technology, Politecnico di Milano, 2010 and 2012, in collaboration with Matteo Pradella.
- **Modeling Time in Computing**, 5 ECTS credits, PhD in Information Technology, Politecnico di Milano, 2013 and 2015, in collaboration with Dino Mandrioli, Carlo A. Furia, and Angelo Morzenti.
- **Automated Verification of Timed Systems**, 5 ECTS credits, PhD in Information Technology, Politecnico di Milano, 2016 and 2018, in collaboration with Pierluigi San Pietro and Marcello Bersani.

ACTIVITY IN SUPPORT OF COURSES TAUGHT BY OTHERS

- Teaching assistant (20 h), *Formal Methods in Concurrent and Distributed Systems* (Prof. D. Mandrioli), Corso di Laurea Specialistica in Ingegneria Informatica, Politecnico di Milano (part of the joint M.Sc. in Computer Science with the University of Illinois at Chicago), AY 2000-2001 and 2002-2003.
- Teaching assistant (16 h), *Ingegneria del Software/Basi di Dati* (Proff. A. Coen/V. De Antonellis), Diploma di Laurea in Ingegneria Informatica, Politecnico di Milano, AY 2000-2001.
- Teaching assistant (24 h), *Informatica 1* (Prof. D. Mandrioli), Corso di Laurea in Ingegneria Informatica (campus Cremona), Politecnico di Milano, AY from 2000-2001 to 2003-2004.
- Teaching assistant (20 h), *Informatica Teorica* (Prof. D. Mandrioli), Corso di Laurea in Ingegneria Informatica, Politecnico di Milano, AY 2002-2003.
- Teaching assistant (20 h), *Ingegneria del Software* (Prof. A. Morzenti), Corso di Laurea in Ingegneria Informatica, Politecnico di Milano, AY from 2002-2003 to 2004-2005.
- Teaching assistant (16 h), *Algebra e Logica Matematica* (Prof.sse A. Cherubini e S. Adami), Corso di Laurea in Ingegneria Informatica, Politecnico di Milano, AY from 2003-2004 to 2004-2005.
- Seminars (4 h), *Ingegneria del Software 2* (Prof. C. Ghezzi), Corso di Laurea Specialistica in Ingegneria Informatica, Politecnico di Milano, AY 2003-2004.
- Seminars (2-4 h), *Affidabilità dei Sistemi Informatici* (Prof. C. Bolchini e P. Cremonesi), Corso di Laurea Specialistica in Ingegneria Informatica, Politecnico di Milano, AY 2005-2006, 2006-2007 and from 2008-2009 to 2013-2014.

ORGANIZATIONAL ACTIVITIES IN SUPPORT OF THE UNIVERSITY

From May 2007 to December 2008: member of the board of Dipartimento di Elettronica e Informazione.
From June 2009 to February 2013: delegate for the Computer Science and Engineering area in the commission for scientific credentials of Dipartimento di Elettronica e Informazione .
Since March 2013: delegate for Dipartimento di Elettronica Informazione e Bioingegneria in the commission for scientific credentials of Politecnico di Milano.

PARTICIPATION TO PROGRAM COMMITTEES

PC Chair

- Student Contest in Software Engineering (SCORE), part of the International Conference on Software Engineering (ICSE), 2011
- Doctoral Symposium of the 21st International Symposium on Formal Methods (FM), 2016
- International Conference on Formal Methods in Software Engineering (FormaliSE), 2019

PC member

- Student Contest in Software Engineering (SCORE), part of the International Conference on Software Engineering (ICSE), 2009, 2013, 2016.
- Formal Methods in Software Engineering: Rigorous and Agile Approaches (FormSERA), part of ICSE 2012
- FME Workshop/Conference on Formal Methods in Software Engineering (FormaliSE), part of ICSE, from 2013 to 2018
- IEEE International Workshop Formal Methods Integration (FMi), from 2013 to 2019
- IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR) 2014 and 2016
- International Workshop on Quality-Aware DevOps (QUDOS), 2015 and 2016
- International Conference on Software Paradigm Trends (ICSOFT-PT), 2015, 2016
- International Conference on Software Technologies (ICSOFT), from 2017 to 2019
- International Workshop on Formal Methods for Industrial Critical Systems and Automated Verification of Critical Systems (FMICS-AVoCS), 2016, 2017
- International Conference on Formal Methods for Industrial Critical Systems (FMICS), 2018, 2019
- International Conference on Computer Safety, Reliability and Security (SAFECOMP), 2017, 2019
- International Symposium on Games, Automata, Logics, and Formal Verification (GandALF), 2017
- International Conference on Reliability, Safety and Security of Railway Systems: Modelling, Analysis, Verification and Certification (RSSRail), 2017
- World Congress on Formal Methods (FM), 2019

I have been reviewer for many journals and conferences, including the IEEE Transactions on Software Engineering, ACM Transactions on Computational Logic, Theoretical Computer Science, Information and Computation, Software and Systems Modeling, Science of Computer Programming, IEEE Transactions on Industrial Informatics, IEEE Transactions on Intelligent Transportation Systems, Robotics and Computer-Integrated Manufacturing, International Conference on Software Engineering, Symposium on the Foundations of Software Engineering, Symposium on Logic in Computer Science, Formal Aspects of Software Engineering, Control and Decision Conference.

PROFESSIONAL (CONSULTING) ACTIVITIES

- M.B. International Telecom Labs S.r.l., April-July 2008.
- Regione Lombardia, June-September 2008.
- Azienda Trasporti Milanesi (ATM), April-July 2009.
- TreNord, May-July 2013.
- TreNord, March-June 2014.
- TreNord, June-July 2015.
- Rete Ferroviaria Italiana (RFI), June-September 2017.
- ABB, June 2018-December 2019

RESEARCH PROJECTS

Responsible:

- “MObility and Tourism in Urban Scenarios” (MOTUS), MSE “Industria 2015” project, 2009-2014, Politecnico di Milano technical leader.
- “Developing Data-Intensive Cloud Application with Iterative Quality Enhancements” (DICE), EU H2020 Project n° 644869, 2015-2017, task leader.
- “Information Technologies for Shift2Rail” (IT2Rail), EU H2020 project, grant n° 636078, 2015-2017 research unit leader.
- “Semantic Transformations for Rail Transportation” (ST4RT), Shift2Rail EU project, grant n° 730842, 2016-2018, research unit leader.

- “Governance of the Interoperability Framework for Rail and Intermodal Mobility” (GOF4R), Shift2Rail EU project, grant n° 730844, 2016-2018, research unit leader.
- “Semantics for Performant and scalable Interoperability of multimodal Transport” (SPRINT), Shift2Rail EU project, grant n°826172, 2018-2020, research unit leader.

Participant:

- “Open Distributed Reliable Environment, Architecture & Middleware for Supervision – II” (OpenDREAMS-II), EU ESPRIT project n° 25262, 1998-2000.
- “Quack: a platform for the quality of new generation integrated embedded systems”, MIUR COFIN project, 2002-2003.
- “Software architectures with high quality of service for global computing on cooperative Wide Area Networks”, CNR project, 2002-2004.
- “Software frameworks and technologies for the development and maintenance of open-source distributed simulation code, oriented to the manufacturing field.”, MIUR FIRB project, 2002-2006.
- “Adaptive Infrastructures for Decentralised Organisations (ARTDECO)”, MIUR FIRB project, 2006-2009.
- “Self-Managing Situated Computing” (SMScom), ERC Advanced Investigator Grant n° 227977 (principal investigator Prof. C. Ghezzi), 2009-2013.
- “Dependable Adaptable Software Architectures for Pervasive Computing” (D-ASAP), MIUR PRIN project, 2008-2011.
- “Model-based methods and tools for Avionics and surveillance embedded systems” (MADES), EU FP7 Project n° 248864, 2010-2012.
- “Diagnostica e monitoraggio CCS”, Fondazione Politecnico di Milano (JRC Trasporti), 2010-2011.
- “Diagnostica e monitoraggio segnalamento ferroviario”, Fondazione Politecnico di Milano (JRC Trasporti), 2012-2013.
- “Green Move”, Regione Lombardia (“Accordi Istituzionali” program), 2011-2013.
- “Formal Methods: Business Impact of Application to Security relevant Devices” (FM-BIASED), EU CIPS Programme for Terrorism & Security-Related Risks, 2013-2014
- “Car and the Internet”, EIT ICT Labs, 2013.
- “3city”, EIT ICT Labs, 2014 and 2015.
- “Governing Adaptive and Unplanned Systems of Systems” (GAUSS), MIUR PRIN project, 2017-2019.

PUBLICATIONS

Books Authored:

- B1. C.A. Furia, D. Mandrioli, A. Morzenti, M. Rossi, *Modeling Time in Computing*, EATCS Monographs in Theoretical Computer Science, Springer, October 2012, doi:[10.1007/978-3-642-32332-4](https://doi.org/10.1007/978-3-642-32332-4).

Book Editing:

- E2. D. Bignami, A. Colorni, A. Lué, R. Nocerino, M. Rossi, S. Savaresi (editors), *Electric Vehicle Sharing Services for Smarter Cities*, Springer, August 2017, doi:[10.1007/978-3-319-61964-4](https://doi.org/10.1007/978-3-319-61964-4).
E1. A. Bagnato, I. R. Quadri, M. Rossi, L. Soares Indrusiak (editors), *Handbook of Research on Embedded Systems Design*, IGI Global, June 2014, doi:[10.4018/978-1-4666-6194-3](https://doi.org/10.4018/978-1-4666-6194-3).

Journal papers:

- J20. F. Vicentini, M. Askarpour, M. Rossi, D. Mandrioli, *Safety Assessment of Collaborative Robotics Through Automated Formal Verification*, IEEE Transaction on Robotics, online first, pp. 1-20. doi:[10.1109/TRO.2019.2937471](https://doi.org/10.1109/TRO.2019.2937471)
J19. M. Askarpour, D. Mandrioli, M. Rossi, F. Vicentini, *Formal model of human erroneous behavior for safety analysis in collaborative robotics*, Robotics and Computer-Integrated Manufacturing, Vol. 57, (June 2019), pp. 465-476. doi:[10.1016/j.rcim.2019.01.001](https://doi.org/10.1016/j.rcim.2019.01.001)
J18. R. Troncy, G. Rizzo, A. Jameson, O. Corcho, J. Plu, E. Palumbo, J. C. Ballesteros Hermida, A. Spirescu, K. Kuhn, C. Barbu, M. Rossi, I. Celino, R. Agarwal, C. Scanu, M. Valla, T. Haaker, *3sixty: Building comprehensive knowledge bases for city exploration*, Journal of Web Semantics, Vol. 46-47, (October 2017), pp. 2-13. doi:[10.1016/j.websem.2017.07.002](https://doi.org/10.1016/j.websem.2017.07.002)
J17. L. Baresi, A. Morzenti, A. Motta, M. M. Pourhashem Kallehbasti, M. Rossi, *A Logic-based Approach for the Verification of UML Timed Models*, ACM Transactions on Software Engineering and Methodology, 26, 2, Article 7 (September 2017), 47 pages. doi:[10.1145/310641](https://doi.org/10.1145/310641)
J16. M. M. Bersani, M. Rossi, P. San Pietro, *A logical characterization of timed regular languages*, Theoretical Computer Science, Volume 658, Part A, 7 January 2017, pp. 46–59, doi:[10.1016/j.tcs.2016.07.020](https://doi.org/10.1016/j.tcs.2016.07.020)
J15. M. Rossi, D. Mandrioli, A. Morzenti, L. Ferrucci, *A temporal logic for micro- and macro-step-based real-time systems: Foundations and applications*, Theoretical Computer Science, vol. 643, August 2016, pp. 38-64, doi:[10.1016/j.tcs.2016.06.042](https://doi.org/10.1016/j.tcs.2016.06.042)
J14. M. M. Bersani, M. Rossi, P. San Pietro, *A Tool for Deciding the Satisfiability of Continuous-time Metric Temporal Logic*, Acta Informatica, vol. 53, n. 2, March 2016, pp. 171-206, doi:[10.1007/s00236-015-0229-y](https://doi.org/10.1007/s00236-015-0229-y)
J13. M.M. Bersani, M. Rossi, P. San Pietro, *An SMT-based Approach to Satisfiability Checking of MITL*, Information and Computation, vol. 245, December 2015, pp. 72-97, doi:[10.1016/j.ic.2015.06.007](https://doi.org/10.1016/j.ic.2015.06.007)
J12. M. M. Bersani, A. Frigeri, A. Morzenti, M. Pradella, M. Rossi, P. San Pietro, *Constraint LTL Satisfiability Checking without Automata*, Journal of Applied Logic, vol. 12, n. 4, December 2014, pp. 522-557, doi:[10.1016/j.jal.2014.07.005](https://doi.org/10.1016/j.jal.2014.07.005)
J11. A. G. Bianchessi, G. Cugola, S. Formentin, A. Morzenti, C. Ongini, E. Panigati, M. Rossi, S. M. Savaresi, F. A. Schreiber, L. Tanca, E. G. Vannutelli Depoli, *Green Move: A Platform for Highly Configurable, Heterogeneous Electric Vehicle Sharing*, IEEE Intelligent Transportation Systems Magazine, vol. 6, n. 3, Fall 2014, pp. 96-108, doi:[10.1109/IMITS.2014.2323421](https://doi.org/10.1109/IMITS.2014.2323421)
J10. A. G. Bianchessi, C. Ongini, S. Rotondi, M. Tanelli, M. Rossi, G. Cugola, S. M. Savaresi, *A Flexible Architecture for Managing Vehicle Sharing Systems*, Embedded Systems Letters, vol. 5, n. 3, September 2013, pp. 30-33, doi:[10.1109/LES.2013.2262765](https://doi.org/10.1109/LES.2013.2262765)
J9. L. Baresi, G. Blohm, D. S. Kolovos, N. Matragkas, A. Motta, R. F. Paige, A. Radjenovic, M. Rossi, *Formal verification and validation of embedded systems: the UML-based MADES approach*, Software and Systems Modeling, February 2015 (online first, June 2013), vol. 14, n. 1, pp. 343-363, doi:[10.1007/s10270-013-0330-z](https://doi.org/10.1007/s10270-013-0330-z), revised and extended version of [L15], selected among the best papers of ECMFA 2012.
J8. E. Carpanzano, L. Ferrucci, D. Mandrioli, M. Mazzolini, A. Morzenti, M. Rossi, *Automated formal verification for flexible manufacturing systems*, Journal of Intelligent Manufacturing, vol. 25, n. 5, October 2014, pp 1181-1195, doi:[10.1007/s10845-013-0760-z](https://doi.org/10.1007/s10845-013-0760-z).
J7. Y. Zhou, L. Baresi, M. Rossi, *Towards A Formal Semantics for UML/MARTE State Machines Based on Hierarchical Timed Automata*, Journal of Computer Science and Technology, January 2013, vol. 28, n. 1, pp 188-202, doi:[10.1007/s11390-013-1322-8](https://doi.org/10.1007/s11390-013-1322-8)
J6. C. A. Furia, M. Rossi, *A theory of sampling for continuous-time metric temporal logic.*, ACM Transactions on Computational Logic, vol. 12, n. 1, November 2010, pp. 1-40, doi:[10.1145/1838552.1838560](https://doi.org/10.1145/1838552.1838560)

- J5. C. A. Furia, D. Mandrioli, A. Morzenti, M. Rossi, *Modeling Time in Computing: a taxonomy and a comparative survey*, ACM Computing Surveys, vol. 42, n. 1, February 2010, pp. 1-59, [doi:10.1145/1667062.1667063](https://doi.org/10.1145/1667062.1667063)
- J4. C. A. Furia, M. Pradella, M. Rossi, *Comments on temporal logics for real-time system specification*, ACM Computing Surveys, vol. 41, n. 2, February 2009, pp. 1-5, [doi:10.1145/1459352.1459358](https://doi.org/10.1145/1459352.1459358)
- J3. C. A. Furia, M. Rossi, D. Mandrioli, A. Morzenti, *Automated Compositional Proofs for Real-Time Systems*, Theoretical Computer Science, vol. 376, n. 3, Maggio 2007, pp. 164-184, [doi:10.1016/j.tcs.2007.02.003](https://doi.org/10.1016/j.tcs.2007.02.003)
- J2. C. A. Furia, A. Morzenti, M. Pradella, M. Rossi, *Comments on "A Temporal Logic for Real-Time System Specification"*, IEEE Transactions on Software Engineering, vol. 32, n. 6, June 2006, pp. 424-427, [doi:10.1109/TSE.2006.50](https://doi.org/10.1109/TSE.2006.50)
- J1. A. Coen-Porisini, M. Pradella, M. Rossi, D. Mandrioli, *A Formal Approach for Designing CORBA-based Applications*, ACM Transactions On Software Engineering and Methodology, vol. 12, n. 2, April 2003, pp. 107-151, [doi:10.1145/941566.941567](https://doi.org/10.1145/941566.941567), revised and extended version of [C3], selected among the papers of ICSE 2000.

Non-refereed journal papers:

- A2. D. Mandrioli, S. Fickas, C. A. Furia, M. Jazayeri, M. Rossi, M. Young, *SCORE: the first student contest on software engineering*, ACM SIGSOFT Software Engineering Notes, vol. 35, n. 4, July 2010, pp. 24-30, [doi:10.1145/1811226.1811240](https://doi.org/10.1145/1811226.1811240)
- A1. C. A. Furia, M. Rossi, *No Need To Be Strict: on the expressiveness of metric temporal logics with (non-)strict operators*, Bulletin of the European Association for Theoretical Computer Science, n. 92, June 2007, pp. 150-160

Lecture Notes in Computer Science:

- L24. M. Askarpour, C. Ghezzi, D. Mandrioli, M. Rossi, C. Tsigkanos, *Formal Methods in Designing Critical Cyber-Physical Systems*, From Software Engineering to Formal Methods and Tools, and Back, October 2019, pp.110-130, [doi:10.1007/978-3-030-30985-5_8](https://doi.org/10.1007/978-3-030-30985-5_8)
- L23. F. Marconi, G. Quattrocchi, L. Baresi, M. M. Bersani, M. Rossi, *On the Timed Analysis of Big-Data Applications*, Proceedings of the NASA Formal Methods Symposium (NFM), March 2018, pp.315-332, [doi:10.1007/978-3-319-77935-5_22](https://doi.org/10.1007/978-3-319-77935-5_22)
- L22. M. Askarpour, D. Mandrioli, M. Rossi, F. Vicentini, *A Human-in-the-loop Perspective for Safety Assessment in Robotic Applications*, Perspectives of System Informatics, January 2018, pp. 12-27, [doi:10.1007/978-3-319-74313-4_2](https://doi.org/10.1007/978-3-319-74313-4_2)
- L21. M. Askarpour, D. Mandrioli, M. Rossi, F. Vicentini, *Modeling Operator Behavior in the Safety Analysis of Collaborative Robotic Applications*, Proceedings of the International Conference on Computer Safety, Reliability, and Security (SAFECOMP), September 2017, pp.89-104, [doi:10.1007/978-3-319-66266-4_6](https://doi.org/10.1007/978-3-319-66266-4_6)
- L20. F. Marconi, M. Bersani, M. Erascu, M. Rossi, *Towards the Formal Verification of Data-Intensive Applications Through Metric Temporal Logic*, Formal Methods and Software Engineering 2016, vol. 10009, November 2016, pp. 193-209, [doi:10.1007/978-3-319-47846-3_13](https://doi.org/10.1007/978-3-319-47846-3_13)
- L19. M. Askarpour, D. Mandrioli, M. Rossi, F. Vicentini, *SAFER-HRC: Safety Analysis Through Formal vERification in Human-Robot Collaboration*, Computer Safety, Reliability, and Security 2016, vol. 9922, September 2016, pp. 283-295, [doi:10.1007/978-3-319-45477-1_22](https://doi.org/10.1007/978-3-319-45477-1_22)
- L18. M. M. Bersani, M. Rossi, P. San Pietro, *A Logical Characterization of Timed (non-)Regular Languages*, Mathematical Foundations of Computer Science 2014, vol. 8634, August 2014, pp. 75-86, [doi:10.1007/978-3-662-44522-8_7](https://doi.org/10.1007/978-3-662-44522-8_7)
- L17. M. M. Bersani, M. Rossi, P. San Pietro, *Deciding Continuous-Time Metric Temporal Logic with Counting Modalities*, Reachability Problems, vol. 8169/2013, September 2013, pp. 70-82, [doi:10.1007/978-3-642-41036-9_8](https://doi.org/10.1007/978-3-642-41036-9_8)
- L16. L. Ferrucci, D. Mandrioli, A. Morzenti, M. Rossi, *Modular Automated Verification of Flexible Manufacturing Systems with Metric Temporal Logic and Non-Standard Analysis*, Formal Methods for Industrial Critical Systems, vol. 7437/2012, August 2012, pp. 162-176, [doi:10.1007/978-3-642-32469-7_11](https://doi.org/10.1007/978-3-642-32469-7_11)
- L15. A. Radjenovic, N. Matragkas, R. F. Paige, M. Rossi, A. Motta, L. Baresi, D. S. Kolovos, *MADES: A Tool Chain for Automated Verification of UML Models of Embedded Systems*, Modelling Foundations and Applications, vol. 7349/2012, July 2012, pp. 340-351, [doi:10.1007/978-3-642-31491-9_26](https://doi.org/10.1007/978-3-642-31491-9_26)
- L14. N. M. Calcavecchia, E. Di Nitto, D. J. Dubois, C. Ghezzi, V. Mazza, M. Rossi, *Complex Autonomic Systems for Networked Enterprises: Mechanisms, Solutions and Design Approaches*, Methodologies and Technologies for Networked Enterprises, vol. 7200/2012, June 2012, pp. 85-113, [doi:10.1007/978-3-642-31739-2_6](https://doi.org/10.1007/978-3-642-31739-2_6)
- L13. L. Baresi, A. Morzenti, A. Motta, M. Rossi, *Towards the UML-Based Formal Verification of Timed Systems*, Formal Methods for Components and Objects, vol. 6957/2012, July 2011, pp. 267-286, [doi:10.1007/978-3-642-25271-6_14](https://doi.org/10.1007/978-3-642-25271-6_14)

- L12. M. M. Bersani, A. Frigeri, M. Rossi, P. San Pietro, *Completeness of the Bounded Satisfiability Problem for Constraint LTL*, Reachability Problems, Lecture Notes in Computer Science, vol. 6945/2011, September 2011, pp. 58-71, doi:[10.1007/978-3-642-24288-5_7](https://doi.org/10.1007/978-3-642-24288-5_7)
- L11. L. Baresi, A. Morzenti, A. Motta, M. Rossi, *From Interaction Overview Diagrams to Temporal Logic*, Models in Software Engineering, Lecture Notes in Computer Science, vol. 6627/2011, February 2011, pp. 90-104, doi:[10.1007/978-3-642-21210-9_9](https://doi.org/10.1007/978-3-642-21210-9_9)
- L10. C. A. Furia, M. Pradella, M. Rossi, *Practical Automated Partial Verification of Multi-Paradigm Real-Time Models*, Formal Methods and Software Engineering, Lecture Notes in Computer Science, vol. 5256/-1, October 2008, pp. 298-317, doi:[10.1007/978-3-540-88194-0_19](https://doi.org/10.1007/978-3-540-88194-0_19)
- L9. C. A. Furia, M. Rossi, *MTL with Bounded Variability: Decidability and Complexity*, Formal Modeling and Analysis of Timed Systems, Lecture Notes in Computer Science, vol. 5215, September 2008, pp. 109-123, doi:[10.1007/978-3-540-85778-5_9](https://doi.org/10.1007/978-3-540-85778-5_9)
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HIGHLIGHTS

Research activity

I developed the first implemented decision procedure for solving the satisfiability of various popular metric temporal logics over continuous time that are used in the formal specification of embedded systems with real-time constraints. The decision procedure is based on a novel temporal logic, called CLTL over clocks, and has been published in several works [J13][J14][J16]. This activity has also produced the [qtlsolver](#) tool. Joint work with M. Bersani and P. San Pietro.

I have collaborated with researchers in industrial automation at the ITIA institute of CNR on several topics. I have defined a technique for the automated formal verification of flexible manufacturing systems [J8][L16]. This research has also led to the definition of a novel logic language, X-TRIO, which allows users to formally analyze – also in an automated way – models which comprise so-called zero-time transitions, a common abstraction that occurs in industrial systems which lacks suitable theory and tools [J15]. As part of the collaboration, I have defined a technique for analyzing the safety of applications in the Human Robot Collaboration (HRC) domain [J20][J19][L19][L21], which is part of the wider so-called Industry 4.0 field. Joint work with D. Mandrioli, A. Morzenti, L. Ferrucci, M. Askarpour, and F. Vicentini.

I led a group of researchers that, within the [DICE](#) EU H2020 project, are defining novel mechanisms for the formal verification of data-intensive applications, which are based on big-data technologies such as, for example, Apache Storm and Apache Spark [L23][L20][C33].

As part of the [MADES](#) EU project I defined a tool-supported technique for the formal verification of UML-based models of embedded systems with real-time constraints [J17][J9][L13][C20]. This activity has produced the [Corretto](#) tool. As part of this activity, to make the technique more amenable to be applied in practice, I have defined novel techniques for the efficient verification of temporal logic specifications, which have been implemented as plugins of the [Zot](#) formal verification tool.

Joint work with L. Baresi, A. Morzenti, A. Motta, M. M. Pourhashem Kallehbasti [C30][C31].

I studied the properties of the MTL (Metric Temporal Logic) temporal logic over continuous-time models [L7][L9]; this activity resulted also in the definition of a technique for solving the satisfiability of MTL specifications in an approximate manner, through a novel notion of sampling [J6]. The technique is also at the basis of the co-simulation tool built within the [MADES](#) project [C22], which allows users to integrate models of physical components described through the Modelica language and logical models described through temporal logics.

Joint work with C. A. Furia.

I co-authored with C. A. Furia, D. Mandrioli and A. Morzenti a book [B1] (stemming from the survey [J5]) on formalisms for describing timed systems.

Systems

I led the team of computer scientists that developed the [Green Move](#) platform for vehicle-sharing systems [J10][J11][E2]. The platform, which has been developed within the research project with the same name, was as the basis of works carried out within several other projects, and in particular the EIT ICT Labs projects “Car and the Internet” and “3cixty”.

I was responsible for Politecnico di Milano of the [MOTUS](#) project, which has developed an application to provide users of public transports with real-time alerts and alternatives in case of reduced service.

Projects

I contributed to the preparation of the proposal, and then to the coordination of the research unit of Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB) of the following projects: [MADES](#) (2010-2012, funded by the EU within the FP7 program; DEIB funding: 380k€) and [Green Move](#) (2011-2013, funded by Regione Lombardia; DEIB funding: 1M€, of which 500k€ for the Computer Science and Engineering area).

I was technical coordinator for Politecnico's research unit (including several departments other than DEIB) in the [MOTUS](#) Industria 2015 project (DEIB funding: 180k€).

I was and am DEIB's research unit leader of several projects related to the [Shift2Rail](#) EU initiative: [IT2Rail](#) (2015-2017, EU H2020 project; DEIB funding: 364k€), [ST4RT](#) (2016-2018, Shift2Rail open call; DEIB funding: 96k€), [GOF4R](#) (2016-2018, Shift2Rail open call; Politecnico's funding: 136k€, of which 68k€ for DEIB), [SPRINT](#) (2018-2020, Shift2Rail open call; DEIB funding: 313k€).

Teaching

I have been lecturer for a number of courses, at various levels (B.Sc., M.Sc., Ph.D.): Informatica A (CIV), Informatica Teorica, Algoritmi e Principi dell'Informatica, Principi di Informatica (per l'Automazione), Software Engineering (for Automation), Software Engineering 2, Functional Programming Languages for Parallelism, Modeling Time in Computing, Automated Verification of Timed Systems.

Organizational activity

I was co-chair of the International Conference on Formal Methods in Software Engineering (FormaliSE), co-located with the International Conference on Software Engineering (ICSE) and held in Montreal in May 2019.

I was co-chair of the Doctoral Symposium of the International Symposium on Formal Methods (FM), held in Cyprus in November 2016.

I am chair of the Book Review Committee of Formal Methods Europe.

I was co-chair of the second Student Contest in Software Engineering (SCORE), held as part of the International Conference on Software Engineering (ICSE), 2011. For my role in helping organizing the first SCORE event in 2009 I received a “certificate of appreciation” by the ACM/IEEE.

I have also been PC member of several international conferences and workshops.