

STEFANO MARIANI'S ACADEMIC CV

STEFANO MARIANI

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1. PERSONAL INFO

Name: Stefano Mariani

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2. SUMMARY

After working as a research collaborator with a grant funded by the EU-FP7 SAPERE Project, I am now a Ph.D. student at the Doctoral School in Computer Science and Engineering of the Alma Mater Studiorum Universit di Bologna, Italy. In the last two years, I worked as a Lecturer at the Alma Mater for the courses of "Concurrent and Distributed Programming" and "Distributed Systems". My research interests mostly deal with coordination models and technologies, self-organisation and formal models, where I have already published several papers at international conferences—listed at the end of this document. I am currently responsible for the maintenance and development of the TuCSon coordination middleware.

3. QUALIFICATIONS

- **Ph.D.** student (3-years grant starting from January 1st 2012) in Computer Science at the Doctoral School in Computer Science and Engineering¹ offered by the Alma Mater Studiorum – Università di Bologna.
- **Research collaborator** in the same Faculty from April 2012 to December 2012, with annual grant partially funded by the SAPERE Project – Supervisors: Professors Mirko Viroli and Andrea Omicini
- **Lecturer** in the same Faculty for the Laurea Magistralis course in *Concurrent and Distributed Programming*, held by Professor Alessandro Ricci
- **Lecturer** in the same Faculty for the Laurea Magistralis course in *Distributed Systems*, held by Professor Andrea Omicini
- **Master Degree** in Computer Science Engineering earned at the II Faculty of Engineering of Cesena, ALMA MATER STUDIORUM – Università di Bologna with the grade of 107 out of 110 and fulfilling the regular Master Degree deadline of 5 years — enrolled in September 2006, graduated in December 2011. Dissertation title was “*Molecules of Knowledge: a new approach to knowledge production, management and consumption*”², in which I discuss a self-organising approach based upon biochemical tuple spaces coordination abstraction as a solution to nowadays issues regarding knowledge-intensive scenarios, with a focus over news management systems.

4. RESEARCH ACTIVITY

- Three years **Ph.D. grant** won in October 2012 started on January 1st 2013 (ending December 31st 2015) under the supervision of Prof. Andrea Omicini. Ph.D. research activity is mainly targeted at analysis and synthesis of nature-inspired software systems, in particular, coordination models and languages for MAS. Furthermore, it covers all aspects of nature-inspired coordination: from theoretical foundations – e.g. expressiveness of probabilistic coordination languages – to actual coordination middlewares – e.g. *MoK* and *TuCSon* – through languages and architectures—e.g. as *ReSpecT* and tuple centres.
- One year **research grant** partially funded by the SAPERE Project³ – from April, 5th 2012 to April, 4th 2013 – under the supervision of Prof. Mirko Viroli and Prof. Andrea Omicini. Title of the research grant is “*Methodologies, analysis tools and middleware for self-organising platforms in pervasive computing environments*”. The main activity is to conceive and

¹www.cse.unibo.it/en/phd-program

²apice.unibo.it/xwiki/bin/view/Theses/KnowledgemoleculesMariani2011

³Self-aware Pervasive Service Ecosystems, FP7-ICT-2009.8.5: Self-awareness in Autonomic Systems, Grant Agreement No.: 256873 - apice.unibo.it/xwiki/bin/view/SAPERE

develop a design methodology to project and implement SAPERE services, providing also analysis tools to monitor their functioning. Research grant quitted on December 31st due to incompatibility issues with the Ph.D. program 3-years grant.

5. TEACHING ACTIVITY

- **Lecturer** in the II Faculty of Engineering of Cesena, Alma Mater Studiorum – Università degli Studi di Bologna for the Laurea Magistralis course in *Concurrent And Distributed Programming*⁴, held by Prof. Alessandro Ricci. Lessons held from March 2012 to July 2012 covering the following themes:
 - *Java PathFinder* (javapathfinder.sourceforge.net) as a tool for Java concurrent programs analysis and verification
 - *Akka Actors* (akka.io) and the Actors model, design & implementation paradigm. Theoretical considerations, Akka as a case study platform, distribution issues
 - *Space-based computing*. Apache River JINI (river.apache.org) as a platform to study, analyze & develop space-based middleware. Theoretical lessons, state-of-art technologies and issues
- **Lecturer** in the same faculty for the new Laurea Magistralis course in *Distributed Systems*⁵, held by Prof. Andrea Omicini. Lessons held from October 2012 to February 2012 covering the following themes:
 - *JADE* (jade.tilab.com) as a framework and platform to design MASs implemented on top of Java
 - *TuCSon* (tucson.unibo.it) and the space-based coordination abstraction. TuCSon as a concrete middleware providing tuple centres and logic-programming facilities
- **Co-supervisor** of a number of Laurea and Laurea Magistralis thesis, full list available at apice.unibo.it/xwiki/bin/view/StefanoMariani/Theses.

6. PUBLICATIONS

Mariani S., Omicini A.: *Molecules of Knowledge: Self-Organisation in Knowledge-Intensive Environments* in Intelligent Distributed Computing VI, Studies in Computational Intelligence 446, 2013

Mariani S., Omicini A.: *Promoting Space-Aware Coordination: ReSpecT as a Spatial-Computing Virtual Machine* in Proceedings of the 6th International Spatial Computing Workshop (SCW 2013), 6 May 2013

⁴www.moodle.unibo.it/login/index.php

⁵apice.unibo.it/xwiki/bin/view/Courses/SdLm1213Lab

- Mariani S., Omicini A.:** *Probabilistic Modular Embedding for Stochastic Coordinated Systems* in Coordination Models and Languages, Lecture Notes in Computer Science 7890, June 2013
- Mariani S., Omicini A.:** *MoK: Stigmergy Meets Chemistry to Exploit Social Actions for Coordination Purposes* in Proceedings of Social Coordination: Principles, Artefacts and Theories (SOCIAL.PATH), 3-5 March 2013
- Mariani S., Omicini A.:** *Event-driven Programming for Situated MAS with ReSpecT Tuple Centres* in Multiagent System Technologies, Lecture Notes in Artificial Intelligence 8076, 2013
- Mariani S., Omicini A.:** *Probabilistic Embedding: Experiments with Tuple-based Probabilistic Languages* in Proceedings of the 28th ACM Symposium on Applied Computing (SAC 2013), 18-22 March 2013
- Omicini A., Mariani S.:** *Coordination for Situated MAS: Towards an Event-driven Architecture* in Proceedings of the International Workshop on Petri Nets and Software Engineering (PNSE'13), CEUR Workshop Proceedings 989, 24-25 June 2013
- Mariani S., Omicini A.:** *Analysis of the Molecules of Knowledge Model with the BioPepa Eclipse Plugin* in AMS Acta (apice.unibo.it/xwiki/bin/view/Journals/AmsActa), Bologna, Italy, 20 September 2013. Pages 1-8
- Mariani S., Omicini A.:** *Self-Organising News Management: The Molecules of Knowledge Approach* in Proceedings of the Self-Adaptive and Self-Organizing Systems Workshops (SASOW), 2012
- Mariani S., Omicini A.:** *Molecules of Knowledge: A Novel Perspective over Knowledge Management* in Proceedings of the Doctoral Consortium of the 12th Symposium of the Italian Association for Artificial Intelligence, CEUR Workshop Proceedings 926, 15 June 2012