Monica Vitali

Curriculum Vitae

Personal Information

Name	Monica Vitali
Date and Place of Birth	Palermo, April 16, 1984
Address	via Giuseppe Ponzio 34/5, 20133 Milan, Italy
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	H-index	Publications	Citations	Co-authors
Scopus[1]	8	32	158	69
Google Scholar[2]	12	40	271	–

[1]last access 07/10/2019 `https://bit.ly/2SLxC4H`

[2]last access 07/10/2019 `https://bit.ly/2PwXuir`

Qualified as Associate Professor (Abilitazione Scientifica Nazionale - ASN) for the scientific class 01/B1 since 11/09/2019

Summary

My main interests in research are related to Information Systems and their Energy Efficiency and Quality of Service. I research new strategies to improve the efficiency of data centers, clouds, and fog computing by applying techniques derived from the Artificial Intelligence and Machine Learning fields. I am very interested in adaptation and self-adaptation to discover how a complex system can heal itself when some problems occur. More specifically I have been working on energy efficiency and sustainability of cloud and fog applications, QoS-aware deployment in edge and fog computing, Data Quality in big data environments, Ambient Assisted Living, Smart Cities, and Smart Buildings.

Academic Positions

04–2019/01–2020 **Temporary Senior Lecturer (Associate Professor level)**, Umeå University (UMU), Umeå, SWEDEN.
Research in the field of Cloud and Edge Computing within the Distributed System Group of the Computer Science Department. This position consists of both research (20% of time) and teaching (80% of time).

01–2014/now **Research Assistant**, Politecnico di Milano, Milano, ITALY.
Research in the field of Information Systems with a focus on adaptive systems, assessment and management of energy efficiency in applications, data quality in Big Data, and data management in hybrid and distributed environments, in collaboration with the Information Systems group.

01–2011/12–2013 **Ph.D. Candidate**, Politecnico di Milano, Milano, ITALY.
Research in the field of adaptive systems for improving efficiency of applications in data centres using machine learning techniques.

10–2010/10–2012 **Research Assistant**, Politecnico di Milano, Milano, ITALY.
Research in the field of data centres energy efficiency, assessed through the definition and implementation of metrics at the infrastructure and application level.

07/2009–06/2010 **Research Assistant**, Università degli Studi di Palermo, Palermo, ITALY.
Research in the field of robotics and artificial intelligence with a focus on imitation learning models.

Education

2011–2013 **Ph.D in Information Technology (XXVI cycle)**, Politecnico di Milano, Milan, Graduation date: March 07, 2014.
Thesis: "Measuring and Improving Energy Efficiency of a Data Center in a Self-Adaptive Context", advisor Prof. Barbara Pernici.

09/2012–02/2013 **Visiting Student**, Massachusetts Institute of Technology, Cambridge, USA, Supported by the Rocca Foundation scholarship.
Study about machine learning techniques for Bayesian Networks automatic learning and probabilistic operator selection.

2006–2009 **Master of Science in Computer Science for Intelligent Systems (Laurea Specialistica in Ingegneria Informatica per i Sistemi Intelligenti)**, Università degli Studi di Palermo, Palermo, First-Class Honours (110/110 e Lode).
Thesis: "Study of an Agent Model Based on the Genetic Metaphor", advisor Prof. Salvatore Gaglio.

2003–2006 **Bachelor of Science in Computer Science (Laurea in Ingegneria Informatica)**, Università degli Studi di Palermo, Palermo, First-Class Honours (110/110 e Lode).
Thesis: "Genetic Programming in Multi-Agent Systems: an Application", advisor Prof. Salvatore Gaglio.

Work Experience and Training

03–09/2008 **Software Developer**, S.I.R.I.O., Palermo, ITALY.
Implementation of a wireless sensor network for vineyard and historical monuments monitoring related to two regional projects: *Virtus Vini* and *Geomon*

03–06/2008	**Intern**, National Research Council (CNR), Palermo, ITALY.
	Research in self-organizing systems; development of a Jade/Prolog interface; development of a Jade based agent society in which individuals share Prolog knowledge
03–07/2006	**Intern**, National Research Council (CNR), Palermo, ITALY.
	Research in multi-agent systems and genetic programming: development of a Java/Jade application using genetic programming techniques in agent systems

Current research focus

The main focus of my research is on adaptive applications in distributed environments. The main goal is to improve the behaviour of applications running in a cloud environment by getting advantage on the information provided by the monitoring system. Using goal based models it is possible to automatically build an adaptive decision system able to manage the application according to the different goals of the application owner and/or of the cloud provider. Possible goals that have been investigated are performance of the application and of the cloud environment, energy efficiency and sustainability of the applications, security constraints. Recently I am also investigating implications in edge and fog computing and serverless applications based on the Function as a Service paradigm. Machine learning techniques such us reinforcement learning, Bayesian networks, and self-adaptation have been employed and adapted to my research. In my research I am connecting these two topics (Adaptive Information Systems and Artificial Intelligence) to create an adaptive system for managing applications in a dynamic environment.

Green IT and Green Cloud I have been working on managing energy efficiency and sustainability of applications and services. I propose an adaptive and dynamic sensitive approach which takes into consideration the behaviour of the application in a dynamic environment. The method detects undesired situation from the data collected by the monitoring system and selects proper repair actions using a continuous refinement process for learning and updating the knowledge about the effect of actions over the monitored variables.

Metrics and Monitoring My research focuses on selecting and defining metrics for describing the application in terms of energy efficiency and sustainability, performance, quality of service, and quality of data. I am investigating hidden relations between metrics. The knowledge of these relations enables a deeper understanding of the application and of the environment in which it has been deployed. I am also investigating techniques for reducing the amount of data to be monitored, with a focus on IoT generated data, studying distributed techniques for collecting and analysing data in order to reduce the time and cost for storing and analysing monitoring data.

Adaptive Systems In my research I am proposing adaptive algorithms and techniques for reducing energy consumption of applications and maintaining their quality of service. The algorithms are based on the informed selection of a repair strategy from a set of available strategies. The selection is based on the learned and continuously updated knowledge about the ability of the action of fixing or mitigating the observed inefficiency.

Big Data Quality	The quality of the information extracted by the analysis of big data depends on the quality of these data. In order to avoid unreliable results, this quality needs to be assessed. Even if data quality is an old and very consolidated topic, when dealing with big data new metrics and new techniques need to be defined and investigated. In my research I propose an updated set of metrics, defined for a big data context, and a framework for a context-aware assessment of data quality.
DaaS in Heterogeneous Edge/Cloud Environments	Edge computing is affecting the cloud computing paradigm by allowing the execution of applications in a location nearer to the user, improving performance and security of the application execution. Data as a Service (DaaS) requires making shared data sources available for applications running in the cloud and in the edge with the highest possible utility, defined as both quality of service in providing data when requested and quality of data in selecting the data source which better match the application needs. The proposed DaaS approach provides a support in the selection of the most appropriate data source according to the customer requirements and manages data movement in cloud and edge to optimize the data access.
Adaptive Ambient Assisted Living	Ambient assisted living aims at providing an adaptive environment in order to assist elderly and non self-sufficient subjects. This kind of systems requires the employment of a set of sensors and a monitoring system to detect interesting events occurring in the observed environment. The aim of the research consists in providing mechanisms for efficiently collecting and analysing relevant events. The elaboration of data coupled with the knowledge of the habits of the observed individuals can be the trigger for a set of adaptation actions allowing the management of both emergencies and daily activities. Machine learning techniques are employed to associate adaptation actions to the detected events, in order to better fit the specific individual life-style and to adapt to the modifications of his habits.

Research Activities

Participation in International Research Projects

01/2017–	**DITAS**, *Data-intensive application Improvement by moving daTA and computation in mixed cloud/fog environmentS*, H2020 European Project, `http://www.ditas-project.eu`.
	ROLE: Task Leader. Design a framework to overcome the barriers that hamper the adoption of Cloud Computing and increase the adoption of Fog computing by exploiting the full potential of these two paradigms in a synergic way. Support the development and execution of data-intensive application that are crucial for organizations and companies that want to manage their data in an efficient, reliable, scalable, and secure manner.
01/2016–12/2017	**EU-BRA BigSEA**, *Europe-Brazil Collaboration of BIG Data Scientific Research through Cloud-Centric Applications*, H2020 European Project, `http://www.eubra-bigsea.eu/`.
	Design and implementation of Big Data services on top of a QoS-aware cloud infrastructure. Proposal of innovative technologies, using standards and providing security and privacy, for distributed applications on multiple data models.

10/2012– **Eco$_2$Clouds**, *Experimental Awareness of CO_2 in Federated Cloud Sourcing*, 7th
09/2014 Framework European Project, `http://www.eco2clouds.polimi.it/`.
Development of methods, guidelines and technology for enriching cloud computing with
means to take into proper consideration ecological concerns, such as energy consumption
and CO_2 footprint of applications.

10/2010– **GAMES**, *Green Active Management of Energy in IT Service centres*, 7th Framework
06/2012 European Project, `http://www.green-datacenters.eu/`.
Monitoring and management of energy efficiency in a data center using adaptive techniques
to improve applications efficiency while preserving the quality of service.

05/2019– **HUMANOBS**, *Humanoids that Learn Socio-Communicative Skills by Observation*,
09/2010 7th Framework European Project, `http://www.humanobs.org/`.
Development of new cognitive architectural principles to allow intelligent agents to learn
skills by observing and imitating the behaviour of a human demonstrator.

Participation in National Research Projects

04/2014– **Attiv@bili**, *Assistenza digitale e innovazione Sociale in Ambienti Controllati*, Bando
09/2015 Smart Cities Regione Lombardia.
Analysis and evolution of adaptive processes for social and health care addressed to elderly
and not self-sufficient people. Analysis and management of monitoring data in an Ambient
Intelligence environment.

03/2008– **VirtusVini**, *Vineyard Monitoring through Wireless Sensor Networks*, Regione Sicilia,
09/2008 `http://www.dicgim.unipa.it/networks/wsn/projects/virtusvini.html`.
Implementation and management of a wireless sensor network for monitoring environmental
features in a vineyard with the aim of enhancing the quality of the production and reducing
risks of failures.

03/2008– **GeoMon**, *Structural Health Monitoring of Historical Heritage Buildings*, Regione Si-
09/2008 cilia, `http://www.dicgim.unipa.it/networks/wsn/projects/geomon.html`.
Design and implementation of an innovative technological framework for monitoring critical
structures and geological sites employing a wireless sensor network.

Research collaborations

– Prof. Eric Elmroth of the **Umeå University**, Sweden: joint research in the field of
energy efficiency and performance management of serverless oriented applications.
Invited visiting researcher in February 2019.

– Prof. Una-May O'Reilly and Dr. Kalyan Veeramachaneni of the **Massachusetts
Institute of Technology**, Cambridge - USA: joint research in the field of machine
learning techniques applied to adaptive management of energy efficiency in data
centres [J5][C17]. PhD visiting candidate between September 2012 and February
2013.

– Prof. Salvatore Gaglio, Dr Massimo Cossentino, and Dr Riccardo Rizzo of the
National Research Council (ICAR-CNR), Palermo - IT: joint research in the field
of evolutionary programming for coordination of multi-agent systems [C22][C24].

– Prof. Antonio Chella and Prof. Haris Dindo of the **Università degli Studi di
Palermo**, Palermo - IT: joint research in the field of learning by imitation tech-
niques [C21].

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Organisation and Participation to International Scientific Conferences and Conventions

List of Organized Conferences and Conventions

2019 **Publicity vice-chair** of the 16th IEEE International Conference on Autonomic Computing (ICAC 2019) and the 13th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2019), June 16-20 2019, Umeå, Sweden

2016 **Program chair** of the International Workshop on Energy-awareness and Big Data Management in Information Systems (EnBIS2016), in conjunction with CAISE'16, June 14 2016, Ljubljana, Slovenia

Speaker at International Conferences and Conventions

2018 Participation to the International Conference on Services Computing (SCC), and **presentation** of the paper "Virtual Machine Profiling for Analyzing Resource Usage of Applications" [C3], June 25-30 2018, Seattle, USA

- **Discussion Session Leader** in the 13th Cloud Control Workshop, June 13-15, 2017, Skåvsjöholm, Sweden

2017 **Discussion Session Leader** in the 11th Cloud Control Workshop, June 12-14, 2017, Haga Slott, Enköping, Sweden

2016 Participation to the 2nd IEEE International Smart Cities Conference (ISC2), and **presentation** of the paper "Interconnecting Processes through IoT in a Health-Care Scenario" [C11], September 12-15 2016, Trento, Italy

- **Invited Speaker** and Participant in the 9th Cloud Control Workshop, June 27-29, 2016, Friiberghs Herrgård, Sweden

- Participation to the 28th International Conference on Advanced Information Systems Engineering (CAISE'16), and **presentation** of the paper "Optimizing Monitorability of Multi-cloud Applications" [C9], June 15-17 2016, Ljubljana, Slovenia

2015 Participation to the On The Move federated Conferences and Workshop (OTM'15), and **presentation** of the paper "PiE - Processes in Events: Interconnections in Ambient Assisted Living" [C13] in the EI2N workshop, October 26-30 2015, Rhodes, Greece

- Participation to the 23rd Italian Symposium on Advanced Database Systems (SEBD) and **presentation** of the paper "Managing Energy Efficiency and Quality of Service in Cloud Applications Using a Distributed Monitoring System" [C12], June 14-17 2015, Gaeta, Italy

2013 Participation to the international conference on Systems, Man, and Cybernetics, and **presentation** of the paper "Modeling Service Execution on Data Centers for Energy Efficiency and Quality of Service Monitoring" [C17], October 13-16 2013, Manchester, UK

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2012	Attendance of the DataCentres Europe 2012 industry-oriented conference and **presentation** of a Demo related to the GAMES European project, May 23-24 2012, Nice, France
-	Attendance of the 2012 VMware Academic Research Symposium and **presentation** of the poster "Resource Allocation in Virtual Machines for Energy Efficient Data Centers", September 26-27 2012, Cambridge, Massachusetts, USA
2011	Participation to the SIGMETRICS international conference and **presentation** of the paper "Usage centric green performance indicators" [C20] at the GreenMetrics Workshop, June 7-11 2011, San Jose, California
-	Participation to the international conference on Intelligent Computer Communication and Processing (ICCP) and **presentation** of the paper "Business process co-design for energy-aware adaptation" [C19], August 24-26 2011, Cluj-Napoca, Romania

Program Committee Service

2019	PC member of the International Conference on Social Networks Analysis, Management and Security (SNAMS)
2019	PC member of the International Conference on Distributed Computing Systems (ICDCS)
2018-2019	PC member of the IEEE International Conference On Big Data Service And Applications (BDS)
2019	PC member of the IEEE International Conference on Advanced Information Systems Engineering (CAISE)
2019	PC member of the DaMove Workshop
2018-2019	PC member of the International Conference on Service Oriented Computing (ICSOC)
2014/2016/ 2018	PC member of the IEEE International Conference on Systems, Man, and Cybernetics (SMC)
2016-2018	PC member of the International Workshop on Energy-Efficient Data Centres (E2DC 2018)
2016-2019	PC member of the IEEE International Conference on Research Challenges in Information Science (RCIS)
2017	PC member of the 2017 IEEE International Conference on Smart City Innovations (IEEE SCI)
2017	PC member of the 1st IEEE International Workshop on Assured Cloud Computing and QoS aware Big Data (WACC)
2016-2019	PC member of the IEEE International Symposium on Computer and Communications (ISCC)
2016	PC member of the second IEEE International Smart Cities Conference (ISC2)

Reviewer Service for International Journals and Conferences

2019	Reviewer for the IEEE Transactions on Services Computing (TSC) Journal
2019	Reviewer for the Journal of Environmental Management (JEMA)

2017/2019	Reviewer for the IEEE Transactions on Network and Service Management (IEEE TNSM) Journal
2019	Reviewer for the Energy Efficiency (ENEF) Journal
2018	Reviewer for the Complex Systems Informatics and Modeling Quarterly (CSIMQ) Journal
2018	Reviewer for the World Review of Science, Technology and Sustainable Development (WRSTSD) Journal
2015/2017	Reviewer for the Computing (COMP) International Journal
2016	Reviewer for the IEEE International Conference on Networking, Sensing and Control (ICNSC)
2016	Reviewer for the Expert Systems with Applications International Journal
2016	Reviewer for the IEEE Transactions on Cloud Computing (TCC) Journal
2015	Reviewer for the ACM Transactions on the Web (TWEB) International Journal
2015	Reviewer for the 23rd International Conference on Cooperative Information Systems (CoopIS2015)

Invited Talks

February 2019	Invited Talk "Managing Services in Heterogeneous Environments. Adaptive approaches towards non-functional requirements satisfaction." at Umeå University (Sweden)

Teaching Activities

Lecturer

AY 2019/2020	**Senior Lecturer**, *28 hours*, Cloud Computing, Umeå University. Master Level
AY 2019/2020	**Senior Lecturer**, *28 hours*, Advanced Distributed Systems, Umeå University. Master Level
AY 2018/2019	**Contract Professor**, *10 hours*, PhD Course in Information and Data Quality, Politecnico di Milano. PhD Level
From AY 2017/2018 to 2018/2019	**Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano. Bachelor Level
From AY 2014/2015 to 2018/2019	**Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano (COMO). Bachelor Level
2017/2018	**Lecturer**, *9 hours*, BABD - International Master in Business Analytics and Big Data, Big Data Cloud Technologies, MIP, Cefriel, and Politecnico di Milano.
2017/2018	**Lecturer**, *8 hours*, Master in Development of Innovative Software Products, Information Systems, Cefriel.

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2017   **Lecturer**, *8 hours*, UBIS IT MASTER PROGRAM 2016, Fundamentals of computing infrastructures and data bases: Computation and data storage in a connected world, Cefriel.

Teaching assistant

From AY 2013/2014 to 2018/2019   **Teaching Assistant**, *20 hours*, Information Systems (Prof. Cinzia Cappiello), Politecnico di Milano.

From AY 2011/2012 to 2016/2017   **Teaching Assistant**, *20 hours*, Information Systems for Computing Engineering (Prof. Barbara Pernici), Politecnico di Milano.

From AY 2011/2012 to 2016/2017   **Teaching Assistant**, *from 24 to 40 hours*, Foundations of Informatics (Prof. Maristella Matera), Politecnico di Milano.

AY 2015/2016   **Tutoring**, *22 hours*, Information Systems for Computing Engineering, Politecnico di Milano.

AY 2011/2012   **Tutoring**, *20 hours*, Matlab (Scuola di Ingegneria dell'Informazione), Politecnico di Milano.

Thesis Supervision

PhD Candidates

2015/2019   **Co-Supervisor**, *Xuesong Peng*, Monitoring Data Utilization in Fog Computing Environments.
PhD Candidate in Information Technology, Politecnico di Milano

Master Level

2018/2019   **Co-Supervisor**, *Alessandro Mandelli*, Analysis of Data Movement and Computation Movement with Spark for Fog Environments.
Master degree in Computer Engineering, Politecnico di Milano

AY 2017/2018   **Co-Supervisor**, *Alessandro Polenghi*, The First Step towards Software Testing Automatic Generation: Automatic Tests Quality Labeling.
Master degree in Computer Engineering, Politecnico di Milano

AY 2017/2018   **Co-Supervisor**, *Alessandro Terragni*, Analyzing Customer Journey with Process Mining: from Discovery to Recommendations.
Master degree in Computer Engineering, Politecnico di Milano

AY 2017/2018   **Supervisor**, *Chao Sun*, Improving DaaS with Kubernetes in Fog Computing Environments.
Master degree in Computer Engineering, Politecnico di Milano

AY 2017/2018   **Supervisor**, *Dushica Stojkoska*, Discovering relations between metrics in a real data center using Bayesian Networks.
Master degree in Computer Engineering, Politecnico di Milano

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AY 2016/2017	**Co-supervisor**, *Samà Walter*, A flexible approach to data quality assessment for big data sources. Master degree in Computer Engineering, Politecnico di Milano
AY 2016/2017	**Co-supervisor**, *Maccagni Giacomo*, A Method for Raising Quality Awareness in Big Data Analysis. Master degree in Computer Engineering, Politecnico di Milano
	Bachelor Level
AY 2018/2019	**Supervisor**, *Jia Moxin*, Data Reduction in Fog Computing. Bachelor degree in Computer Engineering, double degree between Politecnico di Milano and Tongji University, China
AY 2015/2016	**Co-supervisor**, *Nebuloni Riccardo*, Energie Rinnovabili e Data Center. Bachelor degree in Electrical Engineering, Politecnico di Milano

Awards and Recognitions

2018	C. M. Lerici Fellowship, a fellowship for promoting joint research between Italy and Sweden as a visiting researcher (Spring Term 2019 - 2 months) - Amount 27000 SEK, `http://cmlerici.se/borse-di-studio/`
2012	Progetto Roberto Rocca Fellowship, a fellowship for promoting joint research between MIT and Politecnico di Milano as a visiting Ph.D. Candidate (Autumn Term 2012 - 5 months) - Amount 8000 USD, `http://misti.mit.edu/progetto-roberto-rocca`
2012	Scholarship for participating to the 2nd 804 COST Training School on Energy Efficiency in Large Scale Distributed Systems held in Palma de Mallorca, 24-27 April 2012
2012–2013	PhD Scholarship awarded by the Ministry of Education, University, and Research (MIUR), Italy

Publications

Please notice that in most cases authors are listed in an alphabetic order

The symbol † indicates my role as corresponding author

International Journals

[J1] Edoardo Fadda, Pierluigi Plebani, and Monica Vitali†. "Monitoring-aware Optimal Deployment for Applications based on Microservices". In: *IEEE Transactions on Services Computing (IEEE TSC)* (2019). Impact Factor: 4.418, SJR index: 0.870, pp. 1–15. DOI: 10.1109/TSC.2019.2910069.

[J2] Sandro Fiore, Donatello Elia, Carlos Pires, Demetrio Mestre, Cinzia Cappiello, Monica Vitali, Nazareno Andrade, Tarciso Braz, Daniele Lezzi, Regina Moraes, Tania Basso, Nadia Kozievitch, Keiko Fonseca, Nuno Antunes, Marco Vieira, Cosimo Palazzo, Ignacio Blanquer, Wagner Meira, and Giovanni Aloisio. "An integrated big and fast data analytics platform for smart urban transportation management". In: *IEEE Access* (2019). Impact Factor: 4.098, SJR index: 0.609, pp. 1–26. DOI: 10.1109/ACCESS.2019.2936941.

[J3] Danilo Ardagna, Cinzia Cappiello, Walter Samá, and Monica Vitali[†]. "Context-aware Data Quality Assessment for Big Data". In: *Future Generation Computer Systems (FGCS)* 89 (2018). Impact Factor: 4.639, SJR index: 1.151, pp. 548–562. DOI: 10.1016/j.future.2018.07.014.

[J4] Cinzia Cappiello, Nguyen Thi Thao Ho, Barbara Pernici, Pierluigi Plebani, and Monica Vitali[†]. "CO2-aware Adaptation Strategies for Cloud Applications". In: *IEEE Transactions on Cloud Computing (IEEE TCC)* (2015). Impact Factor: 7.928, SJR index: 1.186, pp. 152–165. DOI: 10.1109/TCC.2015.2464796.

[J5] Monica Vitali[†], Barbara Pernici, and Una-May O'Reilly. "Learning a goal-oriented model for energy efficient adaptive applications in data centers". In: *Information Sciences* 319 (2015). Impact Factor: 4.305, SJR index: 2.513, pp. 152–170. DOI: 10.1016/j.ins.2015.01.023.

[J6] Usman Wajid, Cinzia Cappiello, Pierluigi Plebani, Barbara Pernici, Nikilay Mehandjiev, Monica Vitali, Michael Gienger, Kostas Kavoussanakis, David Margery, David Garcia Perez, and Pedro Sampaio. "On Achieving Energy Efficiency and Reducing CO2 Footprint in Cloud Computing". In: *IEEE Transactions on Cloud Computing (IEEE TCC)* (2015). Impact Factor: 7.928, SJR index: 1.186, pp. 138–151. DOI: 10.1109/TCC.2015.2453988.

[J7] Monica Vitali[†] and Barbara Pernici. "A Survey on Energy Efficiency in Information Systems". In: *International Journal of Cooperative Information Systems (IJCIS)* 23.03 (2014). SJR index: 0.256. DOI: 10.1142/S0218843014500014.

[J8] A. Kipp, T. Jiang, J. Liu, M. Fugini, M. Vitali, B. Pernici, and I. Salomie. "Applying green metrics to optimise the energy consumption footprint of IT service centres". In: *International Journal of Space-Based and Situated Computing (IJSSC)* 2.3 (2012), pp. 158–174. DOI: 10.1504/IJSSC.2012.048897.

National Journals

[JN1] Maria Grazia Fugini, Jacopo Finocchi, Monica Vitali, Paolo Locatelli, Luca Gastaldi, Giulia Garavaglia, Federica Citilli, and Sergio Moraschi. "Uso delle piattaforme ICT a supporto dei servizi socio-sanitari: il progetto Attiv@bili". In: *MECOSAN* 98 (2016), pp. 125–140. DOI: 10.3280/MESA2016-098007.

Conferences and Workshops

[C1] Monica Vitali, Barbara Pernici, and Xuesong Peng. "An Adaptive Monitoring Service exploiting Data Correlations in Fog Computing". In: *International Conference on Service Oriented Computing (ICSOC)*. Springer. Toulouse, France, 2019, pp. 1–6.

[C2] Cinzia Cappiello, Walter Samá, and Monica Vitali. "Quality awareness for a Successful Big Data Exploitation". In: *Proceedings of the 22nd International Database Engineering & Applications Symposium*. ACM. 2018, pp. 37–44. DOI: 10.1145/3216122.3216124.

[C3] Xuesong Peng, Barbara Pernici, and Monica Vitali[†]. "Virtual Machine Profiling for Analyzing Resource Usage of Applications". In: *International Conference on Services Computing*. Springer LNCS. 2018, pp. 103–118. DOI: 10.1007/978-3-319-94376-3_7.

[C4] Pierluigi Plebani, Mattia Salnitri, and Monica Vitali. "Fog Computing and Data as a Service: A Goal-Based Modeling Approach to Enable Effective Data Movements". In: *International Conference on Advanced Information Systems Engineering*. Springer LNCS. 2018, pp. 203–219. DOI: 10.1007/978-3-319-91563-0_13.

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[C5] Tiago Brasileiro Araújo, Cinzia Cappiello, Nadia Puchalski Kozievitch, Demetrio Gomes Mestre, Carlos Eduardo Santos Pires, and Monica Vitali. "Towards Reliable Data Analyses for Smart Cities". In: *Proceedings of the 21st International Database Engineering & Applications Symposium*. IDEAS 2017. Bristol, United Kingdom: ACM, 2017, pp. 304–308. ISBN: 978-1-4503-5220-8. DOI: `10.1145/3105831.3105834`. URL: `http://doi.acm.org/10.1145/3105831.3105834`.

[C6] Cinzia Cappiello, Barbara Pernici, Pierluigi Plebani, and Monica Vitali. "Utility-Driven Data Management for Data-Intensive Applications in Fog Environments". In: *International Conference on Conceptual Modeling*. Springer LNCS. 2017, pp. 216–226. DOI: `10.1007/978-3-319-70625-2_20`.

[C7] Pierluigi Plebani, David Garcia-Perez, Maya Anderson, David Bermbach, Cinzia Cappiello, Ronen Kat, Frank Pallas, Barbara Pernici, Stefan Tai, and Monica Vitali. "Information Logistics and Fog Computing: The DITAS Approach". In: *29th International Conference on Advanced Information Systems Engineering Forum (CAISE Forum)*. CEUR. 2017, pp. 129–136.

[C8] Pierluigi Plebani, David Garcia-Perez, Maya Anderson, David Bermbach, Cinzia Cappiello, Ronen I Kat, Achilleas Marinakis, Vrettos Moulos, Frank Pallas, Barbara Pernici, et al. "DITAS: Unleashing the Potential of Fog Computing to Improve Data-Intensive Applications". In: *European Conference on Service-Oriented and Cloud Computing*. Springer. 2017, pp. 154–158. DOI: `10.1007/978-3-319-79090-9_11`.

[C9] Edoardo Fadda, Pierluigi Plebani, and Monica Vitali. "Optimizing Monitorability of Multi-cloud Applications". In: *28th International Conference on Advanced Information Systems Engineering (CAISE'16)*. Springer LNCS. 2016, pp. 411–426. DOI: `10.1007/978-3-319-39696-5_25`.

[C10] Barbara Pernici, Pierluigi Plebani, and Monica Vitali. "About Monitoring in a Service World". In: *Smart Cities, Green Technologies, and Intelligent Transport Systems*. Springer, 2016, pp. 3–23. DOI: `10.1007/978-3-319-63712-9_1`.

[C11] Monica Vitali[†] and Barbara Pernici. "Interconnecting Processes through IoT in a Health-Care Scenario". In: *IEEE International Smart Cities Conference (ISC2)*. IEEE. 2016, pp. 1–6. DOI: `10.1109/ISC2.2016.07580760`.

[C12] Monica Vitali[†]. "Managing Energy Efficiency and Quality of Service in Cloud Applications Using a Distributed Monitoring System". In: *23rd Italian Symposium on Advanced Database Systems (SEBD), Gaeta, Italy, June 14-17, 2015*. Springer LNCS, 2015, pp. 24–35.

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Book Chapters

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Opensource Released Tools

dcSimulation, A tool for simulating monitoring data in a data center by managing load rate and defining features of the involved servers and applications, `https://github.com/monicavit164/dcSimulation`.

StructureLearning, A tool for learning relations existing between a set of continuous variables represented using a Bayesian Network, `https://github.com/monicavit164/StructureLearning`.

StructureLearning, A tool for training and testing an adaptive action selection algorithm for suggesting the best repair action given the state of a set of variables and constraints defined upon them, `https://github.com/monicavit164/ActionSelection`.

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