

Alessandro Pellegrini

Curriculum Vitæ

✉ a.pellegrini@ing.uniroma2.it
🌐 <http://www.ce.uniroma2.it/~pellegrini>



Personal Information

first name Alessandro
last name Pellegrini
place/date of birth Roma (Italy), Wednesday 7th January, 1987
nationality Italian
Abilitazione

- 01/B1—II fascia (abilitato il 23/11/2020)

Scientifica Nazionale

- 09/H1—II fascia (abilitato il 09/09/2019)

Academic Positions

March 2020 **Research Fellow**, *National Research Council*, Rome, Italy.
present Researcher in the National Project (PRIN) SISMA, Grant Agreement #201752ENYB.

December 2014 **Research Fellow**, *Sapienza, University of Rome*, Rome, Italy.
February 2020

November 2018 **Researcher**, *ISSNOVA—Institute for Sustainable Society and Innovation*.
May 2019 Researcher in the H2020 EU Project—EvoATM Grant Agreement #783189.

June 2016 **Researcher**, *DGSIA—Direzione generale per i sistemi informativi automatizzati*,
December 2017 *Italian Ministry of Justice*.
Assessment of the National Telematic Criminal Trial System

September 2015 **Visiting Researcher**, *Barcelona Supercomputing Center (BSC)*, Barcelona, Spain.
October 2015 Visit funded by the “Severo Ochoa” Excellence Program

June 2014 **Researcher**, *IRIANC—International Research Institute for Autonomic Network*
May 2016 *Computing*, Munich, Germany.
Researcher in the EU FP7 Project—Panacea Grant Agreement #610764.

April 2014 **Researcher**, *CINFAL—Consorzio Interuniversitario Nazionale per la Fisica delle*
February 2015 *Atmosfere e delle Idrosfere*.
Researcher for the project SIGMA (Italian PON R&C), to develop an integrated cloud system for the acquisition and management of data coming from heterogeneous sensor networks.

Teaching Activities

September 2020 **Adjunct Professor**, *University of Rome “Tor Vergata”*.
present Professor of the Computer Architectures course in the Bachelor’s Degree in Computer Engineering

September 2020 **Adjunct Professor**, *University of Rome “Tor Vergata”*.
present Professor of the Fundamentals of Computer Science course, integrative to the IT Systems, Data and Applications course in the Master of Science in Business Administration

- September 2019 **Adjunct Professor**, *University of Rome "Tor Vergata"*.
 present Professor of the Algorithm Engineering course in the Bachelor's Degree in Computer Engineering
- October 2018 **Adjunct Professor**, *University of Rome "Tor Vergata"*.
 present Professor of the Technologies and Methodologies for the Development and Management of Data Bases course, integrative to the Data Bases and Knowledge course in the Bachelor's Degree in Computer Engineering
- March 2018 **Adjunct Professor**, *Sapienza, University of Rome*.
 February 2021 Professor of the Advanced Operating Systems and Virtualization course in the Master's Degree in Computer Engineering and Cyber Security
- May 2018 **Adjunct Professor**, *Luiss Business School*.
 Professor of the Data Management for Big Data Introduction course in the Big Data Management Master
- October 2014 **Lecturer**, *CINI—Consorzio Interuniversitario Nazionale per l'Informatica*.
 November 2014 Course on Distributed Simulation for the Private/Public COSMIC Laboratory
- 2012 **Lecturer**, *Sapienza, University of Rome*.
 2013 Assistant for the "Computer Architectures" course, in the Bachelor's Degree in Computer Science
- 2011 **Lecturer**, *Sapienza, University of Rome*.
 2012 Assistant for the "Operating Systems" course, in the Bachelor's Degree in Computer Science

Awards and Honors

- 2018 **HiPEAC Technology Transfer Award**, *HiPEAC—European Network on High Performance Embedded Architecture and Compilation*.
 The HiPEAC's Tech Transfer Awards recognize successful examples of technology transfer. For the purposes of the awards, technology transfer is defined as a contractually documented joint- or privately funded academia-industry project or technology licence agreement, with the goal of bringing a concrete research result into industrial practice. All applications are evaluated by an internal technology transfer committee.
- 2016 **Best Paper Award**, *20th International Symposium on Distributed Simulation and Real Time Applications (DS-RT)*.
 Award for the paper "A Lock-Free O(1) Event Pool and its Application to Share-Everything PDES Platforms"
- 2015 **Best PhD Thesis of the year**, *Sapienza Università Editrice*.
- 2012 **Best Paper Award**, *5th International ICST Conference on Simulation Tools and Techniques (SIMUTools)*.
 Award for the paper "Cache-Aware Memory Manager for Optimistic Simulations"

Memberships and Societies

- October 2018 **HiPEAC**, *European Network on High Performance and Embedded Architecture and Compilation*, Member.
 present
- March 2012 **IEEE**, *Institute of Electrical and Electronics Engineers*, Member.
 present
- November 2011 **ACM**, *Association for Computing Machinery*, Member.
 present

Work Experience

- March 2016 **Co-Founder**, *Lockless s.r.l.*
present University Startup of Sapienza and Tor Vergata Universities.
- June 2019 **Consultant**, *Business Integration Partners S.p.A.*
August 2019 *with Lockless S.r.l.*: High-level Design for Trans Austria Gasleitung GmbH to enhance the security level of the company's IT infrastructure.
- February 2012 **Consultant**, *IES—Ingegneria Elettronica Sistemi s.r.l.*
October 2012 Project of a redundancy system for the HElabor microcontroller, and reliability assessment.
- July 2011 **Consultant**, *Poste Italiane S.p.A.*
September 2011 Assessment and Capacity Analysis of the Business Main Core Infrastructure.

National/International Projects

- November 2008 **ROOT-Sim**, *The ROME OpTimistic Simulator*, Open Source Software Project.
present The ROME OpTimistic Simulator is an Open Source parallel/distributed HPC simulation platform, based on a simulation kernel layer that ultimately relies on MPI for data exchange. The platform transparently supports all the mechanisms associated with parallelization and optimistic synchronization.
- March 2020 **SISMA**, *Solutions for Engineering Microservice Architectures*, PRIN 2017, Grant Agreement #201752ENYB.
present This project focuses on the improvement of the design of test cases for distributed software systems abiding by the microservices paradigm. Areas of interest of the study will concern: strategies for the aggregation of test cases, algorithms to select and prioritise elements in a set of test cases, composition strategies of functional and non-functional aspects for exploring alternative operating conditions. The structured and reusable design of testing bundles would increase the quality of the test suites, and their level of automation as well. Also, a workflow-based planning of test cases would contribute to the incremental development of end-to-end tests, and to the enactment of dynamic strategies for governing regression testing activities.
- January 2018 **EvoATM**, *Evolutionary Air Traffic Management*, H2020 SJU Project.
December 2019 The goal of the EvoATM project is to model ATM system in the Free Route scenario, combining an agent based paradigm with Evolutionary Computing to understand the influence of ATM components parameters on the behaviour at whole system performances level. By using and quantitative indicators, EvoATM has opened the way to more efficient change impact assessment, supporting design and strategic thinking in ATM evolution.
- June 2014 **PANACEA**, *Proactive Autonomic Management of Cloud Resources*, EU FP7
May 2016 Project.
The main objective of the PANACEA project is to provide Proactive Autonomic Management of Cloud Resources, based on Machine Learning, as a remedy to the exponentially growing Cloud complexity. Main targets are: i) proactive autonomic management of Cloud resources, ii) proactive software migration within the Cloud(s), iii) efficient usage of Cloud resources, iv) monitoring, controlling, and proactively managing applications' execution.
- April 2014 **SIGMA**, *Sistema Integrato di sensori in ambiente Cloud per la Gestione Multirischio*
February 2015 *Avanzata*, National Italian Project.
The Integrated Sensors System in Cloud Environments for Advanced Multirisk Management (SIGMA) is a multi-layered architecture for acquiring, integrating, and elaborating heterogeneous data coming from differentiated sensor networks. Its goal is to enhance (both environmental and factory) monitoring and control systems to provide data useful for the prevention of risk situations.

Peer-Review Activities and Service

Editorial Boards

2018 **TOMACS**, *Editorial Board member*, Reproducibility Board, ACM.
present

2019 **TOMACS**, *Guest Editor for the PADS Special Issue*, ACM.

Chairmanship

2021 **Workshop Co-Chair**, *ACM/SPEC International Conference on Performance Engineering (ICPE)*.

2021 **Reproducibility Co-Chair**, *ACM SIGSIM Conference on Principles of Advanced Discrete Simulation (PADS)*.

2020 **Reproducibility Co-Chair**, *ACM SIGSIM Conference on Principles of Advanced Discrete Simulation (PADS)*.

2019 **Reproducibility Co-Chair**, *ACM SIGSIM Conference on Principles of Advanced Discrete Simulation (PADS)*.

2018 **General Co-Chair**, *ACM SIGSIM Conference on Principles of Advanced Discrete Simulation (PADS)*.

2017 **Track Co-Chair**, *"Environment and Sustainability Applications" Track*, Winter Simulation Conference (WSC).

2016 **Program Co-Chair**, *IEEE International Symposium on Network Computing and Applications (NCA)*.

2016 **Financial Chair**, *IEEE International Symposium on Network Computing and Applications (NCA)*.

2015 **Financial Chair**, *IEEE International Symposium on Network Computing and Applications (NCA)*.

Review Activity for Journals

CBM, *Computers in Biology and Medicine*, Elsevier.

COMLAN, *Computer Languages, Systems and Structures*, Elsevier.

IEEE Access, IEEE.

JPDC, *Journal of Parallel and Distributed Computing*, Elsevier.

JSS, *Journal of Systems and Software*, Elsevier.

NGC, *New Generation Computing*, Springer.

Scientific Programming, Hindawi.

SIMPAT, *Journal of Simulation Modelling Practice and Theory*, Elsevier.

SIMPAT, *Journal of Simulation Modelling Practice and Theory*, Elsevier.

SPE, *Software: Practice and Experience*, Wiley.

TC, *Transactions on Computers*, IEEE.

TOMACS, *Transactions of Modeling and Computer Simulation*, ACM.

Conference Program Committees

2020 **ICPE**, *PC Member of the ACM/SPEC International Conference on Performance Engineering*, Reproducibility Board.
present

2017 **ACM SIGSIM PADS**, *PC Member of the ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*.
present

2017 **WSC**, *PC Member of the Winter Simulation Conference*.
present

- 2014 **SIMULTECH**, *PC Member of the Workshop on Dependable Parallel, Distributed and Network-Centric Systems.*
- 2019 **SIMUL**, *PC Member of the International Conference on Advances in System Simulation.*
- 2019 **CLOUD COMPUTING**, *PC Member of the International Conference on Cloud Computing, GRIDs, and Virtualization..*
- 2015 **IEEE/ACM DS-RT**, *PC Member of the IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications.*
- 2019 **Euro-Par**, *PC Member of the International European Conference on Parallel and Distributed Computing, Springer-Verlag.*
- 2019 **AHCP**, *PC Member of the International Workshop on Autonomic High Performance Computing—co-located with the International Conference on High Performance Computing & Application Simulation (HPCS).*
- 2015 **IEEE NCA**, *PC Member of the IEEE International Symposium on Network Computing and Applications.*
- 2015 **IEEE DPDNS**, *PC Member of the Workshop on Dependable Parallel, Distributed and Network-Centric Systems—co-located with the IEEE International Parallel & Distributed Processing Symposium (IPDPS).*

Education

- November 2010 **PhD Course**, *Sapienza, University of Rome, Judgment: Outstanding (top 5%).*
- September 2014 Thesis Title: **Techniques for Transparent Parallelization of Discrete Event Simulation Models**
- December 2010 **Professional Qualification as Information Engineering**, *Sapienza, University of Rome, Professional license obtained by passing the Italian State Exam.*
- November 2008 **Master's Degree in Computer Engineering**, *Sapienza, University of Rome, Mark: 110/110.*
- November 2010 Thesis Title: **Autonomic State Saving of Simulation Objects in Optimistic Simulation Systems**
- November 2005 **Bachelor's Degree in Computer Engineering**, *Sapienza, University of Rome, Mark: 105/110.*
- November 2008 Thesis Title: **Efficient and Transparent Tracking of Dynamic Memory Updates with Arbitrary Granularity in Optimistic Simulation Architectures**
- November 2000 **Classical Lyceum Diploma**, *Pontificio Istituto Apollinare, Rome, Italy, Mark: 100/100.*
- November 2005

Languages

Italian	Mother Tongue	
English	Proficient (C2)	CAE – Cambridge University (2004). Mark: C FCE – Cambridge University (2003). Mark: B PET – Cambridge University (2002). Mark: Passed KET – Cambridge University (2001). Mark: Passed with Merit
Spanish	Independent (B2)	Diploma Básico de Español – Cervantes (2002). Mark: 81/100
French	Independent (B1)	DELFI – St. Louis de France (2002). Mark: 12,35/20
Japanese	Entry level	

Artistic Skills

- Studied piano for 14 years
- Studied violin for 5 years
- Self-learning guitarist

Attachment 1: List of Publications

Books

- [1] Alessandro Pellegrini. *Parallelization of Discrete Event Simulation Models*. Studi e Ricerche. Sapienza Università Editrice, November 2015.

Book Chapters

- [2] Diego Rughetti, Pierangelo Di Sanzo, Alessandro Pellegrini, Bruno Ciciani, and Francesco Quaglia. Tuning the level of concurrency in software transactional memory: An overview of recent analytical, machine learning and mixed approaches. In Rachid Guerraoui and Paolo Romano, editors, *Transactional Memory. Foundations, Algorithms, Tools, and Applications*, volume 8913 of *Lecture Notes in Computer Science*, pages 395–417. Springer International Publishing, 2015.
- [3] Francesco Quaglia, Alessandro Pellegrini, and Roberto Vitali. Reshuffling PDES platforms for multi/many-core machines: a perspective with focus on load sharing. In Daniele Gianni, Andrea D'Ambrogio, and Andreas Tolk, editors, *Modeling and Simulation-based Systems Engineering Handbook*, pages 203–232. Crc Pr I Llc, December 2014.

Journal Articles

- [4] Gabriella Gigante, Roberto Palumbo, Domenico Pascarella, Alessandro Pellegrini, Gabriella Duca, Miquel Àngel Piera, and Juan José Ramos. Support to design for air traffic management: An approach with agent-based modelling and evolutionary search. *International Journal of Aviation, Aeronautics, and Aerospace*, 8(1), March 2021.
- [5] Pierangelo Di Sanzo, Dimiter R. Avresky, and Alessandro Pellegrini. Autonomic rejuvenation of cloud applications as a countermeasure to software anomalies. *Software: Practice and Experience*, 51(1):46–71, January 2021.
- [6] Romolo Marotta, Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. Nbbs: A non-blocking buddy system for multi-core machines. *Transactions on Computers*, 2021.
- [7] Stefano Conoci, Pierangelo Di Sanzo, Alessandro Pellegrini, Bruno Ciciani, and Francesco Quaglia. On power capping and performance optimization of multi-threaded applications. *Concurrency and Computation: Practice and Experience*, 2021.
- [8] Alessandro Pellegrini. Replication of computational results report for “green simulation with database monte carlo”. *ACM Transactions on Modeling and Computer Simulation*, 31(1), 12 2020.
- [9] Alessandro Pellegrini, Pierangelo Di Sanzo, Beatrice Bevilacqua, Gabriella Duca, Domenico Pascarella, Roberto Palumbo, Juan José Ramos, Miquel Àngel Piera, and Gabriella Gigante. Simulation-based evolutionary optimization of air traffic management. *IEEE Access*, 8:161551–161570, September 2020.
- [10] Romolo Marotta, Davide Tiriticco, Pierangelo Di Sanzo, Alessandro Pellegrini, Bruno Ciciani, and Francesco Quaglia. Mutable locks: Combining the best of spin and sleep locks. *Concurrency and Computation: Practice and Experience*, 32(22), 6 2020.
- [11] Matteo Principe, Tommaso Tocci, Pierangelo Di Sanzo, Francesco Quaglia, and Alessandro Pellegrini. A distributed shared-memory middleware for speculative parallel discrete event simulation. *ACM Transactions on Modeling and Computer Simulation*, 30(2):11:1–11:26, February 2020.

- [12] Francesco Quaglia, Georgios Theodoropoulos, and Alessandro Pellegrini. Editorial to the special issue on the principles of advanced discrete simulation (pads). *Transactions on Modeling and Computer Simulations*, 69(5):8:1–8:2, March 2020.
- [13] Pierangelo Di Sanzo, Alessandro Pellegrini, Marco Sannicandro, Bruno Ciciani, and Francesco Quaglia. Adaptive model-based scheduling in software transactional memory. *IEEE Transactions on Computers*, 69(5):621–632, 5 2020.
- [14] Alessandro Pellegrini and Francesco Quaglia. Cross-state events: a new approach to parallel discrete event simulation and its speculative runtime support. *Journal of Parallel and Distributed Computing*, 132:48–68, 10 2019.
- [15] Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. Anonymous readers counting: A wait-free multi-word atomic register algorithm for scalable data sharing on multi-core machines. *IEEE Transactions on Parallel and Distributed Systems*, 30:286–299, 2 2019.
- [16] Davide Cingolani, Alessandro Pellegrini, and Francesco Quaglia. Transparently mixing undo logs and software reversibility for state recovery in optimistic pdes. *ACM Transactions on Modeling and Computer Simulation*, 27(2):11:1–11:26, May 2017.
- [17] Alessandro Pellegrini and Francesco Quaglia. A fine-grain time-sharing time warp system. *ACM Transactions on Modeling and Computer Simulation*, 27(2), May 2017.
- [18] Alessandro Pellegrini, Sebastiano Peluso, Francesco Quaglia, and Roberto Vitali. Transparent speculative parallelization of discrete event simulation applications using global variables. *International Journal of Parallel Programming*, 44(6):1200–1247, December 2016.
- [19] Pierangelo Di Sanzo, Francesco Quaglia, Bruno Ciciani, Alessandro Pellegrini, Diego Didona, Paolo Romano, Roberto Palmieri, and Sebastiano Peluso. A flexible framework for accurate simulation of cloud in-memory data stores. *Simulation Modelling Practice and Theory*, 58(2):219–238, July 2015.
- [20] Alessandro Pellegrini, Roberto Vitali, and Francesco Quaglia. Autonomic state management for optimistic simulation platforms. *IEEE Transactions on Parallel and Distributed Systems*, 26(6):1560–1569, June 2015.
- [21] Roberto Vitali, Alessandro Pellegrini, and Francesco Quaglia. Load sharing for optimistic parallel simulations on multi core machines. *SIGMETRICS Performance Evaluation Review*, 40(3):2–11, August 2012.

Conference Articles

- [22] Maryan Rab, Romolo Marotta, Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. Numa-aware non-blocking calendar queue. In *Proceedings of the 24th IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications*, DS-RT. IEEE, September 2020.
- [23] Andrea Piccione and Alessandro Pellegrini. Agent-based modeling and simulation for emergency scenarios: A holistic approach. In *Proceedings of the 24th IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications*, DS-RT. IEEE, September 2020.
- [24] Stefano Conoci, Mauro Ianni, Romolo Marotta, and Alessandro Pellegrini. Autonomic power management in speculative simulation runtime environments. In

- [25] Matteo Principe, Andrea Piccione, Alessandro Pellegrini, and Francesco Quaglia. Approximated rollbacks. In *Proceedings of the 2020 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS. ACM, June 2020.
- [26] Emiliano Silvesti, Cristian Milia, Romolo Marotta, Alessandro Pellegrini, and Francesco Quaglia. Exploiting inter-processor-interrupts for virtual-time coordination in speculative parallel discrete event simulation. In *Proceedings of the 2020 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS. ACM, June 2020.
- [27] Lorenzo Altamura, Stefano Conoci, and Alessandro Pellegrini. Asymmetric computation for speculative heterogeneous hpc. In *15th International Conference on High Performance and Embedded Architecture and Compilation Workshops*, HiPEAC, January 2020.
- [28] Stefano Carnà, Serena Ferracci, Emanuele De Santis, Alessandro Pellegrini, and Francesco Quaglia. Hardware-assisted incremental checkpointing in speculative parallel discrete event simulation. In *Proceedings of the 2019 Winter Simulation Conference*, WSC. ACM, December 2019.
- [29] Andrea Piccione, Matteo Principe, Alessandro Pellegrini, and Francesco Quaglia. An agent-based simulation api for speculative pdes runtime environments. In *Proceedings of the 2019 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 83–94. ACM, June 2019.
- [30] Romolo Marotta, Mauro Ianni, Andrea Scarselli, Alessandro Pellegrini, and Francesco Quaglia. Nbbs: A non-blocking buddy system for multi-core machines. In *Proceedings of the 19th International Symposium in Cluster, Cloud and Grid Computing*, CCGrid, pages 11–20. IEEE Computer Society, May 2019.
- [31] Simone Economo, Emiliano Silvestri, Pierangelo Di Sanzo, Alessandro Pellegrini, and Francesco Quaglia. Model-based proactive read-validation in transaction processing systems. In *Proceedings of the 24th International Conference on Parallel and Distributed Systems*, ICPADS, pages 481–488. IEEE Computer Society, December 2018.
- [32] Mauro Ianni, Romolo Marotta, Davide Cingolani, Alessandro Pellegrini, and Francesco Quaglia. Optimizing simulation on shared-memory platforms: the smart cities case. In *Proceedings of the 2018 Winter Simulation Conference*, WSC, pages 1969–1980. IEEE Computer Society, December 2018.
- [33] Romolo Marotta, Mauro Ianni, Andrea Scarselli, Alessandro Pellegrini, and Francesco Quaglia. A non-blocking buddy system for scalable memory allocation on multi-core machines. In *IEEE International Conference on Cluster Computing*, CLUSTER, pages 164–165. IEEE Computer Society, September 2018.
- [34] Mauro Ianni, Romolo Marotta, Davide Cingolani, Alessandro Pellegrini, and Francesco Quaglia. The ultimate share-everything pdes system. In *Proceedings of the 2018 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 73–84. ACM, May 2018.
- [35] Stefano Conoci, Davide Cingolani, Pierangelo Di Sanzo, Alessandro Pellegrini, Bruno Ciciani, and Francesco Quaglia. A power cap oriented time warp architecture. In *Proceedings of the 2018 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 97–100. ACM, May 2018.

- [36] Matteo Principe, Tommaso Tocci, Alessandro Pellegrini, and Francesco Quaglia. Porting event & cross-state synchronization to the cloud. In *Proceedings of the 2018 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 177–188. ACM, May 2018. Candidate for (but not winner of) the Best Paper Award.
- [37] Simone Economo, Emiliano Silvestri, Pierangelo Di Sanzo, Alessandro Pellegrini, and Francesco Quaglia. Prompt application-transparent transaction revalidation in software transactional memory. In *Proceedings of the 16th IEEE International Symposium on Network Computing and Applications*, NCA, pages 114–119. IEEE Computer Society, October 2017.
- [38] Dimiter R. Avresky, Alessandro Pellegrini, and Pierangelo Di Sanzo. Machine learning-based management of cloud applications in hybrid clouds: a hadoop case study. In *Proceedings of the 16th IEEE International Symposium on Network Computing and Applications*, NCA, pages 114–119. IEEE Computer Society, October 2017.
- [39] Tommaso Tocci, Alessandro Pellegrini, Francesco Quaglia, Josep Casanovas-García, and Toyotaro Suzumura. Orchestra: An asynchronous wait-free distributed gvt algorithm. In *Proceedings of the 21st IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications*, DS-RT, pages 51–58. IEEE Computer Society, October 2017.
- [40] Mauro Ianni, Romolo Marotta, Alessandro Pellegrini, and Francesco Quaglia. Towards a fully non-blocking share-everything pdes platform. In *Proceedings of the 21st IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications*, DS-RT, pages 25–32. IEEE Computer Society, October 2017.
- [41] Mauro Ianni, Romolo Marotta, Alessandro Pellegrini, and Francesco Quaglia. A non-blocking global virtual time algorithm with logarithmic number of memory operations. In *Proceedings of the 21st IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications*, DS-RT, pages 17–24. IEEE Computer Society, October 2017. Candidate for (but not winner of) the Best Paper Award.
- [42] Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. A wait-free multi-word atomic (1,n) register for large-scale data sharing on multi-core machines. In *Proceedings of the 2017 IEEE Cluster Conference*, CLUSTER, pages 188–192. IEEE Computer Society, September 2017.
- [43] Davide Cingolani, Alessandro Pellegrini, Markus Schordan, Francesco Quaglia, and David R. Jefferson. Dealing with reversibility of shared libraries in pdes. In *Proceedings of the 2017 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS. ACM, May 2017.
- [44] Romolo Marotta, Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. A conflict-resilient lock-free calendar queue for scalable share-everything pdes platforms. In *Proceedings of the 2017 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 41–52. ACM, May 2017.
- [45] Emiliano Silvestri, Simone Economo, Pierangelo Di Sanzo, Alessandro Pellegrini, and Francesco Quaglia. Preemptive software transactional memory. In *Proceedings of the 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing*, CCGrid. IEEE Computer Society, May 2017.

- [46] Alessandro Pellegrini and Pierangelo Di Sanzo. On the optimization of collaborative kerbside waste collection. *Wseas Transactions On Environment And Development*, January 2017.
- [47] Alessandro Pellegrini, Cristina Montañola-Sales, Francesco Quaglia, and Josep Casanovas-Garcia. Programming agent-based demographic models with cross-state and message-exchange dependencies: A study with speculative pdes and automatic load-sharing. In *Proceedings of the 2016 Winter Simulation Conference*, WSC. IEEE Computer Society, December 2016.
- [48] Romolo Marotta, Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. A lock-free $o(1)$ event pool and its application to share-everything pdes platforms. In *Proceedings of the 20th IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications*, DS-RT. IEEE Computer Society, September 2016. Winner of the Best Paper Award.
- [49] Simone Economo, Davide Cingolani, Alessandro Pellegrini, and Francesco Quaglia. Configurable and efficient memory access tracing via selective expression-based x86 binary instrumentation. In *Proceedings of the 24th IEEE International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems*, MASCOTS. IEEE Computer Society, September 2016.
- [50] Alessandro Pellegrini, Cristina Montañola-Sales, Francesco Quaglia, and Josep Casanovas-Garcia. Load-sharing policies in parallel simulation of agent-based demographic models. In *Proceedings of the 4th Workshop on Parallel and Distributed Agent-Based Simulations*, PADABS, pages 334–346. LNCS, Springer-Verlag, August 2016.
- [51] Romolo Marotta, Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. A non-blocking priority queue for the pending event set. In *Proceedings of the 9th EAI International Conference on Simulation Tools and Techniques*, SIMUTools, pages 46–55. ICST, August 2016.
- [52] Alessandro Pellegrini. Optimizing memory management for optimistic simulation with reinforcement learning. In *Proceedings of the 2016 International Conference on High Performance Computing & Simulation Workshops*, HPCS, pages 26–33. IEEE Computer Society, July 2016.
- [53] Davide Cingolani, Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. Mixing hardware and software reversibility for speculative parallel discrete event simulation. In *Proceedings of the 8th Conference on Reversible Computation*, RC, pages 137–152. Springer-Verlag, July 2016.
- [54] Andrea La Rizza, Giuseppe Casarano, Gilberto Castellani, Bruno Ciciani, Luca Pas-salacqua, and Alessandro Pellegrini. Machine learning-based elastic cloud resource provisioning in the solvency ii framework. In *Proceedings of the 2016 IEEE 36th International Conference on Distributed Computing Systems Workshops*, ICDCS, pages 44–48. IEEE Computer Society, June 2016.
- [55] Alessandro Pellegrini, Pierangelo Di Sanzo, and Dimiter R. Avresky. Proactive cloud management for highly heterogeneous multi-cloud infrastructures. In *Proceedings of the 21st IEEE Workshop on Dependable Parallel, Distributed and Network-Centric Systems*, DPDNS, pages 1311–1318. IEEE Computer Society, May 2016.
- [56] Nazzareno Marziale, Francesco Nobilia, Alessandro Pellegrini, and Francesco Quaglia. Granular time warp objects. In *Proceedings of the 2016 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 57–68. ACM, May 2016.

- [57] Ilaria Di Gennaro, Alessandro Pellegrini, and Francesco Quaglia. Os-based numa optimization: Tackling the case of truly multi-thread applications with non-partitioned virtual page accesses. In *Proceedings of the 16th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing*, CCGrid, pages 292–300. IEEE Computer Society, May 2016.
- [58] Vanessa Büsing-Menses, Cristina Montañola-Sales, Josep Casanovas-Garcia, and Alessandro Pellegrini. Analysis and optimization of a demographic simulator for parallel environments (poster paper). In *Proceedings of the 2015 Winter Simulation Conference*, WSC, pages 3218–3219. IEEE Computer Society, December 2015.
- [59] Emanuele Santini, Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. Hardware-transactional-memory based speculative parallel discrete event simulation of very fine grain models. In *Proceedings of the 22nd International Conference on High Performance Computing*, HiPC, pages 145–154. IEEE Computer Society, December 2015.
- [60] Dimiter R. Avresky, Pierangelo Di Sanzo, Alessandro Pellegrini, Bruno Ciciani, and Luca Forte. Proactive scalability and management of resources in hybrid clouds via machine learning (short paper). In *Proceedings of the 14th IEEE International Symposium on Network Computing and Applications*, NCA, pages 114–119. IEEE Computer Society, September 2015.
- [61] Davide Cingolani, Alessandro Pellegrini, and Francesco Quaglia. RAMSES: Reversibility-based agent modeling and simulation environment with speculation support. In *Proceedings of the 3rd Workshop on Parallel and Distributed Agent-Based Simulations*, PADABS, pages 466–478. LNCS, Springer-Verlag, August 2015.
- [62] Pierangelo Di Sanzo, Alessandro Pellegrini, and Dimiter R. Avresky. Machine learning for achieving self-* properties and seamless execution of applications in the cloud. In *Proceedings of the Fourth IEEE Symposium on Network Cloud Computing and Applications*, NCCA, pages 51–58. IEEE Computer Society, June 2015.
- [63] Davide Cingolani, Alessandro Pellegrini, and Francesco Quaglia. Transparently mixing undo logs and software reversibility for state recovery in optimistic pdes. In *Proceedings of the 2015 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 211–222. ACM, June 2015.
- [64] Alessandro Pellegrini and Francesco Quaglia. Numa time warp. In *Proceedings of the 2015 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 59–70. ACM, June 2015.
- [65] Alessandro Pellegrini and Francesco Quaglia. Time-sharing time warp via lightweight operating system support. In *Proceedings of the 2015 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 47–58. ACM, June 2015.
- [66] Alessandro Pellegrini, Pierangelo Di Sanzo, and Dimiter R. Avresky. A machine learning-based framework for building application failure prediction models. In *Proceedings of the 20th IEEE Workshop on Dependable Parallel, Distributed and Network-Centric Systems*, DPDNS, pages 1072–1081. IEEE Computer Society, May 2015.
- [67] Alessandro Pellegrini and Francesco Quaglia. Wait-free Global Virtual Time computation in shared memory Time-Warp systems. In *Proceedings of the 26th International Conference on Computer Architecture and High Performance Computing*, SBAC-PAD, pages 9–16. IEEE Computer Society, October 2014.

- [68] Alessandro Pellegrini and Francesco Quaglia. Programmability and performance of parallel ECS-based simulation of multi-agent exploration models. In *Proceedings of the 2nd Workshop on Parallel and Distributed Agent-Based Simulations*, PADABS, pages 395–406. LNCS, Springer-Verlag, August 2014.
- [69] Alessandro Pellegrini and Francesco Quaglia. Transparent multi-core speculative parallelization of DES models with event and cross-state dependencies. In *Proceedings of the 2014 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 105–116. ACM, May 2014.
- [70] Diego Rughetti, Pierangelo Di Sanzo, and Alessandro Pellegrini. Adaptive transactional memories: Performance and energy consumption tradeoffs. In *Proceedings of the Third IEEE Symposium on Network Cloud Computing and Applications*, NCCA, pages 105–112. IEEE Computer Society, February 2014.
- [71] Alessandro Pellegrini and Francesco Quaglia. The ROme OpTimistic Simulator: A tutorial. In *Proceedings of the 1st Workshop on Parallel and Distributed Agent-Based Simulations*, PADABS, pages 501–512. LNCS, Springer-Verlag, August 2013.
- [72] Alessandro Pellegrini and Francesco Quaglia. A study on the parallelization of terrain-covering ant robots simulations. In *Proceedings of the 1st Workshop on Parallel and Distributed Agent-Based Simulations*, PADABS, pages 585–594. LNCS, Springer-Verlag, August 2013.
- [73] Alice Porfirio, Alessandro Pellegrini, Pierangelo Di Sanzo, and Francesco Quaglia. Transparent support for partial rollback in software transactional memories. In *Proceedings of the International Euro-Par 2013 Conference*, Euro-Par, pages 583–594. LNCS, Springer-Verlag, August 2013.
- [74] Alessandro Pellegrini. Hijacker: Efficient static software instrumentation with applications in high performance computing (poster paper). In *Proceedings of the 2013 International Conference on High Performance Computing & Simulation*, HPCS, pages 650–655. IEEE Computer Society, July 2013. Candidate for (but not winner of) the Outstanding Poster Paper Award.
- [75] Francesco Antonacci, Alessandro Pellegrini, and Francesco Quaglia. Consistent and efficient output-stream management in optimistic simulation platform. In *Proceedings of the 2013 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation*, PADS, pages 315–326. ACM, May 2013.
- [76] Alessandro Pellegrini and Giuseppe Piro. Multi-threaded simulation of 4G cellular systems within the LTE-Sim framework. In *Proceedings of the 8th IEEE International Workshop on the Performance Analysis and Enhancement of Wireless Networks*, PAEWN, pages 101–106. IEEE Computer Society, March 2013.
- [77] Pierangelo Di Sanzo, Francesco Antonacci, Bruno Ciciani, Roberto Palmieri, Alessandro Pellegrini, Sebastiano Peluso, Francesco Quaglia, Diego Rughetti, and Roberto Vitali. A framework for high performance simulation of transactional data grid platforms. In *Proceedings of the 6th ICST Conference of Simulation Tools and Techniques*, SIMUTools, pages 63–72. ICST, March 2013.
- [78] Roberto Vitali, Alessandro Pellegrini, and Francesco Quaglia. A load sharing architecture for optimistic simulations on multi-core machines. In *Proceedings of the 19th International Conference on High Performance Computing*, HiPC. IEEE Computer Society, December 2012.
- [79] Roberto Vitali, Alessandro Pellegrini, and Francesco Quaglia. Assessing load sharing within optimistic simulation platforms (invited paper). In *Proceedings of the 2012*

Winter Simulation Conference, WSC, pages 1–13. Society for Computer Simulation, December 2012.

- [80] Alessandro Pellegrini, Roberto Vitali, Sebastiano Peluso, and Francesco Quaglia. Transparent and efficient shared-state management for optimistic simulations on multi-core machines. In *Proceedings 20th International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, MASCOTS*, pages 134–141. IEEE Computer Society, August 2012.
- [81] Roberto Vitali, Alessandro Pellegrini, and Francesco Quaglia. Towards symmetric multi-threaded optimistic simulation kernels. In *Proceedings of the 26th International Workshop on Principles of Advanced and Distributed Simulation, PADS*, pages 211–220. IEEE Computer Society, August 2012.
- [82] Roberto Vitali, Alessandro Pellegrini, and Gionata Cerasuolo. Cache-aware memory manager for optimistic simulations. In *Proceedings of the 5th ICST Conference of Simulation Tools and Techniques, SIMUTools*, pages 192–138. ICST, March 2012. Winner of the Best Paper Award.
- [83] Alessandro Pellegrini, Roberto Vitali, and Francesco Quaglia. The ROme OpTimistic Simulator: Core internals and programming model. In *Proceedings of the 4th International ICST Conference on Simulation Tools and Techniques, SIMUTools*, pages 96–98. ICST, 2011.
- [84] Alessandro Pellegrini, Roberto Vitali, and Francesco Quaglia. An evolutionary algorithm to optimize log/restore operations within optimistic simulation platforms. In *Proceedings of the 4th International ICST Conference on Simulation Tools and Techniques, SIMUTools*, pages 206–215. SIGSIM, 2011.
- [85] Roberto Vitali, Alessandro Pellegrini, and Francesco Quaglia. Autonomic log/restore for advanced optimistic simulation systems. In *Proceedings of the Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems, MASCOTS*, pages 319–327. IEEE Computer Society, 2010.
- [86] Roberto Vitali, Alessandro Pellegrini, and Francesco Quaglia. Benchmarking memory management capabilities within root-sim. In *Proceedings of the 13th IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications, DS-RT*, pages 33–40. IEEE Computer Society, 2009.
- [87] Alessandro Pellegrini, Roberto Vitali, and Francesco Quaglia. Di-DyMeLoR: Logging only dirty chunks for efficient management of dynamic memory based optimistic simulation objects. In *Proceedings of the 2009 ACM/IEEE/SCS 23rd Workshop on Principles of Advanced and Distributed Simulation, PADS*, pages 45–53. IEEE Computer Society, 2009. Candidate for (but not winner of) the Best Paper Award.

Technical Reports

- [88] Alessandro Pellegrini and Francesco Quaglia. On the relevance of wait-free coordination algorithms in shared-memory hpc: The global virtual time case. Technical report, April 2020. Workshop di Informatica Quantitativa (InfQ) 2014.
- [89] Alessandro Pellegrini. Reproducibility report for the paper: Modeling of request cloning in cloud server systems using processor sharing. Technical report, 2 2020.
- [90] Romolo Marotta, Davide Tiriticco, Pierangelo Di Sanzo, Alessandro Pellegrini, Bruno Ciciani, and Francesco Quaglia. Mutable locks: Combining the best of spin and sleep locks. Technical report, CoRR, 2019.

- [91] Matteo Principe, Alessandro Pellegrini, Francesco Quaglia, and Bruno Ciciani. Transparent distributed cross-state synchronization in optimistic parallel discrete event simulation. Technical report, Sapienza, University of Rome, December 2017.
- [92] Mauro Ianni, Alessandro Pellegrini, and Francesco Quaglia. A wait-free multi-word atomic $(1, n)$ register for large-scale data sharing on multi-core machines. Technical report, CoRR, 2017.
- [93] Alessandro Pellegrini. Adaptive transactional memories: Performance and energy consumption tradeoffs (poster + talk). Euro-TM Workshop on Transactional Memory, April 2014.
- [94] Roberto Vitali, Alessandro Pellegrini, and Francesco Quaglia. A symmetric multi-threaded architecture for load-sharing in multi-core optimistic simulations. Technical report, Sapienza, University of Rome, July 2012. Workshop di Informatica Quantitativa.