ALLEGATO B

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Vitali Monica
CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	**VITALI**
NOME	**MONICA**
DATA DI NASCITA	16/04/1984

INSERIRE IL PROPRIO CURRICULUM
(non eccedente le 30 pagine)

Monica Vitali

Curriculum Vitae

Personal Information

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SUMMARY

	H-index	Publications	Citations	Co-authors
Scopus[1]	8	30	130	69
Google Scholar[2]	10	38	226	–

[1] last access 10/02/2019 `https://bit.ly/2SLxC4H`

[2] last access 10/02/2019 `https://bit.ly/2PwXuir`

Research Statement

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.

Academic Positions

04–2019/01–2020 **Senior Lecturer (Associate Professor)**, Umeå University (UMU), Umeå, SWEDEN.
Research in the field of Cloud and Edge Computing within the Distributed System Group of the Computer Science Department.

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

Green IT and Green Cloud

Starting with my PhD, I have been working on managing energy efficiency and sustainability of applications and services. In literature, most of the approaches focus on the exploitation of the hardware efficiency and on server consolidation. These approaches try to propose solutions which are independent from the application nature but they do not take into account how the application behaviour can dynamically change over time. In my research I propose an adaptive and dynamic sensitive approach which takes into consideration the behaviour of the application in a dynamic environment. This goal is reached through several steps. The first step consists in the definition of the business goals. In this way it is possible to define the constraints in terms of quality and sustainability that the application has to respect. The second step consists in the monitoring of the application. This is realized through the selection of relevant metrics able to catch the behaviour of the application and in the definition of new metrics. Once metrics are defined, the application state has to be assessed by monitoring the relevant metrics and verifying the satisfaction of constraints. The last step consists in the adaptation enactment. If some constraints are not satisfied, adaptation actions are selected from a pool of available strategies in order to solve or mitigate the violation. The definition of a proper set of actions and the selection mechanism are object of the research. In the specific, selecting the proper action given a specific context can be trivial with an extended number of variables involved and the effect of actions can be positive or negative for several of the involved variable. An automatic mechanism for action selection is needed and has to be based of a continuous refinement process for learning and updating the knowledge about the effect of actions over the monitored variables.

Metrics and Monitoring Through the definition and computation of specific metrics it is possible to understand the behaviour of an application and to detect issues related to quality and efficiency. The selection of proper metrics is essential for successfully managing the application. In my research I am focusing on the existing metrics and also proposing new 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. This acquired knowledge can be used for predicting the effect of a modification and for conducting "what if" analysis. Finally, I am investigating techniques for detecting the metrics which better describe the application efficiency and quality for specific applications and for class of applications (data intensive, CPU intensive, memory intensive). Metrics are computed starting from data retrieved by a monitoring system. The amount of information to be collected can be too big for big data centres or cloud environment. The collection of such an amount of data can generate inefficiencies due to delays introduced by the monitoring system. For these reason I am investigating techniques for reducing the amount of data to be monitored. I am also studying distributed techniques for collecting and analysing data in order to improve the collection mechanism and to reduce the time needed to conduct analysis on the monitoring data.

Adaptive Systems Adaptation is the key for achieving efficiency and quality in dynamic environment such as the management of applications in data centres and clouds. 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 Data are the key for success in every environment nowadays. A huge amount of data is generated everyday and a proper exploitation of the information contained in them is the key for the success of every organization. The quality of this process depends on the quality of the data. In order to avoid falsified 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.

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. However, due to computational limitations of the edge environment, a mixed approach is needed where applications might been executed in the edge or in the cloud according to the current contextual situation. Data as a Service (DaaS) in this context consists in 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 manages data movement in cloud and edge environment to optimize the concurrent access of applications to shared data sources.

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 data. The elaboration of data coupled with the knowledge of the habits of the observed individuals and some reference values for a set of metrics can be the trigger for a set of adaptation actions allowing the management of emergencies or simply used for helping the individual in his 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– 09/2014 **Eco$_2$Clouds**, *Experimental Awareness of CO_2 in Federated Cloud Sourcing*, 7th 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– 06/2012 **GAMES**, *Green Active Management of Energy in IT Service centres*, 7th Framework 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– 09/2010 **HUMANOBS**, *Humanoids that Learn Socio-Communicative Skills by Observation*, 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

04/2014–09/2015 **Attiv@bili**, *Assistenza digitale e innovazione Sociale in Ambienti Controllati*, Bando 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.

03/2008–09/2008 **VirtusVini**, *Vineyard Monitoring through Wireless Sensor Networks*, Regione Sicilia, `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.

03/2008–09/2008 **GeoMon**, *Structural Health Monitoring of Historical Heritage Buildings*, Regione Sicilia, `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 [J4][C16]. 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 [C21][C23].
- 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 techniques [C20].

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" [C2], 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" [C10], 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" [C8], 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" [C12] 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" [C11], 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" [C16], October 13-16 2013, Manchester, UK

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" [C19] 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" [C18], August 24-26 2011, Cluj-Napoca, Romania

Program Committee Service

2019 PC member of the International Conference on Distributed Computing Systems (ICDCS 2019)

2019 PC member of the IEEE International Conference On Big Data Service And Applications (BDS 2019)

2019 PC member of the IEEE International Conference on Advanced Information Systems Engineering (CAISE 2019)

2019 PC member of the DaMove-2019 Workshop

2018 PC member of the International Conference on Service Oriented Computing (ICSOC 2018)

2018 PC member of the IEEE International Conference on Systems, Man, and Cybernetics (SMC 2018)

2018 PC member of the International Workshop on Energy-Efficient Data Centres (E2DC 2018)

2018-2019 PC member of IEEE International Conference on Big Data Service 2018

2016-2019 PC member of the 10th IEEE International Conference on Research Challenges in Information Science (RCIS2016)

2017 PC member of the 2017 IEEE International Conference on Smart City Innovations (IEEE SCI 2017)

2017 PC member of the 1st IEEE International Workshop on Assured Cloud Computing and QoS aware Big Data (WACC'17)

2016-2019 PC member of the IEEE International Symposium on Computer and Communications (ISCC 2016)

2016 PC member of the IEEE International Conference on Systems, Man, and Cybernetics (SMC2016)

2016 PC member of the second IEEE International Smart Cities Conference (ISC2)

2016 PC member of the 5th International Workshop on Energy-Efficient Data Centers (E2DC 2016)

2014 PC member of the IEEE International Conference on Systems, Man, and Cybernetics (SMC2014)

Reviewer Service for International Journals and Conferences

2019 Reviewer for the Journal of Environmental Management (JEMA)

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

2017 Reviewer for the IEEE Transactions on Network and Service Management (IEEE TNSM) Journal

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 International Journal Computing, special issue on Sustainable Computing Systems and Applications (COMP2016)

2015 Reviewer for the 23rd International Conference on Cooperative Information Systems (CoopIS2015)

Teaching Activities

Lecturer

AY 2020/2021 **Senior Lecturer**, *28 hours*, Cloud Computing, Umeå University.
Master Level

AY 2020/2021 **Senior Lecturer**, *28 hours*, Advanced Distributed Systems, Umeå University.
Master Level

AY 2018/2019 **Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano.
Bachelor Level

AY 2018/2019 **Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano (COMO).
Bachelor Level

2018 **Lecturer**, *9 hours*, BABD - International Master in Business Analytics and Big Data, Big Data Cloud Technologies, MIP, Cefriel, and Politecnico di Milano.

2018 **Lecturer**, *8 hours*, Master in Development of Innovative Software Products, Information Systems, Cefriel.

AY 2017/2018 **Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano.
Bachelor Level

AY 2017/2018 **Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano (COMO).
Bachelor Level

2017 **Lecturer**, *6 hours*, BABD - International Master in Business Analytics and Big Data, Big Data Cloud Technologies, MIP, Cefriel, and Politecnico di Milano.

2017 **Lecturer**, *8 hours*, Master in Development of Innovative Software Products, Information Systems, Cefriel.

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.

AY 2016/2017 **Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano (COMO).
Bachelor Level

AY 2015/2016 **Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano (COMO).
Bachelor Level

AY 2014/2015 **Contract Professor**, *30 hours*, Information Systems for Computing Engineering, Politecnico di Milano (COMO).
Bachelor Level

Teaching assistant

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

AY 2017/2018 **Teaching Assistant**, *20 hours*, Information Systems (Prof. Cinzia Cappiello), Politecnico di Milano.

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

Teaching Assistant, *20 hours*, Information Systems (Prof. Cinzia Cappiello), Politecnico di Milano.

Teaching Assistant, *27 hours*, Foundations of Informatics (Prof. Maristella Matera), Politecnico di Milano.

AY 2015/2016 **Teaching Assistant**, *20 hours*, Information Systems for Computing Engineering (Prof. Barbara Pernici), Politecnico di Milano.

Teaching Assistant, *20 hours*, Information Systems (Prof. Cinzia Cappiello), Politecnico di Milano.

Teaching Assistant, *36 hours*, Foundations of Informatics (Prof. Maristella Matera), Politecnico di Milano.

Tutoring, *22 hours*, Information Systems for Computing Engineering, Politecnico di Milano.

AY 2014/2015 **Teaching Assistant**, *20 hours*, Information Systems for Computing Engineering (Prof. Barbara Pernici), Politecnico di Milano.

Teaching Assistant, *20 hours*, Information Systems (Prof. Cinzia Cappiello), Politecnico di Milano.

Teaching Assistant, *40 hours*, Foundations of Informatics (Prof. Maristella Matera), Politecnico di Milano.

AY 2013/2014 **Teaching Assistant**, *20 hours*, Information Systems for Computing Engineering (Prof. Barbara Pernici), Politecnico di Milano.

Teaching Assistant, *20 hours*, Information Systems (Prof. Cinzia Cappiello), Politecnico di Milano.

Teaching Assistant, *24 hours*, Foundations of Informatics (Prof. Maristella Matera), Politecnico di Milano.

AY 2012/2013 **Teaching Assistant**, *20 hours*, Information Systems for Computing Engineering (Prof. Barbara Pernici), Politecnico di Milano.

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

Teaching Assistant, *24 hours*, Foundations of Informatics (Prof. Maristella Matera), Politecnico di Milano.

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

Thesis Supervision

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

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

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

Journals

[J1] 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). SJR index: 1.151, pp. 548–562. DOI: 10.1016/j.future.2018.07.014.

[J2] 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.

[J3] 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). SJR index: 1.186, pp. 152–165. DOI: 10.1109/TCC.2015.2464796.

[J4] 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: 3.364, SJR index: 2.513, pp. 152–170. DOI: 10.1016/j.ins.2015.01.023.

[J5] 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). SJR index: 1.186, pp. 138–151. DOI: 10.1109/TCC.2015.2453988.

[J6] Monica Vitali and Barbara Pernici. "A Survey on Energy Efficiency in Information Systems". In: *International Journal of Cooperative Information Systems (IJCIS)* 23.03 (2014). DOI: 10.1142/S0218843014500014.

[J7] 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.

Conferences and Workshops

[C1] 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.

[C2] Xuesong Peng, Barbara Pernici, and Monica Vitali. "Virtual Machine Profiling for Analyzing Resource Usage of Applications". In: *International Conference on Services Computing*. Springer. 2018, pp. 103–118. DOI: 10.1007/978-3-319-94376-3_7.

[C3] 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. 2018, pp. 203–219. DOI: 10.1007/978-3-319-91563-0_13.

[C4] 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.

[C5] 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. 2017, pp. 216–226. DOI: 10.1007/978-3-319-70625-2_20.

[C6] 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.

[C7] 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.

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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`.

Data	17/02/2019	Luogo	Milano