Gabriele Russo Russo

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Education

2017– **PhD student** in Computer Science, University of Rome Tor Vergata.
Advisors: Prof. Valeria Cardellini, and Prof. Francesco Lo Presti.

2019 **Visiting PhD student**, Imperial College London (UK).
Hosted by Dr. Giuliano Casale, August-September 2019.

2014–17 **Laurea Magistrale** (MSc equivalent) in Computer Engineering.
University of Rome Tor Vergata, 110/110 *cum laude*.
Thesis: "Optimal Deployment and Run-Time Reconfiguration for Data Stream Processing". *Advisors*: Prof. Valeria Cardellini and Prof. Francesco Lo Presti.

2011–14 **Laurea** (BSc equivalent) in Computer Engineerinig.
University of Rome Tor Vergata, 110/110 *cum laude*.
Thesis: "Analysis and Implementation of Energy-Aware Routing Algorithms for Ad-Hoc Wireless Networks". *Advisor*: Prof. Francesco Lo Presti.

Attended Schools and Symposiums

2019 7th **Heidelberg Laureate Forum**, Heidelberg (Germany), September.
2019 ACM Europe Summer School on *HPC Architectures for AI and Dedicated Applications*, Barcelona (Spain), July.
2018 Symposium *Being human with algorithms*, Heidelberg (Germany), September.
2018 Summer School *Advanced Course on Data Science & Machine Learning*, Siena (Italy), July.
2017 Summer School on *Optimization, Big Data and Applications*, Veroli (Italy), July.
2017 Summer School on *Latency Control for Internet of Services*, Karlstad (Sweden) June.

Honors and Awards

2011 **Alfiere del Lavoro**.
Awarded by Italian President Giorgio Napolitano and *Federazione Nazionale Cavalieri del Lavoro.* I was included in the list of the 25 Italian students completing high school with the highest grades.

Student Travel Grants

2019 Travel grant sponsored by SAP for attending the *13th ACM Conference on Distributed and Event-Based Systems* (*DEBS 2019*) in Darmstadt (Germany).
2018 Travel grant sponsored by ACM Council of European Chapter Leaders for attending the Symposium *Being human with algorithms* in Heidelberg (Germany).
2017 Travel grant for attending the Summer School on *Latency Control for Internet of Services* organized by COST Action 1304 *Autonomous Control for a Reliable Internet of Services* (ACROSS), in Karlstad (Sweden).

Professional service

I reviewed manuscripts submitted to the following international journals:
- Journal of Grid Computing, Springer (2020)
- Science of Computer Programming, Elsevier (2020)

- ○ Future Generation Computing Systems, Elsevier (2019)
- ○ Cluster Computing, Springer (2019)
- ○ Expert Systems with Applications, Elsevier (2018)

I reviewed manuscripts submitted to the following international conferences:
- ○ IEEE/ACM International Conference on Cloud Computing (2020)
- ○ ACM Distributed and Event-based Systems (2019)
- ○ IEEE Vehicular Technology Conference (2018)

Teaching

I have been involved in the following teaching activities at the University of Rome Tor Vergata:

Graduate and Master degree courses

- ○ *Hands-on Cloud Computing Services*, supplementary course for the MSc in *Computer Science* (2019/20, 2020/21).
- ○ *Hands-on Big Data & Hadoop*, 2nd Level Master degree in *Customer Experience & Social Media Analytics* (*CESMA*) (*2019, 2020*).

Undergraduate courses

- ○ TA for the *Computer Architecture* course, BSc in *Computer Science* (from 2016/17 to 2019/20).

Thesis supervision

I have co-supervised the following *Laurea Magistrale* (MSc) theses:

- T7 A. Schiazza, *Mechanisms and Policies for Elastic Functions in Apache Pulsar* (Italian), April 2020. Supervisor: Valeria Cardellini.

- T6 S. Mancini, *Elastic Data Stream Processing on Heterogeneous Resources using Deep Reinforcement Learning* (Italian), February 2020. Supervisor: Valeria Cardellini.

- T5 E. Serrao, *Elasticity Control Policies for Data Stream Processing in the Fog: A Reinforcement Learning Approach* (Italian), April 2019. Supervisor: Francesco Lo Presti.

- T4 A. Ponte, *A Scalable Architecture for Real-Time Data Analytics based on Akka* (Italian), April 2019. Supervisor: Valeria Cardellini.

- T3 M. Calzetta, *Mechanisms and Reinforcement Learning-based Policies for Elastic Data Stream Processing in Apache Flink* (Italian), February 2019. Supervisor: Valeria Cardellini.

- T2 F. Di Giacomo, *Operator Migration Policies for Data Stream Processing in a Fog Environment* (Italian), February 2019. Supervisor: Francesco Lo Presti.

- T1 G. Vertulli, *A Deep Reinforcement Learning-based Approach for Data Stream Processing Application Placement* (Italian), October 2018. Supervisor: Valeria Cardellini.

Publications

International Journals

- J1 G. Russo Russo, M. Nardelli, V. Cardellini, and F. Lo Presti. Multi-level elasticity for wide-area data streaming systems: A reinforcement learning approach. *Algorithms*, 11(9):134, 2018

- J2 V. Cardellini, F. Lo Presti, M. Nardelli, and G. Russo Russo. Decentralized self-adaptation for elastic data stream processing. *Future Gener. Comput. Syst.*, 87:171–185, 2018

J3   V. Cardellini, F. Lo Presti, M. Nardelli, and G. Russo Russo. Optimal operator deployment and replication for elastic distributed data stream processing. *Concurr. Comput. Pract. Exp.*, 30(9), 2018

International Conferences and Workshops

C1   G. Russo Russo. Self-adaptive data stream processing in geo-distributed computing environments. In *Proceedings of the 13th ACM International Conference on Distributed and Event-based Systems, DEBS 2019, Darmstadt, Germany, June 24-28, 2019*, pages 276–279. ACM, 2019

C2   G. Russo Russo, V. Cardellini, and F. Lo Presti. Reinforcement learning based policies for elastic stream processing on heterogeneous resources. In *Proceedings of the 13th ACM International Conference on Distributed and Event-based Systems, DEBS 2019, Darmstadt, Germany, June 24-28, 2019*, pages 31–42. ACM, 2019

C3   M. Nardelli, G. Russo Russo, V. Cardellini, and F. Lo Presti. A multi-level elasticity framework for distributed data stream processing. In *Euro-Par 2018: Parallel Processing Workshops - Euro-Par 2018 International Workshops, Turin, Italy, August 27-28, 2018, Revised Selected Papers*, volume 11339 of *Lecture Notes in Computer Science*, pages 53–64. Springer, 2018

C4   G. Russo Russo. Towards decentralized auto-scaling policies for data stream processing applications. In *Proceedings of the 10th Central European Workshop on Services and their Composition, Dresden, Germany, February 8-9, 2018*, volume 2072 of *CEUR Workshop Proceedings*, pages 47–54. CEUR-WS.org, 2018

C5   V. Cardellini, F. Lo Presti, M. Nardelli, and G. Russo Russo. Towards hierarchical autonomous control for elastic data stream processing in the fog. In *Euro-Par 2017: Parallel Processing Workshops - Euro-Par 2017 International Workshops, Santiago de Compostela, Spain, August 28-29, 2017, Revised Selected Papers*, volume 10659 of *Lecture Notes in Computer Science*, pages 106–117. Springer, 2017

C6   V. Cardellini, F. Lo Presti, M. Nardelli, and G. Russo Russo. Auto-scaling in data stream processing applications: A model-based reinforcement learning approach. In *New Frontiers in Quantitative Methods in Informatics - 7th Workshop, InfQ 2017, Venice, Italy, December 4, 2017, Revised Selected Papers*, volume 825 of *Communications in Computer and Information Science*, pages 97–110. Springer, 2017

Book Chapters

B1   G. Russo Russo, V. Cardellini, F. Lo Presti, and M. Nardelli. Towards a security-aware deployment of data streaming applications in fog computing. In W. Chang and J. Wu, editors, *Fog/Edge Computing for Security,Privacy, and Applications*. Springer, 2020 (to appear)