Riccardo Pinciroli, Ph.D.

» Postdoctoral Fellow

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Education

Nov. 2014 – Feb. 2018	**Ph.D.** in Information Technology at Politecnico di Milano, Italy. *Dissertation:* Energy efficiency in large data-centers using performance evaluation techniques *Advisors:* Dr. Gribaudo M. and Dr. Serazzi G.
Oct. 2012 – Oct. 2014	**M.Sc.** in Computer Engineering at Politecnico di Milano, Italy. *Thesis:* Energy consumption minimization in systems with multi-class workloads *Advisors:* Dr. Gribaudo M. and Dr. Serazzi G. *Final Score:* 110/110 cum laude
Oct. 2009 – Jul. 2012	**B.Sc.** in Computer Engineering at Politecnico di Milano, Italy.

Academic Positions

Oct. 2020 – Ongoing	**Postdoctoral Fellow.** Dept. of Computer Science, GSSI, Italy. *Supervisor:* Dr. Trubiani C.
Sep. 2019 – Sep. 2020	**Postdoctoral Fellow.** Dept. of Computer Science, William and Mary, VA, USA. *Supervisor:* Dr. Smirni E.
Feb. 2019 – Sep. 2019	**Research Assistant.** Dept. of Computer Science, William and Mary, VA, USA. *Supervisor:* Dr. Smirni E.
Nov. 2017 – Jan. 2019	**Postdoctoral Fellow.** DEIB, Politecnico di Milano, Italy. *Supervisor:* Dr. Di Nitto E.

Research Activities

Performance Evaluation	Usage of mathematical modeling (queuing networks, Petri nets and Markov chains), simulation, and experimental evaluation to investigate the performance of large-scale and high-performance computing systems, including Big Data applications and cloud computing systems.
Cloud Computing	Profiling and modeling of virtual resources for predicting and optimizing the performance of burstable instances and serverless computing in public cloud (AWS). The proposed models account for bursty workloads and allow meeting SLOs defined on the latency distribution.
Uncertainty Propagation	Analysis of dependability and performance models to investigate how uncertainty on input parameters propagates through a model and affects its output measures.

Keywords: Performance Evaluation; Cloud Computing; Uncertainty Propagation; Energy Consumption; Models for Computer Performance Prediction; Load Balancing; Queuing Networks; Petri Nets; Markov Chains; Data Centers; Large-Scale Systems; High-Performance Computing; Dependability ; Data Analysis

Publications

Journal Articles

J1 Antonelli, F., Cortellessa, V., Gribaudo, M., **Pinciroli, R.**, Trivedi, K., & Trubiani, C. (2020). "Analytical modeling of performance indices under epistemic uncertainty applied to cloud computing systems". *Future Generation Computer Systems, 102*, pp. 746–761.

J2 **Pinciroli, R.**, Ali, A., Yan, F., & Smirni, E. (2020). "Cedule+: Resource management for burstable cloud instances using predictive analytics". *IEEE Transactions on Network and Service Management*, pp. 1–13.

J3 Gribaudo, M., **Pinciroli, R.**, & Trivedi, K. (2018). "Epistemic uncertainty propagation in power models". *Electronic Notes in Theoretical Computer Science, 337*, pp. 67–86.

J4 **Pinciroli, R.**, & Distefano, S. (2017). "Characterization and evaluation of mobile crowdsensing performance and energy indicators". *ACM SIGMETRICS Performance Evaluation Review, 44*(4), pp. 80–90.

Conference Proceedings

C1 **Pinciroli, R.**, Smith, C. U., & Trubiani, C. (2021). "Qn-based modeling and analysis of software performance antipatterns for cyber-physical systems", In *Proceedings of the ACM/SPEC International Conference on Performance Engineering*.

C2 **Pinciroli, R.**, & Trubiani, C. (2021). "Model-based performance analysis for architecting cyber-physical dynamic spaces", In *2021 IEEE 18th International Conference on Software Architecture (ICSA)*. IEEE.

C3 Ali, A., **Pinciroli, R.**, Yan, F., & Smirni, E. (2020). "Batch: Machine learning inference serving on serverless platforms with adaptive batching", pp. 972–986.

C4 Yang, L., Schmedding, A., **Pinciroli, R.**, & Smirni, E. (2020). "Simulating COVID-19 containment measures using the South Korean patient data: poster abstract", pp. 782–783.

C5 Ali, A., **Pinciroli, R.**, Yan, F., & Smirni, E. (2019). "It's not a Sprint, it's a Marathon: Stretching Multi-resource Burstable Performance in Public Clouds". *Proceedings of the 20th International Middleware Conference Industrial Track (Middleware)*, pp. 36–42.

C6 Ali, A., **Pinciroli, R.**, Yan, F., & Smirni, E. (2018). "Cedule: A scheduling framework for burstable performance in cloud computing". *IEEE International Conference on Autonomic Computing (ICAC)*, pp. 141–150.

C7 **Pinciroli, R.**, Bobbio, A., Bolchini, C., Cerotti, D., Gribaudo, M., Miele, A., & Trivedi, K. (2017). "Epistemic uncertainty propagation in a weibull environment for a two-core system-on-chip". *2nd International Conference on System Reliability and Safety (ICSRS)*, pp. 516–520.

C8 **Pinciroli, R.**, Gribaudo, M., Roveri, M., & Serazzi, G. (2017). "Capacity planning of fog computing infrastructures for smart monitoring". *Workshop on New Frontiers in Quantitative Methods in Informatics (InfQ)*, pp. 72–81.

C9 **Pinciroli, R.**, Gribaudo, M., & Serazzi, G. (2017). "Modeling multiclass task-based applications on heterogeneous distributed environments". *International Conference on Analytical and Stochastic Modeling Techniques and Applications (ASMTA)*, pp. 166–180.

C10 Cerotti, D., Gribaudo, M., **Pinciroli, R.**, & Serazzi, G. (2016). "Optimal population mix in pool depletion systems with two-class workload". *10th EAI International Conference on Performance Evaluation Methodologies and Tools (ValueTools)*, pp. 11–18.

C11 Cerotti, D., Gribaudo, M., **Pinciroli**, **R.**, & Serazzi, G. (2016). "Stochastic analysis of energy consumption in pool depletion systems". *International GI/ITG Conference on Measurement, Modelling, and Evaluation of Computing Systems and Dependability and Fault Tolerance (MMB&DFT)*, pp. 25–39.

C12 **Pinciroli**, **R.**, & Distefano, S. (2016). "Extending queuing networks to assess mobile crowdsensing application performance". *10th EAI International Conference on Performance Evaluation Methodologies and Tools (ValueTools)*, pp. 255–262.

C13 **Pinciroli**, **R.**, Trivedi, K. S., & Bobbio, A. (2016). "Parametric sensitivity and uncertainty propagation in dependability models". *10th EAI International Conference on Performance Evaluation Methodologies and Tools (ValueTools)*, pp. 44–51.

C14 Cerotti, D., Gribaudo, M., Piazzolla, P., **Pinciroli**, **R.**, & Serazzi, G. (2015). "Modeling power consumption in multicore cpus with multithreading and frequency scaling". *Information Sciences and Systems 2015 (ISCIS)*, pp. 81–90.

C15 Cerotti, D., Gribaudo, M., Piazzolla, P., **Pinciroli**, **R.**, & Serazzi, G. (2014). "Multi-class queuing networks models for energy optimization". *Proceedings of the 8th International Conference on Performance Evaluation Methodologies and Tools (ValueTools)*, pp. 98–105.

Books and Chapters

B1 Cerotti, D., Gribaudo, M., **Pinciroli**, **R.**, & Serazzi, G. (2019). "Modeling Techniques for Pool Depletion Systems". *Systems Modeling: Methodologies and Tools*, pp. 79–94.

Scientific Committees

2021 **Program Committee.** IEEE International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2021)

Program Committee. International Workshop on Energy-Efficient Data Centres (E2DC 2021)

Program Committee. IEEE International Conference on JointCloud Computing (JCC 2021)

Program Committee (Cloud Computing and Data Centers Track). IEEE International Conference on Distributed Computing Systems (ICDCS 2021)

Program Committee (Artifact Evaluation Track). ACM/SPEC International Conference on Performance Engineering (ICPE 2021)

Program Committee (Artifact Evaluation Track). International Conference on Quantitative Evaluation of SysTems (QEST 2021)

2020 **Program Committee.** International Conference on Quantitative Evaluation of SysTems (QEST 2020)

Program Committee. IEEE International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2020)

Teaching Activities

2020/2021 **Formal Methods at Work** (for Ph.D. students), held by Dr. Trubiani C. and Dr. Pinciroli R. at Gran Sasso Science Institute
Role: Teacher

2018/2019 – 2019/2020 **Impianti e Servizi Informatici** (for B.Sc. students), held by Dr. Mirandola R. at Politecnico di Milano (OnLine)
Role: Teaching assistant

Teaching Activities (continued)

2018/2019	🔖	**Computer Systems Performance Evaluation** (for M.Sc. students), held by Dr. Gribaudo M. at Politecnico di Milano *Role:* Teaching assistant
2017/2018	🔖	**Computer Systems Performance Evaluation** (for M.Sc. students), held by Dr. Serazzi G. at Politecnico di Milano *Role:* Teaching assistant
2014/2015 – 2016/2017	🔖	**Performance Evaluation of Computer Systems** (for M.Sc. students), held by Dr. Gribaudo M. at Politecnico di Milano (Como) *Role:* Teaching assistant

Visiting Experiences

Feb. 2018 – Jun. 2018	🔖	**Visiting Scholar.** Dept. of Computer Science, William and Mary, VA, USA. *Supervisor:* Dr. Smirni E.
Jan. 2016 – Apr. 2016	🔖	**Visiting Scholar.** ECE Dept., Duke University, NC, USA. *Supervisor:* Dr. Trivedi K.

L'Aquila – November 10, 2021