

Valeria Cardellini

Dipartimento di Ingegneria Civile e Ingegneria Informatica
Università di Roma “Tor Vergata”
via del Politecnico 1
00133 Roma, Italy

phone: +39 06 72597388
fax: +39 06 72597460
email: cardellini@ing.uniroma2.it
URL: www.ce.uniroma2.it/~valeria

1 Research Interests and Scientific Results

My main research interests are in the 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 Web systems, quality of service in Web systems, distributed infrastructures for adapting Web content and services. More recently, I have been working on: (i) QoS-driven runtime adaptation of service-oriented systems, (ii) resource provisioning and pricing in Cloud systems, (iii) computation offloading in Mobile Cloud Computing, (iv) QoS-aware placement of distributed data stream applications, and (v) optimization of kernel codes on GPUs.

I have co-authored more than 95 papers in peer-reviewed international journals, book chapters, and conference proceedings, starting with the first published paper in 1998. Three of these publications have received paper awards.

According to Google Scholar, in December 2018 there are more than 4000 citations of all the articles that I co-authored, with a h-index equal to 26. According to Scopus, in December 2018 the total number of citations exceeds 2010 (with 80 indexed articles) and my h-index is 21.

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 in reading list 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, 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

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” (co-authors: E. Casalicchio, M. Colajanni, P.S. Yu), ACM Computing Surveys, Vol. 34, June 2002 - 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** Italian Ministry of Education, University and Research, SIR 2014 project “MULTIdimensional Single-cell microfluidic Impedance Cytometry (MUSIC)”.
- 2015-2016** 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.
- 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 project “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 project “Development and evaluation of new computational techniques to enable the provision of quality service in SOA architectures”, founded by Fundação de Amparo á Pesquisa do Estado de São Paulo (FAPESP), Brazil.
- 2009-2011** Italian Ministry of Education, University and Research, PRIN 2007 project “D-ASAP: Dependable Adaptable Software Architectures for Pervasive Computing”.
- 2005-2008** Italian Ministry of Education, University and Research, PON “CRESCO: Centro Computazionale di RicErca sui Sistemi Complessi”.
- 2002-2006** Italian Ministry of Education, University and Research, FIRB project “WEB MINDS: Wide-scalE, Broadband, Middleware for Network Distributed Services”.

- 2002-2006** Italian Ministry of Education, University and Research, FIRB project “Perf: Performance Evaluation of Complex Systems: Techniques, Methodologies, and Tools - Perf”.
- 2002-2004** Italian National Research Council (CNR), project “SP1 Internet Networks: efficiency, integration and security”.
- 2002-2003** Italian Ministry of Education, University and Research, COFIN project “High quality Web systems”.
- 2002-2003** Italian National Research Council (CNR), Agenzia 2000 project “Computational grids and applications”.
- 1998-1999** Italian Ministry of Education, University and Research, project “MOSAICO: Methodologies and Tools for the Design of High Performance Systems for Distributed Applications”.

Research Projects Evaluator

- 2013** “Futuro in Ricerca” program, Ministry of Education, University and Research, Italy.
- 2009** Millennium Science Initiative, Chile.

5 Professional Activities

Journal Guest Editor

- 2018-2019** *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 Computing 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. *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. *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.
2. *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.
3. *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.

4. *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.
5. *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,

Program Committee Member

1. *11th ACM/SPEC International Conference on Performance Engineering* (ICPE 2020), Edmonton, Alberta, Canada, April 2020.
2. *19th IEEE International Conference on Scalable Computing and Communications* (ScalCom 2019), Leicester, UK, August 19-23, 2019.
3. *13th ACM International Conference on Distributed and Event-based Systems* (DEBS 2019), Darmstadt, Germany, June 24-28, 2019.
4. *26th International Science Conference on Computer Networks* (CN 2019), Kamień Śląski, Poland, June 25-28, 2019.
5. *4th International Conference on Fog and Mobile Edge Computing* (FMEC 2019), PhD Forum and Posters track, Rome, Italy, June 10-13, 2019.
6. *9th NSF/TCPD Workshop on Parallel and Distributed Computing Education* (EduPar-19), Rio de Janeiro, Brazil, May 20, 2019.
7. *The Web Conference 2019* (formerly known as WWW 2019), Intelligent Systems and Infrastructure track, San Francisco, CA, USA, May 13-17, 2019.
8. *3rd IEEE International Conference on Fog and Edge Computing* (ICFEC 2019), Larcana, Cyprus, May 14-17, 2019.
9. *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.
10. *18th IEEE International Conference on Scalable Computing and Communications* (ScalCom 2018), Guangzhou, China, October 8-12, 2018.
11. *International Workshop on Container-based Systems for Big Data, Distributed and Parallel Computing* (CBDP 2018), Turin, Italy, August 27, 2018.
12. *15th International Conference on Mobile Systems and Pervasive Computing* (MobiSPC 2018), Mobile Cloud Computing track, Gran Canaria, Spain, August 13-15, 2018.
13. *Special Session on Internet of Things and HPC: Devices, Networks, and Applications* (IoT-HPC 2018), 2018 International Conference on High Performance Computing & Simulation (HPCS 2018), Orléans, France, July 16-20, 2018.
14. *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.

15. *2nd IEEE International Conference on Fog and Edge Computing (ICFEC 2018)*, Washington DC, USA, May 3, 2018.
16. *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.
17. *InfQ 2017 - New Frontiers in Quantitative Methods in Informatics*, Venice, Italy, December 4, 2017.
18. *IEEE 25th Int'l Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2017)*, Banff, Alberta, Canada, September 20-22, 2017.
19. *1st International Workshop on Autonomic Management of Large-scale Container-based Systems (AMLCS 2017)*, Tucson, AZ, USA, September 18, 2017.
20. *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.
21. *14th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2017)*, Mobile Cloud Computing track, Leuven, Belgium, July 24-26, 2017.
22. *12th International Workshop on Feedback Computing (FC 2017)*, Columbus, OH, USA, July 17, 2017.
23. *InfQ 2016 - New Frontiers in Quantitative Methods in Informatics*, Taormina, Italy, October 25, 2016.
24. *IEEE 24th Int'l Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2016)*, London, UK, September 19-21, 2016.
25. *13th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2016)*, Mobile Cloud Computing track, Montreal, Quebec, Canada, August 15-18, 2016.
26. *IEEE 23rd Int'l Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2015)*, Atlanta, GA, USA, October 5-7, 2015.
27. *12th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2015)*, Mobile Cloud Computing track, Belfort, France, August 17-20, 2015.
28. *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.
29. *5th Workshop of the Italian group of Quantitative Informatics (InfQ 2014)*, Turin, Italy, October 6-7, 2014.
30. *IEEE 22nd Int'l Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2014)*, Paris, France, September 9-11, 2014.
31. *5th International Conference on Computer and Communication Technology (ICCCT 2014)*, Allahabad, India, September 26-28, 2014.
32. *11th International Conference on Mobile Systems and Pervasive Computing (MobiSPC 2014)*, Mobile Cloud Computing track, Niagara Falls, Ontario, Canada, August 17-20, 2014.
33. *IEEE 21st Int'l Symposium on Modeling, Analysis and Simulation of Computer and Telecommunications Systems (MASCOTS 2013)*, San Francisco, CA, USA, August 14-16, 2013.
34. *International Workshop on Cloud Convergence: challenges for future infrastructures and services (WCC 2013)*, Budapest, Hungary, June 13, 2013.
35. *5th International Conference on Internet and Distributed Computing Systems (IDCS 2012)*, Wu Yi Shan, Fujian, China, November 21-23, 2012.

36. *International Workshop on Clouds for Business and Business for Clouds (C4BB4C)*, Madrid, Spain, July 10-13, 2012.
37. *Special Session on Distributed Networking and Computing (DNC 2011)*, Networking and Electronic Commerce Research Conference 2011, Riva del Garda, Italy, October 13-16, 2011.
38. *16th International World Wide Web Conference (WWW 2007)*, Performance and Scalability track, Banff, Alberta, Canada, May 8-12, 2007.
39. *2nd IEEE International Workshop on Services and Architectures for the Ubiquitous Web and Mobile Internet (SIUMI 2006)*, Lisboa, Portugal, July 4, 2006.
40. *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 for *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. “EuroPAR Diversity Panel”, *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 210 articles submitted to **international journals**, among which:

- ACM Transactions on Autonomous and Adaptive Systems (2016, 2017)
- ACM Transactions on Software Engineering and Methodology (2015, 2017, 2018)
- ACM Transactions on Modeling and Performance Evaluation of Computing Systems (2015, 2016)
- ACM Transactions on Mathematical Software (2015-2018)
- ACM Transactions on the Web (2011, 2015)
- ACM Transactions on Internet Technology (2002, 2007, 2018)
- ACM Computing Surveys (2017, 2018)
- IEEE/ACM Transactions on Networking (2018)
- IEEE Transactions on Parallel and Distributed Systems (2003, 2004, 2010, 2013-2016)
- IEEE Transactions on Services Computing (2009-2016, 2018)
- IEEE Transactions on Cloud Computing (2018)
- IEEE Transactions on Software Engineering (2015, 2016)
- IEEE Transactions on Wireless Communications (2014, 2015, 2017, 2018)
- IEEE Transactions on Mobile Computing (2016-2018)
- IEEE Transactions on Communications (2017)
- IEEE Transactions on Vehicular Technology (2016)
- IEEE Transactions on Computers (2005, 2011)
- IEEE Transactions on Knowledge and Data Engineering (2001-2013, 2006)
- IEEE Transactions on Network and Service Management (2013, 2017)
- Computer Networks, Elsevier (2006-2017) (recognized as *outstanding reviewer* in Nov. 2015 and Nov. 2017)
- Future Generation Computer Systems, Elsevier (2018) (recognized as *outstanding reviewer* in Feb. 2018)
- Information Science, Elsevier (2013, 2014, 2018)
- Journal of Parallel and Distributed Computing (2018)
- Journal of Systems and Software, Elsevier (2004, 2005, 2009, 2010, 2014, 2018)
- Performance Evaluation, Elsevier (2005, 2009)
- Computers and Operations Research, Elsevier (2006)
- World Wide Web, Springer (2000, 2003)
- 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 Cloud Computing Magazine (2016, 2017)
- IEEE Communications Magazine (2004, 2017)
- IEEE Network Magazine (2005, 2009)
- Cluster Computing, Springer (2008, 2010-2014)

- Computing, Springer (2014, 2017)
- Journal of Global Optimization, Springer (2017)
- Neural Computing and Applications, Springer (2016)
- Service Oriented Computing and Applications, Springer (2017)
- Soft Computing, Springer (2015)
- Computer Communications, Elsevier (2010)
- Data & Knowledge Engineering, Elsevier (2010)
- Journal of Network and Computer Applications, Elsevier (2007, 2010-2012, 2014-2016, 2018)
(recognized as *outstanding reviewer* in Sep. 2018)

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 2019)
- 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”. Now 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. Now Founder of the startup Ghost-Shark.

Alessandro Fanfarillo (2016), “Parallel Programming Techniques for Heterogeneous Exascale Computing Platforms”, joint supervisor with Salvatore Filippone. Now 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”. Postdoc at University of Rome Tor Vergata, Rome, 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

2015- Ambra Abdullahi, co-supervising with Salvatore Filippone, expected 2019.

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

Member of Ph.D. Thesis Committees

2017 PhD Program in Computer Science, University of La Sapienza Rome, Italy.

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

External Reviewer/Opponent for Ph.D. Theses

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

2018 External reviewer, 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 2018/19), 9 ECTS

Systems and Architectures for Big Data (from 2016/17 to 2018/19), 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 (2018/19), 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 (2018/19), 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 2015/16 to 2017/18), 1st Level Master degree in Data Science, 4 ECTS

Big Data (2014/15), 1st Level Master degree in Data Science, 3 ECTS

Big Data & Hadoop (from 2014/15 to 2017/18), 2nd Level Master degree in Customer Experience & Social Media Analytics (CESMA)

Supervised Theses

Since 2008 I have supervised 64 Laurea Magistrale theses and from 2004 to 2015 45 undergraduate level theses, all at the University of Rome Tor Vergata. I was also assistant supervisor for 19 Laurea Magistrale theses.

Teaching Grants

2018 Google Cloud Platform Education Grant (1500 \$).

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

Referred Articles in International Journals

- IJ1.** A. Abdullahi Hassan, V. Cardellini, P. D'Ambra, D. di Serafino, S. Filippone, "Efficient algebraic multigrid preconditioners on clusters of GPUs", *Parallel Processing Letters*, accepted for publication in 2018, to appear.
- IJ2.** V. Cardellini, V. Di Valerio, F. Lo Presti, "Game-theoretic pricing and provisioning strategies in cloud systems", *IEEE Transactions on Service Computing*, accepted for publication in 2016, to appear. doi: 10.1109/TSC.2016.2633266
- IJ3.** V. Cardellini, F. Lo Presti, M. Nardelli, G. Russo Russo, "Decentralized self-adaptation for elastic data stream processing", *Future Generation Computing Systems*, Vol. 87, pp. 171–185, October 2018. doi: 10.1016/j.future.2018.05.025
- IJ4.** 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, pp. 1–27, MDPI, September 2018. doi: 10.3390/a11090134
- IJ5.** 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
- IJ6.** E. Casalicchio, V. Cardellini, G. Interino, M. Palmirani, "Research challenges in legal-rule and QoS-aware cloud service brokerage", *Future Generation Computing Systems*, Vol. 78, Part 1, pp. 211-223, January 2018. doi: 10.1016/j.future.2016.11.025
- IJ7.** 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

- IJ8.** 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
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- E2.** 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. ISBN: 978-3-642-10624-8. doi: 10.1007/978-3-642-10625-5

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- IC2.** 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
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- IC8.** 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
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- IC14.** 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
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- IC19.** A. Ismail, V. Cardellini, “Decentralized planning for self-adaptation in multi-cloud environment”, *2nd International Workshop on Cloud for IoT (CLIoT)* (in conjunction with ESOC 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
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¹Selected and published as book chapter in “Business System Management and Engineering: From Open Issues to Applications”, 2012.

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