

## **Francesco Lo Presti**

Francesco Lo Presti, male, is an Associate Professor in Computer Engineering (ING-INF/05 as scientific disciplinary sector) at the Civil Engineering and Computer Engineering Department of the University of Rome "Tor Vergata" since January 2007.

### **Education and Previous Positions**

He received the Laurea degree cum laude and honors in Electrical Engineering from the University of Roma Tor Vergata in 1993. He obtained the PhD degree in Computer Science and Automation Engineering from the University of Roma Tor Vergata in 1997". During 1995-1996 he spent 18 months as visiting scholar at the University of Massachusetts at Amherst in the Advanced Computer Networking Group led by Prof. J. Kurose and Prof. Don Towsley. From 1997 to 1998, he was an ICT engineer at Telecom Italia and at the Information and Computer Systems Department of the Italian National Central Bank. From 1998 to 2001, he held a joint post-doc position at the University of Massachusetts at Amherst (MA) and the AT&T Research Labs in Florham Park (NJ). From October 2001 to October 2005 he was an Assistant Professor at the Computer Science Department of University of L'Aquila and from November 2005 to December 2006 at the Computer Science Department of University of Rome Tor Vergata.

### **Teaching**

He is currently an Associate Professor at the Faculty of Engineering of the University of Rome "Tor Vergata" where he teaches both undergraduate and graduate courses in Computer Networks and Internet Modeling. He has supervised more than 50 M.S. Thesis.

He is member of the PhD scientific board of the GeoInformation, Computer Science and Control PhD Program of the University of Rome Tor Vergata. He supervised two graduated PhD student and he is currently supervising three PhD students.

### **Research Activity**

His general research interests are in the fields of distributed computing systems and computer networks. Within this general framework, he has recently focused his research activity on: (i) cross-layer optimization of cognitive radio networks; (ii) reinforcement based routing for underwater networks; (ii) QoS driven runtime adaptation of service-oriented systems; (iii) resource provisioning and pricing in Cloud systems; (iv) mobile Cloud computing, (v) scheduling and optimal deployment of data stream applications in Fog computing. He has published more than 80 papers in peer-reviewed international journals, international conference, symposium and workshop proceedings.

### **Bibliometric indices**

According to Google Scholar, in May 2020 there are more than 4600 citations with a h-index equal to 34. According to Scopus, in May 2020 the total number of citations exceeds 2200 and the h-index is 26.

### **Awards**

He has received the best poster award at the 9th ACM International Conference on Distributed Event-Based Systems (DEBS 2015), the 2012 SIGMETRIC *Test of Time Award* for the 2002 paper "Network Tomography on General Topologies" co-authored with T. Bu, N. Duffield and D. Towsley for pioneering work in network tomography, and the best paper award at the IEEE 6th International Symposium on Service-Oriented System & Engineering (SOSE 2011).

## Professional activities

He participated to several Italian and European research projects: PRIN "D-ASAP: Dependable Adaptable Software Architectures for Pervasive Computing" (2009-2011), ITEA POLLENS (Platform for Open Light Legible and Efficient Network Services) (2002-2003), FP6 IST Secure, Internetable, Mobile Platforms Leading Citizens Towards Simplicity (Simplicity) (2004-2005), FP7 ICT Monitoring and Measurement in the Next Generation Technologies (Moment) (2008-2010), FP7 ICT Sensor Network for Dynamic and Cognitive Radio Access (Sendora) (2008-2010), FP7 ICT Distributed computing, storage and radio resource allocation over cooperative femtocells (TROPIC) (2012-2015) and the Project FP7 ICT Sensing, monitoring and actuating on the UNDERwater world through a federated Research InfraStructure Extending the Future Internet (SUNRISE) (2014-2016). He also served replacement member of the Management Committee of COST Action "IC1304: Autonomous Control for a Reliable Internet of Services (ACROSS)" (2013-2017).

He has been co-chair of the international workshop 10th IEEE Broadband Wireless Access Workshop (BWA 2014), 5th edition of Informatica Quantitativa (InfQ 2014), Program Co-Chair of the international Workshop on Autonomous Control for Performance and Reliability Trade-offs in Internet of Services (ACPROSS 2017). He is Workshop chair of the IEEE International Conference on Sensing, Communication and Networking (SECON 2018).

He serves and has served as technical program committee member in various international conference and workshops, including IEEE INFOCOM, IEEE Conference on Computer Communications (2009-2020), ACM MSWIM, ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (2005-2020), Performance (2002, 2014), ACM CoNEXT, ACM International Conference on emerging Networking EXperiments and Technologies (2011).

He is also a reviewer for top ranked international journals, including ACM/IEEE TON, ACM WiNeT, ACM ToIT, IEEE JSAC, IEEE TSP, Performance Evaluation, Computer networks and Computer Communication Review.

## Recent Publications

- [1] V. Cardellini, V. Di Valerio, F. Lo Presti, "Game-theoretic pricing and provisioning strategies in cloud systems", IEEE Transactions in Service Computing, Vol. 13, No 1, January 2020.
- [2] Valerio Di Valerio, Francesco Lo Presti, Chiara Petrioli, Luigi Picari, Daniele Spaccini, Stefano Basagni, "CARMA: Channel-Aware Reinforcement Learning-Based Multi-Path Adaptive Routing for Underwater Wireless Sensor Networks", IEEE Journal on Selected Areas in Communications, Vol 37, No. 11: pp. 2634-2647, November 2019.
- [3] 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.
- [4] 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. Accepted for publication in the post-conference Lecture Notes in Computer Science proceedings, to appear.
- [5] 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), Barcelona, Spain, June 29-July 3 2019.

- [6] 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), Darmstadt, Germany, 24-28 June 2019.
- [7] 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.
- [9] M. Nardelli, G. Russo Russo, 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.
- [10] 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.
- [11] S. Salsano, F. Patriarca, F. Lo Presti, P.L. Ventre, V. Gentile, "Accurate and efficient measurements of IP level performance to drive interface selection in heterogeneous wireless networks" to appear in IEEE Transactions on Mobile Computing, 2018.
- [12] 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, accepted for publication in 2017.
- [13] Valeria Cardellini, Francesco Lo Presti, Matteo Nardelli, and Gabriele Russo Russo, "Autoscaling in Data Stream Processing Applications: A Model Based Reinforcement Learning Approach", Proceeding of InfQ 2017 - New Frontiers in Quantitative Methods in Informatics (in conjunction with VALUETOOLS 2017), Venezia, Italy, December 2017.
- [14] Valeria Cardellini, Francesco Lo Presti, Matteo Nardelli, and Gabriele Russo Russo, "Towards Hierarchical Autonomous Control for Elastic Data Stream Processing in the Fog", Proceeding of AutoDasp 2017 Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP) (in conjunction with EUROPAR 2017), Santiago de Compostela, Spagna, August 29, 2017.
- [15] 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.
- [16] F. Bianchi, F. Lo Presti, "Markov Reward Model Based Greedy Heuristic for the Virtual Network Embedding Problem", Proceedings of MASCOTS 2016, the 23rd Annual Meeting of the IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems, London, England, September 19-21, 2016.

- [17] V. Cardellini, Vittoria De Nitto Persone, 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.
- [18] 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, pp. 69-80, June 2016. Honorable Mention
- [19] A. Cammarano, F. Lo Presti, G. Maselli, L. Pescosolido, C. Petrioli, "Throughput-optimal Cross-layer Design for Cognitive Radio Ad Hoc Networks", *IEEE Transactions on Parallel and Distributed Systems*, Vol. 26, No. 9, pp 2599-2609, 2015.
- [20] V. Cardellini, V. Grassi, F. Lo Presti, M. Nardelli, "On QoS-aware Scheduling of Data Stream Application over Fog Computing Infrastructures", *Proceeding of MOCS 2015, the 5th Workshop on Management of Cloud and Smart city systems*, Larnaca, Cyprus, July 6 2015.
- [21] M. Abundo, V. Di Valerio, V. Cardellini, F. Lo Presti, "Bidding strategies in QoS-aware cloud systems based on N-armed bandit problems", *Proceedings of the 3rd IEEE Symposium on Network Cloud Computing and Applications (NCCA 2014)*, pp. 38-45, Feb. 2014.
- [22] 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 of Service Oriented Systems Engineering*, Vol. 7, No. 2, pp. 195-220, 2013.
- [23] V. Di Valerio, V. Cardellini, F. Lo Presti, "Optimal pricing and service provisioning strategies in cloud systems: a Stackelberg game approach", *Proceedings of the IEEE 6th International Conference on Cloud Computing (CLOUD 2013)*, Santa Clara, CA, pp. 115-122, June 2013.
- [24] 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", in *IEEE Transactions on Software Engineering*, vol. 38, n. 5, pp. 1138-1159, Sept. 2012.
- [25] S. Casolari, S. Tosi, F. Lo Presti. "An adaptive model for online detection of relevant state changes in Internet-based systems". in *Performance Evaluation*, Vol. 69, n. 5, pp. 206-226, May 2012.
- [26] M. Abundo, V. Cardellini, F. Lo Presti, "Admission Control Policies for a Multi-Class QoS-aware Service Oriented Architecture", in *ACM SIGMETRICS Performance Evaluation Review*, vol. 39, n. 4, pp. 89-98, Apr. 2012.
- [27] V. Cardellini, V. Di Valerio, V. Grassi, S. Iannucci, F. Lo Presti. "A New Approach to QoS Driven Service Selection in Service Oriented Architectures". In *Proc. of IEEE SOSE 2011: IEEE 6th International Symposium on Service-Oriented System Engineering*, Irving (CA), December 12-14, 2011. Best Paper Award.
- [28] V. Cardellini, E. Casalicchio, F. Lo Presti and Luca Silvestri. "SLA-aware Resource Management for Application Service Providers in the Cloud". In *Proc. IEEE NCCA 2011*,

IEEE First Symposium on Network Cloud Computing and Applications, Toulouse, November 21-23, 2011.

- [29] V. Cardellini, E. Casalicchio, V. Grassi, F. Lo Presti, and R. Mirandola. “Qos-driven runtime adaptation of service oriented architectures”. In Proceedings of ESEC/SIGSOFT FSE 2009 the 7th joint meeting of the European Software Engineering Conference (ESEC) and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE), pages 131-140, 2009.