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1 Research Interests and Scientific Results

My research interests are in the broad field of distributed computing systems, with a focus on Web-based and Cloud-based systems and services. From 1998 my research topics included high performance and quality-aware Web systems as well as distributed infrastructures for adapting Web applications. In the last 10 years, I have been working on: (i) QoS-driven runtime adaptation of service-oriented systems, (ii) resource provisioning and elasticity in Cloud and edge/fog systems, (iii) self-adaptive deployment of geo-distributed data stream applications, and (iv) optimization of kernel codes on GPUs.

I have co-authored more than 110 papers published in peer-reviewed international journals, conference and workshop proceedings, and book chapters, starting with the first published paper in 1998. Three of these publications have received paper awards at international conferences (SOSE 2011, ACM DEBS 2015, ACM DEBS 2016).

According to Google Scholar, in September 2020 there are more than 4700 citations of all the articles that I co-authored, with a h-index equal to 29. According to Scopus, in September 2020 the total number of citations exceeds 2500 (with 95 indexed articles) and my h-index is 25.

Specifically, the research results concerning the definition, analysis and performance evaluation of architectures, mechanisms and algorithms for distributed Web systems are widely cited in the literature and suggested in reading lists of academic courses. More recent research contributions on QoS-driven runtime adaptation and its usage in the area of service-oriented applications, on resource provisioning and pricing in Cloud systems, computation offloading in mobile Cloud computing, and on the placement and elasticity for data stream processing systems have also been well cited in the literature.

2 Education and Positions

Education

1997-2001 Ph.D. in Computer Science and Automation Engineering at the University of Rome Tor Vergata (Italy). Thesis title: “Scalable Web-server systems”. Thesis supervisors: Michele Colajanni and Salvatore Tucci.

1991-1997 Laurea with summa cum laude in Computer Engineering (equivalent to M.Eng.) at the University of Rome Tor Vergata (Italy).

Current Position

Associate professor (January 2015-present) in Computer Engineering, University of Rome Tor Vergata (Italy), Department of Civil Engineering and Computer Science Engineering.

Past Positions

Assistant professor (tenure track) (October 2006-January 2015) in Computer Engineering at the University of Rome Tor Vergata (Italy).

Research associate (2001-2006) at the University of Rome Tor Vergata (Italy).

Visiting researcher (May-November 1999), IBM T.J. Watson Research Center, NY (USA), in the unit led by Philip S. Yu.

Qualifications

2019 Italian National Scientific Qualification (ASN 2018) for the role of Full Professor in Information Processing Systems (09/H1).

2017 Italian National Scientific Qualification (ASN 2016) for the role of Full Professor in Computer Science (01/B1).

2014 Italian National Scientific Qualification (ASN 2012) for the role of Associate Professor in Computer Science (01/B1).

2013 Italian National Scientific Qualification (ASN 2012) for the role of Associate Professor in Information Processing Systems (09/H1).

3 International Awards and Acknowledgements

2016 Honorable mention paper award at the 10th ACM International Conference on Distributed and Event-Based Systems (DEBS 2016).

2015 Best poster award at the 9th ACM International Conference on Distributed Event-Based Systems (DEBS 2015).

2011 Best paper award at the IEEE 6th International Symposium on Service-Oriented System & Engineering (SOSE 2011).

2002 “The state of the art in locally distributed Web-server systems” published in ACM Computing Surveys in June 2002 was in the top 10 of the most downloaded papers from the ACM Digital Library for the quarters June-Sept. 2002 and Oct.-Dec. 2002.

4 Research Projects

Responsibility

2016-2018 EU Horizon 2020 “Energy oriented Centre of Excellence (EoCoE) for computing applications”, Grant Agreement Number: 676629, University of Rome Tor Vergata is linked

third-party of CNR.

Responsibility: responsible of Rome Tor Vergata research unit from November 2016.

2013-2017 European COST Action “IC1304: Autonomous Control for a Reliable Internet of Services (ACROSS)”.

Responsibility: Management Committee member.

2017 Realization of a research and development project (pre-commercial procurement) on “Cloud for Europe” (Tender no. 5843932, FP7-610650), Phase II (Prototype development) for Lots 1, 2 and 3.

Responsibility: responsible of Rome Tor Vergata research unit.

2016 Realization of a research and development project (pre-commercial procurement) on “Cloud for Europe” (Tender no. 5843932, FP7-610650), Phase I (Solution design) for Lots 1, 2 and 3.

Responsibility: responsible of Rome Tor Vergata research unit.

2015-2016 HOME/2013/ISEC/FINEC/4000005234 “System for prevention and combat identity theft (SYPCIT)”, financed by the European Commission.

Responsibility: responsible of Rome Tor Vergata research unit from November 2015 till the project end.

2002 University of Rome Tor Vergata, young researchers project “Cooperative Proxy Servers for Universal Web Access”.

Responsibility: principal investigator.

1999 IBM Research Grant for research activity in cooperation with Dr. Philip Yu, IBM T.J. Watson Research Center.

Responsibility: principal investigator.

Participation

I contribute and contributed actively in the following international and national research projects:

2015-2018 SIR 2014 “MULTIdimensional Single-cell microfluidic Impedance Cytometry (MUSIC)”, financed by the Italian Ministry of Education, University and Research.

2018 MSU “Global Discovery” Seed Grant Program “Autonomic security for next generation health care systems”, funded by the Mississippi State University (MSU).

2015-2016 EU Horizon 2020 “Energy oriented Centre of Excellence (EoCoE) for computing applications”, Grant Agreement No. 676629 (University of Rome Tor Vergata is linked third-party of CNR).

2014-2015 HOME/2013/ISEC/FINEC/4000005234 “System for prevention and combat identity theft (SYPCIT)”, financed by the European Commission.

2014 EU FP7 IST-318784 STP “TROPIC: Distributed computing, storage and radio resource allocation over cooperative femtocells”.

2013-2015 FRGS Fasa 2/2013 “A robust multi-layer planning model for a self-adaptive service-based framework”, funded in the framework of the Fundamental Research Grant Scheme (FRGS) by the Ministry of Higher Education, Malaysia.

2012-2014 FAPESP 2011/09524-7 “Development and evaluation of new computational techniques to enable the provision of quality service in SOA architectures”, funded by Fundação de Amparo á Pesquisa do Estado de São Paulo (FAPESP), Brazil.

2009-2011 PRIN 2007 “D-ASAP: Dependable Adaptable Software Architectures for Pervasive Computing”, financed by the Italian Ministry of Education, University and Research,

- 2005-2008** PON “CRESCO: Centro Computazionale di RicErca sui Sistemi Complessi”, financed by the Italian Ministry of Education, University and Research.
- 2002-2006** FIRB “WEB MINDS: Wide-scale, Broadband, Middleware for Network Distributed Services”, financed by the Italian Ministry of Education, University and Research.
- 2002-2006** FIRB “Perf: Performance Evaluation of Complex Systems: Techniques, Methodologies, and Tools - Perf”, financed by the Italian Ministry of Education, University and Research.
- 2002-2004** “SP1 Internet Networks: efficiency, integration and security”, financed by the Italian National Research Council (CNR).
- 2002-2003** COFIN “High quality Web systems”, financed by the Italian Ministry of Education, University and Research.
- 2002-2003** Agenzia 2000 “Computational grids and applications”, financed by the Italian National Research Council (CNR).
- 1998-1999** “MOSAICO: Methodologies and Tools for the Design of High Performance Systems for Distributed Applications”, financed by the Italian Ministry of Education, University and Research.

Research Projects Evaluator

- 2020** Generic Call for Proposals 2020 (AAPG 2020), French National Research Agency (ANR), France.
- 2018** Member of the expert panel “Doctoral (PhD) grant strategic basic research (SB) SBWT50 - Informatics and data communication”, Research Foundation - Flanders (FWO), Belgium.
- 2013** “Futuro in Ricerca” program, Ministry of Education, University and Research, Italy.
- 2009** Millennium Science Initiative, Chile.

5 Professional Activities

Editorial Board

- 2020-** Associate Editor of IEEE Transactions of Parallel and Distributed Systems.

Journal Guest Editor

- 2019-2020** *Big Data Research* (Elsevier), Special issue “Big Data in Industrial and Commercial Applications”. Guest editor with Lars Lundberg, Håkan Grahm, Andreas Polze, and Sogand Shirinbab.
- 2018-2020** *Parallel Computing* (Elsevier), Special Issue on “Data Stream Processing in HPC Systems: New Frameworks and Architectures for High Frequency Streaming”. Guest editor with Marco Aldinucci, Gabriele Mencagli, and Massimo Torquati.
- 2017-2018** *Future Generation Computer Systems* (Elsevier), Special Issue on “New Landscapes of the Data Stream Processing in the era of Fog Computing”. Guest editor with Gabriele Mencagli, Domenico Talia, and Massimo Torquati.

Conference and Workshop Organization

Program Chair

1. *2020 IEEE International Conference on Fog Computing (ICFC 2020)*, Sydney, Australia, April 21-24, 2020. Co-chair with Song Guo.
2. *11th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2018)*, Zurich, Switzerland, December 17-20, 2018. Co-chair with Luiz Fernando Bittencourt.

Workshop Chair

1. *3rd International Workshop on Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP 2019)*, Göttingen, Germany, August 2019, co-located with Euro-Par 2019. Co-chair with Gabriele Mencagli and Massimo Torquati.
2. *2nd International Workshop on Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP 2018)*, Turin, Italy, August 28, 2018, co-located with Euro-Par 2018. Co-chair with Gabriele Mencagli and Massimo Torquati.
3. *International Workshop on Autonomic Systems for Big Data Analytics (ASBDA 2017)*, Tucson, AZ, USA, September 18, 2017, co-located with IEEE ICACC 2017. Co-chair with Manish Parashar.
4. *International Workshop on Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP 2017)*, Santiago de Compostela, Spain, August 29, 2017, co-located with Euro-Par 2017. Co-chair with Gabriele Mencagli and Massimo Torquati.
5. *International Workshop on Autonomous Control for Performance and Reliability Trade-offs in Internet of Services (ACPROSS 2017)*, L'Aquila, Italy, April 22, 2017, co-located with ICPE 2017. Co-chair with Francesco Lo Presti and Peter Pocta.
6. *3rd International Workshop on Advanced Architectures and Algorithms for Internet DELivery and Applications (AAA-IDEA 2009)*, Las Palmas de Gran Canaria, Spain, November 26, 2009, co-located with QShine 2009. Co-chair with Anirban Mahanti.

Tutorial Chair

1. *8th ACM/SPEC International Conference on Performance Engineering (ICPE 2017)*, L'Aquila, Italy, April 22-27, 2017.

Publicity Chair

1. *2020 IEEE International Conference on Fog Computing (ICFC 2020)*, Sydney, Australia, April 21-24, 2020.
2. *12th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2019)* and the *6th IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (BDCAT 2019)*, Auckland, New Zealand, December 2019.

Program Committee Member

1. *5th IEEE International Conference on Fog and Edge Computing (ICFEC 2021)*, Melbourne, Australia, May 10-13, 2021.

2. *12th ACM/SPEC International Conference on Performance Engineering (ICPE 2021)*, Rennes, France, April 19-23, 2021.
3. *13th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2020)*, Leicester, UK, December 7-10, 2020.
4. Doctoral Symposium at *13th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2020)*, Leicester, UK, December 7-10, 2020.
5. *IEEE 28th International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2020)*, Nice, France, November 17-19, 2020.
6. *14th IEEE International Conference on Big Data Science and Engineering (IEEE BigDataSE 2020)*, Guangzhou, China, November 10-13, 2020
7. *International Symposium on Algorithmic Aspects of Cloud Computing (ALGO CLOUD 2020)*, Pisa, Italy, September 7-10, 2020.
8. *29th International Conference on Computer Communications and Networks (ICCCN 2020)*, Communication Networks Architectures, Algorithms, Measurement and Performance Evaluation (CAAME) track, Honolulu, Hawaii, USA, August 3-6, 2020.
9. *27th International Science Conference on Computer Networks (CN 2020)*, Poland, June 23-25, 2020.
10. *10th NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar-20)*, New Orleans, Louisiana, USA, May 18-22, 2020.
11. *4th IEEE International Conference on Fog and Edge Computing (ICFEC 2020)*, Melbourne, Australia, May 11-14, 2020.
12. *The Web Conference 2020*, Intelligent Systems and Infrastructure track, Taipei, Taiwan, April 20-24, 2020.
13. *11th ACM/SPEC International Conference on Performance Engineering (ICPE 2020)*, Edmonton, Alberta, Canada, April 20-24, 2020.
14. *4th International Conference on Fog and Mobile Edge Computing (FMEC 2020)*, PhD Forum and Posters track, Paris, France, April 20-23, 2020.
15. *Special Session on Cloud Computing on Infrastructure as a Service and its Applications (CCISA)*, 28th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing (PDP 2020), Vasteras, Sweden, March 11-13, 2020.
16. *6th International Conference on Information and Communication Technologies for Disaster Management (ICT-DM 2019)*, Paris, France, December 18-20, 2019.
17. *12th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2019)*, Auckland, New Zealand, December 2-5, 2019.
18. *International Symposium on Algorithmic Aspects of Cloud Computing (ALGO CLOUD 2019)*, Munich, Germany, September 9-13, 2019.
19. *19th IEEE International Conference on Scalable Computing and Communications (ScalCom 2019)*, Leicester, UK, August 19-23, 2019.
20. *13th ACM International Conference on Distributed and Event-based Systems (DEBS 2019)*, Darmstadt, Germany, June 24-28, 2019.
21. *26th International Science Conference on Computer Networks (CN 2019)*, Kamień Śląski, Poland, June 25-28, 2019.
22. *4th International Conference on Fog and Mobile Edge Computing (FMEC 2019)*, PhD Forum and Posters track, Rome, Italy, June 10-13, 2019.
23. *9th NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar-19)*,

- Rio de Janeiro, Brazil, May 20, 2019.
24. *The Web Conference 2019* (formerly known as The WWW Conference), Intelligent Systems and Infrastructure track, San Francisco, CA, USA, May 13-17, 2019.
 25. *3rd IEEE International Conference on Fog and Edge Computing (ICFEC 2019)*, Larcana, Cyprus, May 14-17, 2019.
 26. *Special Session on Cloud Computing on Infrastructure as a Service and its Applications (CCISA)*, 27th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing (PDP 2019), Pavia, Italy, February 13-15, 2019.
 27. *18th IEEE International Conference on Scalable Computing and Communications (ScalCom 2018)*, Guangzhou, China, October 8-12, 2018.
 28. *International Workshop on Container-based Systems for Big Data, Distributed and Parallel Computing (CBDP 2018)*, Turin, Italy, August 27, 2018.
 29. *15th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2018)*, Mobile Cloud Computing track, Gran Canaria, Spain, August 13-15, 2018.
 30. *Special Session on Technologies for Secure and High-Quality Web-Based Services (Tech-SQWeb)*, 25th International Scientific Conference on Computer Networks 2018, Gliwice, Poland, June 19-22, 2018.
 31. *2nd IEEE International Conference on Fog and Edge Computing (ICFEC 2018)*, Washington DC, USA, May 3, 2018.
 32. *Special Session on Cloud Computing on Infrastructure as a Service and its Applications (CCISA)*, 26th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing (PDP 2018), Cambridge, UK, March 21-23, 2018.
 33. *InfQ 2017 - New Frontiers in Quantitative Methods in Informatics*, Venice, Italy, December 4, 2017.
 34. *IEEE 25th International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2017)*, Banff, Alberta, Canada, September 20-22, 2017.
 35. *1st International Workshop on Autonomic Management of Large-scale Container-based Systems (AMLCS 2017)*, Tucson, AZ, USA, September 18, 2017.
 36. *5th International Conference on Future Internet of Things and Cloud (FiCloud 2017)*, QoS-aware IoT and Cloud Services Composition track, Prague, Czech Republic, August 21-23, 2017.
 37. *14th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2017)*, Mobile Cloud Computing track, Leuven, Belgium, July 24-26, 2017.
 38. *12th International Workshop on Feedback Computing (FC 2017)*, Columbus, OH, USA, July 17, 2017.
 39. *InfQ 2016 - New Frontiers in Quantitative Methods in Informatics*, Taormina, Italy, October 25, 2016.
 40. *IEEE 24th International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2016)*, London, UK, September 19-21, 2016.
 41. *13th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2016)*, Mobile Cloud Computing track, Montreal, Quebec, Canada, August 15-18, 2016.
 42. *IEEE 23rd International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2015)*, Atlanta, GA, USA, October 5-7, 2015.
 43. *12th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2015)*,

- Mobile Cloud Computing track, Belfort, France, August 17-20, 2015.
44. *Selected Areas in Communications Symposium* at the 2015 IEEE International Conference on Communications (ICC 2015), Data Storage and Cloud Computing track, London, UK, June 8-12, 2015.
 45. *5th Workshop of the Italian group of Quantitative Informatics (InfQ 2014)*, Turin, Italy, October 6-7, 2014.
 46. *IEEE 22nd International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2014)*, Paris, France, September 9-11, 2014.
 47. *5th International Conference on Computer and Communication Technology (ICCT 2014)*, Allahabad, India, September 26-28, 2014.
 48. *11th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2014)*, Mobile Cloud Computing track, Niagara Falls, Ontario, Canada, August 17-20, 2014.
 49. *IEEE 21st International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2013)*, San Francisco, CA, USA, August 14-16, 2013.
 50. *International Workshop on Cloud Convergence: challenges for future infrastructures and services (WCC 2013)*, Budapest, Hungary, June 13, 2013.
 51. *5th International Conference on Internet and Distributed Computing Systems (IDCS 2012)*, Wu Yi Shan, Fujian, China, November 21-23, 2012.
 52. *International Workshop on Clouds for Business and Business for Clouds (C4BB4C)*, Madrid, Spain, July 10-13, 2012.
 53. *Special Session on Distributed Networking and Computing (DNC 2011)*, Networking and Electronic Commerce Research Conference 2011, Riva del Garda, Italy, October 13-16, 2011.
 54. *16th International World Wide Web Conference (WWW 2007)*, Performance and Scalability track, Banff, Alberta, Canada, May 8-12, 2007.
 55. *2nd IEEE International Workshop on Services and Architectures for the Ubiquitous Web and Mobile Internet (SIUMI 2006)*, Lisboa, Portugal, July 4, 2006.
 56. *1st IEEE International Workshop on Services and Architectures for the Ubiquitous Web and Mobile Internet (SIUMI 2005)*, Columbus, OH, June 6, 2005.

Invited/Keynote Talks at International Conferences and Workshops

1. “Self-adaptation for streaming analytics at the edge”, invited talk at *International Workshop on Container-based Systems for Big Data, Distributed and Parallel Computing (CBDP 2018)*, in conjunction with Euro-Par 2018, Turin, Italy, August 27, 2018.
2. “Decentralized self-adaptation for elastic data stream processing”, invited talk at *13th Cloud Control Workshop*, Skåvsjöholm, Sweden, June 15, 2018.
3. “Web: the engineering perspective”, invited talk at *1st International Global Governance Symposium*, Rome, Italy, July 13, 2017.
4. “Deploying data streaming applications in the Fog”, invited talk at *2nd Workshop Through the Fog*, Pisa, Italy, February 24, 2017.
5. “Placing applications in large-scale distributed and heterogeneous environments”, **keynote talk** at *IEEE 24th International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2016)*, London, UK, September 19, 2016.

Conference Tutorials

1. M. Colajanni, M. Andreolini, V. Cardellini, “Benchmarking of locally and geographically distributed Web-server systems”, *12th International World Wide Web Conference (WWW 2003)*, Budapest, Hungary, May 20-24, 2003.
2. M. Andreolini, V. Cardellini, M. Colajanni, “Benchmarking models and tools for distributed Web server systems”, *IFIP WG 7.3 International Symposium on Computer Modeling, Measurement and Evaluation (Performance 2002)*, Roma, Italy, September 23-27, 2002.
3. M. Colajanni, P.S. Yu, V. Cardellini, “Scalable Web server systems: Architectures, models, and load balancing algorithms”, *ACM International Conference on Measurement and Modeling of Computer Systems (ACM Sigmetrics 2000)*, Santa Clara, CA, USA, June 18-21, 2000.

Participation in Panels of Conferences and Workshops

1. “From Cloud native to Big Data: What is the point (and place) of academic research?”, joint panel at the *11th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2018)* and *5th IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (BDCAT 2018)*, Zurich, Switzerland, December 19, 2018.
2. “Towards gender balance in our field”, *4th European Workshop on Parallel and Distributed Computing Education for Undergraduate Students (Euro-EDUPAR 2018)*, Turin, Italy, August 28, 2018.

Reviewer for Journals and Conferences

Since 2003 I have reviewed more than 240 articles submitted to **international journals**, among which:

- ACM Transactions on Autonomous and Adaptive Systems (2016, 2017, 2020)
- ACM Transactions on Internet Technology (2002, 2007, 2018)
- ACM Transactions on Internet of Things (2019)
- ACM Transactions on Mathematical Software (2015-2018)
- ACM Transactions on Modeling and Performance Evaluation of Computing Systems (2015, 2016)
- ACM Transactions on Software Engineering and Methodology (2015, 2017, 2018)
- ACM Transactions on the Web (2011, 2015)
- ACM Computing Surveys (2017)
- IEEE/ACM Transactions on Networking (2018)
- IEEE Transactions on Parallel and Distributed Systems (2003, 2004, 2010, 2013-2016, 2019)
- IEEE Transactions on Services Computing (2009-2016, 2018)
- IEEE Transactions on Cloud Computing (2018, 2019)
- IEEE Transactions on Software Engineering (2015, 2016)
- IEEE Transactions on Wireless Communications (2014, 2015, 2017, 2018)
- IEEE Transactions on Mobile Computing (2016-2018, 2020)
- IEEE Transactions on Communications (2017)
- IEEE Transactions on Vehicular Technology (2016, 2020)
- IEEE Transactions on Computers (2005, 2011)

- IEEE Transactions on Knowledge and Data Engineering (2001-2003, 2006)
- IEEE Transactions on Network and Service Management (2013, 2017, 2019)
- Big Data Research (2020)
- Computer Communications, Elsevier (2010) (recognized as *outstanding reviewer* in Sep. 2018)
- Computer Networks, Elsevier (2006-2017) (recognized as *outstanding reviewer* in Nov. 2015 and Nov. 2017)
- Computers and Operations Research, Elsevier (2006)
- Data & Knowledge Engineering, Elsevier (2010)
- Future Generation Computer Systems, Elsevier (2018) (recognized as *outstanding reviewer* in Feb. 2018)
- Information Science, Elsevier (2013, 2014, 2018)
- Journal of Computer and System Sciences (2020)
- Journal of Network and Computer Applications, Elsevier (2007, 2010-2012, 2014-2016, 2018, 2019)
- Journal of Parallel and Distributed Computing, Elsevier (2018, 2020)
- Journal of Systems and Software, Elsevier (2004, 2005, 2009, 2010, 2014, 2018)
- Parallel Computing, Elsevier (2019, 2020)
- Performance Evaluation, Elsevier (2005, 2009)
- Cluster Computing, Springer (2008, 2010-2014, 2020)
- Computing, Springer (2014, 2017, 2019)
- Journal of Global Optimization, Springer (2017)
- Neural Computing and Applications, Springer (2016)
- Service Oriented Computing and Applications, Springer (2017)
- Soft Computing, Springer (2015)
- World Wide Web, Springer (2000, 2003)
- Enterprise Information Systems, Taylor & Francis (2011-2015)
- Software Practice and Experience, Wiley (2001, 2003, 2005, 2006, 2015)
- Concurrency and Computation: Practice and Experience, Wiley (2016)
- The Computer Journal, Oxford University Press (2006, 2007, 2009)
- ACM Sigmetrics Performance Evaluation Review (2003, 2017)
- Communications of the ACM (2006)
- IEEE Access (2019, 2020)
- IEEE Cloud Computing Magazine (2016, 2017)
- IEEE Communications Magazine (2004, 2017)
- IEEE Network Magazine (2005, 2009)

Since 2000 I have reviewed more than 50 submissions to **international conferences and workshops** (without being a TPC member), among which:

- 24th International European Conference on Parallel and Distributed Computing (Euro-Par 2018)
- ACM/SPEC International Conference on Performance Engineering (ICPE 2017)
- IEEE Int'l Conference on Computer Communications (INFOCOM 2016, 2014, 2004)
- IEEE Conference on Decision and Control (CDC 2013)
- Int'l Conference on Quantitative Evaluation of SysTems (QEST 2011)
- Hawaii Int'l Conference on System Sciences (HICSS-47 in 2013, HICSS-46 in 2012, HICSS-45 in 2011, HICSS-44 in 2010, HICSS-43 in 2009, HICSS-41 in 2007)

- Joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundation of Software Engineering (ESEC/FSE 2009)
- ACM/IEEE Int'l Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM 2009, 2006, 2005)
- Americas Conference on Information Systems (AMCIS 2009, 2008)
- ACM Int'l Conference on Performance Evaluation Methodologies and Tools (ValueTools 2006)
- Int'l World Wide Web Conference (WWW 2005, 2003, 2002)
- IFIP WG 7.3 Int'l Symposium on Computer Performance, Modeling, Measurements and Evaluation (Performance 2005)
- IEEE Int'l Symposium on Computers and Communications (ISCC 2005)
- IEEE Int'l Conference on Communications (ICC 2004)
- ACM Symposium on Applied Computing (SAC 2004)
- European Conference on Parallel Processing (EuroPar 2004)
- Int'l Workshop on Web Content Caching and Distribution (WCW 2004)
- IEEE Int'l Workshop on Internet Applications (WIAPP 2003)
- IEEE/ACM Int'l Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2003)
- ACM Sigmetrics 2002 and 2001
- IEEE Workshop on Advanced Issues of E-Commerce and Web-Based Information Systems (WECWIS 2000)

I have also been reviewer for the following **books and series**:

- Springer Theses Series (2013)
- Adaptive Web Services for Modular and Reusable Software Development: Tactics and Solutions, IGI Global (2011)

Membership and Responsibility for Professional Associations

- Faculty sponsor for the University of Rome Tor Vergata ACM Student Chapter (from November 2016 to November 2020)
- Member, ACM (1999-present)
- Member, IEEE and IEEE Computer Society (1998-present)

6 Ph.D. Students

Ph.D. Graduates

Stefano Iannucci (2015), “MOSES: a QoS-driven Autonomic Framework for Service Oriented Systems”. Assistant Professor at Mississippi State University.

Davide Barbieri (2015), “SIMPL: A Pattern Language for Writing Efficient Kernels on GPU architectures”, joint supervisor with Salvatore Filippone. Founder of GhostShark Games.

Alessandro Fanfarillo (2016), “Parallel Programming Techniques for Heterogeneous Exascale Computing Platforms”, joint supervisor with Salvatore Filippone. Postdoc at National Center for Atmospheric Research (NCAR), Boulder, CA, USA.

Matteo Nardelli (2018), “QoS-aware Deployment and Adaptation of Data Stream Processing Applications in Geo-distributed Environments”. Matteo’s thesis won the SPEC Kaivalya

Dixit Distinguished Dissertation Award 2018. Software engineer at Code Architects Automation, Bari. Italy.

Steve Nicola Antonio Petruzza (2018), “Combining Scalability, Portability, and Usability in Big Data Analytics for HPC”. Postdoc at University of Utah, Salt Lake City, UT, USA.

Current Ph.D. Students

2017- Gabriele Russo Russo, co-supervising with Francesco Lo Presti, expected 2021.

2018- Fabiana Rossi, co-supervising with Francesco Lo Presti, expected 2022.

2019- Giacomo Belocchi, co-supervising with Giuseppe Bianchi, expected 2023.

Member of Ph.D. Thesis Defense Committees

2020 TU Wien, Austria.

2020 “Task Placement and Resource Allocation in Edge Computing Systems” by Sladana Josilo, KTH Royal Institute of Technology, Stockholm, Sweden.

2019 PhD Program in Computer Science, Sapienza University of Rome, Italy (2 sessions).

2017 PhD Program in Computer Science, Sapienza University of Rome, Italy (2 sessions).

2017 PhD Program in Information Technology, Politecnico of Milan, Italy.

External Reviewer/Opponent for Ph.D. Theses

2019-2020 External reviewer of “Predictive Approaches for Resource Provisioning in Distributed Systems” by Michael Borkowski, TU Wien, Austria.

2019 Opponent of “Performance Implications of Virtualization” by Sogand Shirinbab, Blekinge Institute of Technology, Karlskrona, Sweden.

2018 External reviewer of “New Horizons for Stream Processing” by Lorenzo Affetti, Politecnico of Milan, Italy.

2018 Opponent of “Resource Allocation for Mobile Edge Clouds” by Amardeep Mehta, Umeå University, Sweden.

2018 External reviewer of “Task Scheduling in Data Stream Processing Systems” by Leila Eskandari, University of Otago, New Zealand.

2018 External reviewer of “Code Offloading and Resource Management Algorithms for Heterogeneous Mobile Clouds” by Bowen Zhou, University of Melbourne, Australia.

2017 External reviewer of “Auto-scaling and Deployment of Web Applications in Distributed Computing Cloud” by Chenhao Qu, University of Melbourne, Australia.

2016 External reviewer of “Towards Sustainable Solutions for Applications in Cloud Computing and Big Data” by Nguyen Thi Thao Ho, Politecnico of Milan, Italy.

2009 External reviewer of “Utility-Oriented Internetworking of Content Delivery Networks” by Al-Mukaddim K. Pathan, University of Melbourne, Australia.

Invited Lectures at International Schools

1. “Cross layer latency control for Big Data Analytics over fog/edge computing, part I”, International Summer School on Latency Control for Internet of Services, Karlstad, Sweden, June 30, 2017.

2. “Toward large-scale distributed stream processing: models, systems and challenges, part I”, 2nd International Summer School on Autonomous Control for Reliable Future Networks and Services, Opatija, Croatia, May 30, 2016.
3. “QoS in Service Oriented Architectures”, Summer School on Computational Mathematics, Statistics and Computer Science, Institute of Mathematics and Computer Science, University of São Paulo, Brazil, February 9, 2009.

7 Teaching Activities

Graduate Courses

At University of Rome Tor Vergata, for the Laurea Magistrale (master’s degree) in Computer Engineering:

Distributed Systems and Cloud Computing (from 2011/12 to 2020/21), 9 ECTS

Systems and Architectures for Big Data (from 2016/17 to 2020/21), 6 ECTS

Distributed Systems (from 2008/09 to 2010/11), 9 ECTS

Web Engineering (2006/07, 2007/08), 6 ECTS

As teaching assistant: Computer Architectures (1998/99, 1999/2000), Advanced Computer Architectures (2000/01), Web Engineering (from 2001/02 to 2005/06)

Undergraduate Courses

At University of Rome Tor Vergata, for the Laurea (bachelor’s degree) in Computer Engineering:

Computer Architectures (from 2018/19 to 2019/20), 3 (out of 9) ECTS

Computer Architectures and Operating Systems - part 1 (2008/09), 5 ECTS

Advanced Computer Architectures (from 2005/06 to 2007/08), 5 ECTS

Computer Architectures (from 2002/03 to 2004/05), 5 ECTS

At the Faculty of Economics of the University of Rome Tor Vergata, for the bachelor degree programs taught in English:

Algorithms, Data and Security (from 2018/19 to 2020/21), 6 ECTS

Computer Skills (6 ECTS in 2015/16, 3 ECTS in 2014/15)

At Sapienza University of Rome:

Computer Architectures (2001/02), 5 ECTS

1st and 2nd Level Master Degree Courses

At University of Rome Tor Vergata:

Big Data (from 2014/15 to 2019/20), 1st Level Master degree in Data Science, 4 ECTS (3 ECTS in 2014/15)

Big Data, Hadoop & Spark (from 2014/15 to 2019/20), 2nd Level Master degree in Customer Experience & Social Media Analytics (CESMA)

Supervised Theses

Since 2008 I have supervised more than 80 Laurea Magistrale theses and since 2004 about 50 undergraduate level theses, all at the University of Rome Tor Vergata. I was also assistant supervisor

for 20 Laurea Magistrale theses.

Teaching Grants

- 2020** AWS Educate Classroom grant (750 \$).
- 2019** AWS Educate Classroom grant (2250 \$).
- 2019** Google Cloud Platform Education grants (a total of 5400 \$).
- 2018** Google Cloud Platform Education grant (1550 \$).
- 2014** Amazon Web Services (AWS) in Education teaching grant (4500 \$).
- 2013** Amazon Web Services (AWS) in Education teaching grant (5100 \$).
- 2012** Amazon Web Services (AWS) in Education teaching grant (4000 \$).

8 Publications

Peer-reviewed International Journals Articles

- J1.** S. Iannucci, V. Cardellini, O.D. Barba, I. Banicescu, “A hybrid model-free approach for the near-optimal intrusion response control of non-stationary systems”, *Future Generation Computer Systems*, Vol. 109, pp. 111–124, August 2020. doi: 10.1016/j.future.2020.03.018
- J2.** F. Rossi, V. Cardellini, F. Lo Presti, M. Nardelli, “Geo-distributed efficient deployment of containers with Kubernetes”, *Computer Communications*, Vol. 159, pp. 161–174, June 2020. doi: 10.1016/j.comcom.2020.04.061
- J3.** V. Cardellini, V. Di Valerio, F. Lo Presti, “Game-theoretic pricing and provisioning strategies in cloud systems”, *IEEE Transactions on Service Computing*, Vol. 13, No. 1, pp. 86–98, January/February 2020. doi: 10.1109/TSC.2016.2633266
- J4.** M. Nardelli, V. Cardellini, V. Grassi, F. Lo Presti, “Efficient operator placement for distributed data stream processing applications”, *IEEE Transactions on Parallel and Distributed Systems*, Vol. 30, No. 8, pp. 1753–1767, August 2019. doi: 10.1109/TPDS.2019.2896115
- J5.** A. Abdullahi Hassan, V. Cardellini, P. D’Ambra, D. di Serafino, S. Filippone, “Efficient algebraic multigrid preconditioners on clusters of GPUs”, *Parallel Processing Letters*, Vol. 29, No. 1, March 2019. doi: 10.1142/S0129626419500014
- J6.** V. Cardellini, F. Lo Presti, M. Nardelli, G. Russo Russo, “Decentralized self-adaptation for elastic data stream processing”, *Future Generation Computer Systems*, Vol. 87, pp. 171–185, October 2018. doi: 10.1016/j.future.2018.05.025
- J7.** G. Russo Russo, M. Nardelli, V. Cardellini, F. Lo Presti, “Multi-level elasticity for wide-area data streaming systems: a reinforcement learning approach”, *Algorithms*, Special Issue on Algorithms for the Resource Management of Large Scale Infrastructures, Vol. 11, No. 9, Art. 134, pp. 1–27, MDPI, September 2018. doi: 10.3390/a11090134
- J8.** V. Cardellini, F. Lo Presti, M. Nardelli, G. Russo Russo, “Optimal operator deployment and replication for elastic distributed data stream processing”, *Concurrency and Computation: Practice & Experience*, Vol. 30, No. 9, May 2018. doi: 10.1002/cpe.4334
- J9.** E. Casalicchio, V. Cardellini, G. Interino, M. Palmirani, “Research challenges in legal-rule and QoS-aware cloud service brokerage”, *Future Generation Computer Systems*, Vol. 78, Part 1, pp. 211–223, January 2018. doi: 10.1016/j.future.2016.11.025
- J10.** V. Cardellini, A. Fanfarillo, S. Filippone, “Coarray-based load balancing on heterogeneous and many-core architectures”, *Parallel Computing*, Vol. 68, pp. 45–58, October 2017. doi:

10.1016/j.parco.2017.06.001

- J11.** V. Cardellini, V. Grassi, F. Lo Presti, M. Nardelli, “Optimal operator replication and placement for distributed stream processing systems”, *ACM SIGMETRICS Performance Evaluation Review*, Vol. 44, No. 4, pp. 11-22, March 2017. doi: 10.1145/3092819.3092823
- J12.** S. Filippone, V. Cardellini, D. Barbieri, A. Fanfarillo, “Sparse matrix-vector multiplication on GPGPUs”, *ACM Transactions on Mathematical Software*, Vol. 43, No. 4, Article No. 30, pp. 30:1–30:49, January 2017. doi: 10.1145/3017994
- J13.** V. Cardellini, V. De Nitto Personè, V. Di Valerio, F. Facchinei, V. Grassi, F. Lo Presti, V. Piccialli, “A game-theoretic approach to computation offloading in mobile cloud computing”, *Mathematical Programming*, Vol. 157, No. 2, pp. 421–449, June 2016. doi: 10.1007/s10107-015-0881-6
- J14.** V. Cardellini, S. Filippone, D. Rouson, “Design patterns for sparse-matrix computations on hybrid CPU/GPU platforms”, *Scientific Programming*, Vol. 22, No. 1, pp. 1-19, 2014. doi: 10.3233/SPR-130363
- J15.** V. Cardellini, V. Di Valerio, V. Grassi, S. Iannucci, F. Lo Presti, “QoS driven per-request load-aware service selection in service oriented architectures”, *International Journal of Software and Informatics*, Special Issue on Service Oriented Systems Engineering, Vol. 7, No. 2, pp. 195-220, 2013.
- J16.** V. Cardellini, E. Casalicchio, V. Grassi, S. Iannucci, F. Lo Presti, R. Mirandola, “MOSES: a framework for QoS driven runtime adaptation of service-oriented systems”, *IEEE Transactions on Software Engineering*, Vol. 38, No. 5, pp. 1138-1159, Sept./Oct. 2012. doi: 10.1109/TSE.2011.68
- J17.** M. Abundo, V. Cardellini, F. Lo Presti, “Admission control policies for a multi-class QoS-aware service oriented architecture”, *ACM SIGMETRICS Performance Evaluation Review*, Special issue on modeling dynamic behaviors of complex distributed systems, Vol. 39, No. 4, pp. 89-98, Apr. 2012. doi: 10.1145/2185395.2185445
- J18.** C. Canali, V. Cardellini, R. Lancellotti, “Content adaptation architectures based on Squid proxy server”, *World Wide Web*, Springer, Vol. 9, No. 1, pp. 63–92, Mar. 2006. doi: 10.1007/s11280-005-4049-9
- J19.** V. Cardellini, M. Colajanni, P.S. Yu, “Request redirection algorithms for distributed Web systems”, *IEEE Transactions on Parallel and Distributed Systems*, Vol. 14, No. 4, pp. 355-368, Apr. 2003. doi: 10.1109/TPDS.2003.1195408
- J20.** V. Cardellini, E. Casalicchio, M. Colajanni, P.S. Yu, “The state of the art in locally distributed Web-server systems”, *ACM Computing Surveys*, Vol. 34, No. 2, pp. 263–311, June 2002. doi: 10.1145/508352.508355
- J21.** E. Casalicchio, V. Cardellini, M. Colajanni, “Content-aware dispatching algorithms for cluster-based Web servers”, *Cluster Computing*, Kluwer Academic Publ., Vol. 5, No. 1, pp. 65–74, Jan. 2002. doi: 10.1023/A:1012796706047
- J22.** V. Cardellini, E. Casalicchio, M. Colajanni, S. Tucci, “Mechanisms for quality of service in Web clusters”, *Computer Networks*, Elsevier Science, Vol. 37, No. 6, pp. 761–771, Dec. 2001. doi: 10.1016/S1389-1286(01)00252-3
- J23.** V. Cardellini, E. Casalicchio, M. Colajanni, M. Mambelli, “Web switch support for differentiated services”, *ACM SIGMETRICS Performance Evaluation Review*, Vol. 29, No. 2, pp. 14–19, Sept. 2001. doi: 10.1145/572317.572320
- J24.** V. Cardellini, M. Colajanni, P.S. Yu, “DNS dispatching algorithms with state estimators for

scalable Web-server clusters”, *World Wide Web*, Baltzer Science, Vol. 2, No. 3, pp. 101–113, Aug. 1999. doi: 10.1023/A:1019296605640

- J25.** V. Cardellini, M. Colajanni, P.S. Yu, “Dynamic load balancing on Web-server systems”, *IEEE Internet Computing*, Vol. 3, No. 3, pp. 28–39, May–June 1999. doi: 10.1109/4236.769420

Editorial Articles

- EA1.** M. Aldinucci, V. Cardellini, G. Mencagli, M. Torquati, “Data stream processing in HPC systems: New frameworks and architectures for high-frequency streaming”, *Parallel Computing*, Vol. 98, October 2020. doi: 10.1016/j.parco.2020.102694
- EA2.** V. Cardellini, G. Mencagli, D. Talia, M. Torquati, “New landscapes of the data stream processing in the era of fog computing”, *Future Generation Computer Systems*, Vol. 99, pp. 646–650, October 2019. doi: 10.1016/j.future.2019.03.027

Books Edited and Conference Proceedings Edited

- E1.** U. Schwardmann, C. Boehme, D. B. Heras, V. Cardellini, E. Jeannot, A. Salis, C. Schifanella, R. R. Manumachu, D. Schwamborn, L. Ricci, O. Sangyoon, T. Gruber, L. Antonelli, S. L. Scott, “Euro-Par 2019: Parallel Processing Workshops - Euro-Par 2019 International Workshops, Göttingen, Germany, August 26-30, 2019, Revised Selected Papers”, *Lecture Notes in Computer Sciences* Vol. 11997, Springer, April 2020. doi: 10.1007/978-3-030-48340-1
- E2.** G. Mencagli, D. B. Heras, V. Cardellini, E. Casalicchio, E. Jeannot, F. Wolf, A. Salis, C. Schifanella, R. R. Manumachu, L. Ricci, M. Beccuti, L. Antonelli, J. D. Garcia Sanchez, S. L. Scott, “Euro-Par 2018: Parallel Processing Workshops - Euro-Par 2018 International Workshops, Turin, Italy, August 27-28, 2018, Revised Selected Papers”, *Lecture Notes in Computer Sciences* Vol. 11339, Springer, March 2019. doi: 10.1007/978-3-030-10549-5
- E3.** V. Cardellini, E. Casalicchio, K.R.L.J. Castelo Branco, J.C. Estrella, F.J. Monaco (Eds.), “Performance and Dependability in Service Computing: Concepts, Techniques and Research Directions”, IGI Global, 2012. doi: 10.4018/978-1-60960-794-4
- E4.** N. Bartolini, S. Nikolettseas, P. Sinha, V. Cardellini, A. Mahanti (Eds.), “Quality of Service in Heterogeneous Networks - 6th International ICST Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness, QShine 2009 and 3rd International Workshop on Advanced Architectures and Algorithms for Internet Delivery and Applications, AAA-IDEA 2009”, *Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering* Vol. 22, Springer, 2009. doi: 10.1007/978-3-642-10625-5

Peer-reviewed Book Chapters

- B1.** G. Russo Russo, V. Cardellini, F. Lo Presti, M. Nardelli, “Towards a security-aware deployment of data streaming applications in fog computing”, *Fog/Edge Computing for Security, Privacy, and Applications*, W. Chang and J. Wu (eds.), Springer, accepted for publication, to appear in 2020.
- B2.** V. Cardellini, T. Galinac Grbac, M. Nardelli, N. Tanković, H.-L. Truong, “QoS-based elasticity for service chains in distributed edge cloud environments”, *Autonomous Control for a Reliable Internet of Services: Methods, Models, Approaches, Techniques, Algorithms and*

- Tools*, I. Ganchev, R. van der Mei, H. van den Berg (eds.), Lecture Notes in Computer Science, Vol. 10768, Springer, pp. 182–211, May 2018. doi: 10.1007/978-3-319-90415-3_8
- B3.** V. Cardellini, T. Galinac Grbac, A. Kassler, P. Kathiravelu, F. Lo Presti, A. Marotta, M. Nardelli, L. Veiga, “Integrating SDN and NFV with QoS-aware service composition”, *Autonomous Control for a Reliable Internet of Services: Methods, Models, Approaches, Techniques, Algorithms and Tools*, I. Ganchev, R. van der Mei, H. van den Berg (eds.), Lecture Notes in Computer Science, Vol. 10768, Springer, pp. 212–240, May 2018. doi: 10.1007/978-3-319-90415-3_9
- B4.** V. Cardellini, E. Casalicchio, V. Grassi, S. Iannucci, F. Lo Presti, R. Mirandola, “MOSES: a platform for experimenting with QoS-driven self-adaptation policies for service oriented systems”, *Software Engineering for Self-Adaptive Systems III. Assurances*, R. de Lemos, D. Garlan, C. Ghezzi, and H. Giese (eds.), Lecture Notes in Computer Science, Vol. 9640, Springer, pp. 409–433, 2017. doi: 10.1007/978-3-319-74183-3_14
- B5.** V. Cardellini, V. Di Valerio, S. Iannucci, F. Lo Presti, “Service-oriented systems for adaptive management of service composition”, *Adaptive Web Services for Modular and Reusable Software Development: Tactics and Solutions*, G. Ortiz and X. Cubo (eds.), IGI Global, pp. 161–195, 2013. doi: 10.4018/978-1-4666-2089-6.ch006
- B6.** V. Cardellini, E. Casalicchio, V. Grassi, F. Lo Presti, “On guaranteeing global dependability properties in collaborative business process management”, *Business System Management and Engineering: From Open Issues to Applications*, C.A. Ardagna, E. Damiani, L.A. Maciaszek, M. Missikoff, and M. Parkin (eds.), Lecture Notes in Computer Science, Vol. 7350, Springer, pp. 48–70, July 2012. doi: 10.1007/978-3-642-32439-0_4
- B7.** V. Cardellini, E. Casalicchio, L. Silvestri, “Service level provisioning for cloud-based applications”, *Advancements in Distributed Computing and Internet Technologies: Trends and Issues*, A.-S.K. Pathan, M. Pathan, H.Y. Lee (eds.), IGI Global, pp. 363–385, 2012. doi: 10.4018/978-1-61350-110-8.ch017
- B8.** V. Cardellini, E. Casalicchio, F. Lo Presti, V. Grassi, R. Mirandola, “Towards self-adaptation for dependable service oriented systems”, *Architecting Dependable Systems VI*, R. de Lemos, J.-C. Fabre, C. Gacek, F. Gadducci, and M.H. ter Beek (eds.), Lecture Notes in Computer Science, Programming and Software Engineering Vol. 5835, Springer, pp. 24–48, Oct. 2009. doi: 10.1007/978-3-642-10248-6_2
- B9.** C. Canali, V. Cardellini, M. Colajanni, R. Lancellotti, “Content delivery and management”, *Content Delivery Networks*, R. Buyya, M. Pathan, and A. Vakali (eds.), Lecture Notes in Electrical Engineering Vol. 9, Springer, pp. 105–126, Sept. 2008. doi: 10.1007/978-3-540-77887-5_4
- B10.** V. Cardellini, M. Colajanni, P.S. Yu, “Distributed systems for efficient Web-based services”, *Performance Evaluation of Parallel, Distributed and Emergent Systems* (Distributed, Cluster and Grid Computing, Volume 1), G. Min and M. Ould-Khaoua (eds.), Nova Science Publishers, pp. 319–354, Dec. 2007.
- B11.** M. Andreolini, V. Cardellini, M. Colajanni, “Benchmarking models and tools for distributed Web-server systems”, *Performance Evaluation of Complex Systems: Techniques and Tools*, M.C. Calzarossa and S. Tucci (eds.), Lecture Notes in Computer Science Vol. 2459, Springer, pp. 208–235, Nov. 2002. doi: 10.1007/3-540-45798-4_10
- B12.** V. Cardellini, M. Colajanni, P.S. Yu, “Impact of workload models in evaluating the performance of distributed Web-server systems”, *System Performance Evaluation: Methodologies*

and Applications, E. Gelenbe (ed.), CRC Press, pp. 397–417, Mar. 2000.

Peer-reviewed International Conference Papers

- C1.** F. Rossi, V. Cardellini, F. Lo Presti, “Self-adaptive threshold-based policy for microservices elasticity”, *Proceedings of the 28th IEEE Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2020)*, Nice, France, November 17-19 2020.
- C2.** F. Rossi, V. Cardellini, F. Lo Presti, “Hierarchical scaling of microservices in Kubernetes”, *Proceedings of the 1st IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS 2020)*, Washington, DC, Washington, USA, August 17-21 2020.
- C3.** G. Belocchi, V. Cardellini, A. Cammarano, G. Bianchi, “Paxos in the NIC: hardware acceleration of distributed consensus protocols”, *Proceedings of the 16th International Conference on the Design of Reliable Communication Networks (DRCN 2020)*, pp. 1–6, IEEE, Milan, Italy, March 24-27 2020. doi: 10.1109/DRCN48652.2020.1570611009
- C4.** V. Cardellini, F. Lo Presti, M. Nardelli, F. Rossi, “Self-adaptive container deployment in the fog: A survey”, *5th International Symposium on Algorithmic Aspects of Cloud Computing (ALGO CLOUD 2019)*, Munich, Germany, September 10, 2019. Lecture Notes in Computer Science Vol. 12041, Springer, pp. 77–102, August 2020. doi: 10.1007/978-3-030-58628-7_6
- C5.** F. Rossi, M. Nardelli, V. Cardellini, “Horizontal and vertical scaling of container-based applications using reinforcement learning”, *Proceedings of the 2019 IEEE International Conference on Cloud Computing (IEEE CLOUD 2019)*, pp. 329–338, Milan, Italy, July 8-13 2019. doi: 10.1109/CLOUD.2019.00061
- C6.** F. Rossi, V. Cardellini, F. Lo Presti, “Elastic deployment of software containers in geo-distributed computing environments”, *Proceedings of the 2019 IEEE Symposium on Computers and Communications (ISCC 2019)*, pp. 1–8, Barcelona, Spain, June 29-July 3 2019. doi: 10.1109/ISCC47284.2019.8969607
- C7.** G. Russo Russo, V. Cardellini, F. Lo Presti, “Reinforcement learning based policies for elastic stream processing on heterogeneous resources”, *Proceedings of the 13th ACM International Conference on Distributed and Event-based Systems (DEBS 2019)*, pp. 31–42, Darmstadt, Germany, June 24-28 2019. doi: 10.1145/3328905.3329506
- C8.** S. Iannucci, O. D. Barba, V. Cardellini, I. Banicescu, “A performance evaluation of deep reinforcement learning for model-based intrusion response”, *1st International Workshop on Self-Protecting Systems (SPS 2019)* (in conjunction with IEEE ICAC 2019 and SASO 2019), Umeå, Sweden, June 16-20 2019. *Proceedings of the 2019 IEEE 4th International Workshops on Foundations and Applications of Self* Systems (FAS*W)*, pp. 158–163, 2019. doi: 10.1109/FAS-W.2019.00047
- C9.** M. Nardelli, G. Russo Russo, V. Cardellini, F. Lo Presti, “A multi-level elasticity framework for distributed data stream processing”, *International Workshop on Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP 2018)* (in conjunction with Euro-Par 2018), Turin, Italy, August 28, 2018. *Euro-Par 2018: Parallel Processing Workshops*, Lecture Notes in Computer Science Vol. 11339, Springer, pp. 53–64, March 2019. doi: 10.1007/978-3-030-10549-5_5
- C10.** M. Nardelli, V. Cardellini, E. Casalicchio, “Multi-level elastic deployment of containerized applications in geo-distributed environments”, *Proceedings of the IEEE 6th International*

- Conference on Future Internet of Things and Cloud (FiCloud 2018)*, Barcelona, Spain, August 6-8, 2018, pp. 1–8. doi: 10.1109/FiCloud.2018.00009
- C11.** V. Cardellini, F. Lo Presti, M. Nardelli, G. Russo Russo, “Auto-scaling in data stream processing applications: A model based reinforcement learning approach”, *InfQ 2017 – New Frontiers in Quantitative Methods in Informatics* (in conjunction with VALUETOOLS 2017), Venice, Italy, December 4, 2017. Communications in Computer and Information Science Vol. 825, pp. 97–110, Springer, May 2018. doi: 10.1007/978-3-319-91632-3_8
- C12.** A. Abdullahi Hassan, V. Cardellini, S. Filippone, “Solving sparse linear systems of equations using CAF”, *International Conference on Parallel Computing (ParCo 2017)*, Bologna, Italy, September 12-15, 2017. *Parallel Computing is Everywhere*, Advances in Parallel Computing Vol. 32, pp. 87–96, IOS Press, 2018. doi: 10.3233/978-1-61499-843-3-87
- C13.** V. Cardellini, F. Lo Presti, M. Nardelli, G. Russo Russo, “Towards hierarchical autonomous control for elastic data stream processing in the fog”, *International Workshop on Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP 2017)* (in conjunction with Euro-Par 2017), Santiago de Compostela, Spain, August 29, 2017. *Euro-Par 2017: Parallel Processing Workshops*, Lecture Notes in Computer Science Vol. 10659, Springer, pp. 106–117, February 2018. doi: 10.1007/978-3-319-75178-8_9
- C14.** A. Abdullahi Hassan, V. Cardellini, S. Filippone, “A framework for unit testing with Coarray Fortran”, *Proceedings of the 25th High Performance Computing Symposium (HPC 2017)*, Virginia Beach, VA, USA, April 23-26, 2017, The Society for Modeling and Simulation International, pp. 5:1–5:12. doi:10.22360/springsim.2017.hpc.014
- C15.** V. Cardellini, V. Grassi, F. Lo Presti, M. Nardelli, “Joint operator replication and placement optimization for distributed streaming applications”, *InfQ 2016 - New Frontiers in Quantitative Methods in Informatics* (in conjunction with VALUETOOLS 2016), Taormina, Italy, October 25, 2016. *Proceedings of the 10th EAI International Conference on Performance Evaluation Methodologies and Tools*, ACM, pp. 263–270, 2017. doi:10.4108/eai.25-10-2016.2266628
- C16.** V. Cardellini, M. Nardelli, D. Luzi, “Elastic stateful stream processing in Storm”, *Proceedings of the 2016 International Conference on High Performance Computing & Simulation (HPCS 2016)*, Innsbruck, Austria, July 18-22, 2016, IEEE, pp. 583–590. doi:10.1109/HPCSim.2016.7568388
- C17.** G. Marciani, M. Piu, M. Porretta, M. Nardelli, V. Cardellini, “Real-time analysis of social networks leveraging the Flink framework”, *Proceedings of the 10th ACM International Conference on Distributed and Event-Based Systems (DEBS 2016)*, Irvine, CA, USA, June 20-24, 2016, pp. 386–389. doi:10.1145/2933267.2933517
- C18.** V. Cardellini, V. Grassi, F. Lo Presti, M. Nardelli, “Optimal operator placement for distributed stream processing applications”, *Proceedings of the 10th ACM International Conference on Distributed and Event-Based Systems (DEBS 2016)*, Irvine, CA, USA, June 20-24, 2016, pp. 69–80. doi:10.1145/2933267.2933312 **Honorable mention paper award**
- C19.** V. Cardellini, A. Fanfarillo, S. Filippone, “Heterogeneous CAF-based load balancing on Intel Xeon Phi”, *6th International Workshop on Accelerators and Hybrid Exascale Systems (AsHES 2016)* (in conjunction with IPDPS 2016), Chicago, IL, USA, May 23, 2016. *Proceedings of the 2016 IEEE International Parallel & Distributed Processing Symposium Workshops*, pp. 702–711, 2016. doi:10.1109/IPDPSW.2016.51
- C20.** V. Cardellini, A. Fanfarillo, S. Filippone, D. Rouson, “Hybrid coarrays: a PGAS feature for

- many-core architectures”, *International Conference on Parallel Computing (ParCo 2015)*, Edinburgh, UK, September 1-4, 2015. *Parallel Computing: On the Road to Exascale*, Advances in Parallel Computing Vol. 27, IOS Press, pp. 175–184, April 2016. doi:10.3233/978-1-61499-621-7-175
- C21.** V. Cardellini, M. D’Angelo, V. Grassi, M. Marzolla, R. Mirandola, “A decentralized approach to network-aware service composition”, *Proceedings of the 4th European Conference on Service-Oriented and Cloud Computing (ESOCC 2015)*, Taormina, Italy, September 15-17, 2015, Lecture Notes in Computer Science Vol. 9306, Springer, pp. 34–48. doi:10.1007/978-3-319-24072-5_3 (acceptance rate: $13/48 = 27\%$)
- C22.** V. Cardellini, V. Grassi, F. Lo Presti, M. Nardelli, “On QoS-aware scheduling of data stream applications over fog computing infrastructures”, *5th International Workshop on Management of Cloud and Smart City Systems 2015 (MOCS 2015)* (in conjunction with ISCC 2015), Larnaca, Cyprus, July 6, 2015. *Proceedings of the 2015 IEEE Symposium on Computers and Communication (ISCC 2015)*, pp. 271–276, 2015. doi:10.1109/ISCC.2015.7405527
- C23.** V. Cardellini, V. Grassi, F. Lo Presti, M. Nardelli, “Distributed QoS-aware scheduling in Storm”, *Proceedings of the 9th ACM International Conference on Distributed Event-Based Systems (DEBS 2015)*, Oslo, Norway, June 29 - July 3, 2015, pp. 344–347. doi:10.1145/2675743.2776766 **Best poster award**
- C24.** D. Barbieri, V. Cardellini, S. Filippone, “SIMPL: a pattern language for writing efficient kernels on GPGPU”, *Proceedings of the 1st IEEE/ACM International Workshop on Software Engineering for High Performance Computing in Science (SE4HPCS 2015)* (in conjunction with ICSE 2015), Florence, Italy, May 18, 2015, pp. 38–45. doi:10.1109/SE4HPCS.2015.13
- C25.** M. Abundo, V. Di Valerio, V. Cardellini, F. Lo Presti, “QoS-aware bidding strategies for VM spot instances: a reinforcement learning approach applied to periodic long running jobs”, *Proceedings of the 14th IFIP/IEEE International Symposium on Integrated Network Management (IM 2015)*, Ottawa, ON, Canada, May 11-15, 2015, pp. 53–61. doi:10.1109/INM.2015.7140276 (acceptance rate: 27%)
- C26.** A. Fanfarillo, T. Burnus, V. Cardellini, S. Filippone, D. Nagle, D. Rouson, “OpenCoarrays: open-source transport layers supporting coarray Fortran compilers”, *Proceedings of the 8th International Conference on Partitioned Global Address Space Programming Models (PGAS 2014)*, Eugene, OR, USA, October 7-10, 2014, ACM, pp. 4:1–4:11. doi:10.1145/2676870.2676876
- C27.** A. Ismail, V. Cardellini, “Decentralized planning for self-adaptation in multi-cloud environment”, *2nd International Workshop on Cloud for IoT (CLIoT)* (in conjunction with ESOCC 2014), Manchester, UK, September 2, 2014. *Advances in Service-Oriented and Cloud Computing*, Communications in Computer and Information Science Vol. 508, Springer International Publishing Switzerland, pp. 76–90, 2015. doi:10.1007/978-3-319-14886-1_9
- C28.** A. Fanfarillo, T. Burnus, V. Cardellini, S. Filippone, D. Nagle, D. Rouson, “Coarrays in GNU Fortran”, *Proceedings of the 23rd International Conference on Parallel Architectures and Compilation Techniques (PACT 2014)*, Edmonton, Alberta, Canada, August 24-27, 2014, poster session, ACM, pp. 513–514. doi: 10.1145/2628071.2671427
- C29.** V. Cardellini, A. Fanfarillo, S. Filippone, “Sparse matrix computations on clusters with GPGPUs”, *Proceedings of the 2014 International Conference on High Performance Computing and Simulation (HPCS 2014)*, Bologna, Italy, July 21-25, 2014, IEEE, pp. 23–30. doi:10.1109/HPCSim.2014.6903665 (acceptance rate: $58/151 = 38.4\%$)
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