

Curriculum Vitae

Fabio Patrizi

April 7, 2020

General Information

Full Name	Fabio Patrizi
Date of Birth	19/12/1978
Place of Birth	Rome, Italy
Citizenship	Italian
Spoken Languages	Italian (Mother Tongue), English (Excellent), Spanish (Excellent)

Summary

Fabio Patrizi is Associate Professor in the Department of Computer, Control and Management Engineering (DIAG) at Sapienza University of Rome (Italy). Previously, he has held a tenure-track position as Assistant Professor (RTD-B) at DIAG - Sapienza. He has held several academic appointments including: a research Fellowship at the KRDB Center, Faculty of Computer Science of the Free University of Bozen-Bolzano (Italy), (Oct 2014 - Sep 2016), as the Principal Investigator of a 2-year project, "Verification and Synthesis from Components of Processes that Manipulate Data", funded by the Provincia Autonoma di Bolzano - Alto Adige; an RTD-A at DIAG - Sapienza University of Rome, and a Post-doc (Research Associate) at Imperial College, London (UK). His research activity, carried out in Rome (Italy), London (UK), San Diego (CA,USA), and Bolzano (Italy), concerns theoretical, methodological, and practical aspects in different areas of Computer Science and Artificial Intelligence, including Formal Methods, Knowledge Representation, Reasoning about Action, non-standard forms of Planning in Artificial Intelligence, Service-oriented Computing, and Business Processes.

Fabio Patrizi regularly publishes the results of his research in top-level international journals and conferences. He has co-authored beyond 50 scientific papers, published in international journals or proceedings of international conferences and has been invited to present the results of his research at various institutions (one talk was funded by the RMIT Melbourne's *Visiting Researcher's Award*). He was the (co-)recipient of a Best Paper Award and a Test of Time Award. His Google Scholar profile reports 1492 citations and 19 as h-index.

He is regularly invited as a PC or SPC member of various top-level conferences in the areas of his interest, and as a reviewer or guest editor for several international journals. In 2015, he has been selected as a tutorial lecturer at the prestigious International Joint Conference on Artificial Intelligence (IJCAI'15). He has served as moderator for the selection of papers submitted to the Artificial Intelligence section of the *Computing Research Repository* (www.arxiv.org). He has been local chair of the 9th Italian Convention on Computational Logic (CILC'12), co-chair of the PhD Symposium of the 11th International Conference on Service Oriented Computing (ICSOC'13), and co-organizer of the KR'18 workshop "Reasoning about Actions and Processes: Highlights of Recent Advances (ACTIONS@KR)". Since November 2017, Fabio Patrizi serves as the Secretary of the PhD Program in "Engineering in Computer Science" at DIAG - Sapienza. He regularly teaches courses at academic level.

Education

Year	Type	Institution	Notes
2009	PhD Degree	Sapienza University	-
2009	PhD School "GAMES"	European Science Foundation	-
2008	Research Visit	University of California, San Diego, Ca, USA	Jan - Jul 2008
2006	PhD School "ESSLLI"	Malaga University (Spain)	-
2004	Licensure in Engineering	Ordine degli Ingegneri della Provincia di Roma	-
2003	Laurea Degree	Sapienza University	5 yrs, Final Mark: 107/110

Appointments

Academic Appointments

Start	End	Institution	Position
Nov 2020	present	DIAG – Sapienza University of Rome	Associate Professor
		DIAG – Sapienza University of	Tenured-track Assistant
Nov 2016	Nov 2019	Roma	Professor (RTD-B Art.24 L. 240/10)
Oct 2014	Sep 2016	KRDB – Free University of Bozen-Bolzano	Research Fellow
Oct 2011	Sep 2014	DIAG – Sapienza University	Fixed-term Assistant Professor (RTD-A, art.1 comma 14 L. 230/05)
Aug 2011	Sep 2011	DIAG – Sapienza University	Research Associate
Sep 2010	Aug 2011	DoC – Imperial College,	Research Associate
		London, UK	
Feb 2009	Sep 2010	DIAG – Sapienza University	Research Associate
Jan 2006	Oct 2006	DIAG – Sapienza University	Research Assistant
Apr 2005	Oct 2005	Udine University	Research Associate

Industrial Appointments

Start	End	Company	Position
Jun 2007	Jul 2007	Tool Area S.r.l.	IT Consultant
Jul 2006	Jul 2006	Tool Area S.r.l.	Teacher of "Oracle Intermediate" at Sytel-
Reply Jan 2006	Mar 2006	Tool Area S.r.l.	Web Architecture and
		Web Services Consultant	

Teaching Experience

Year	Institution	Lecture/Course
2019/2020	Sapienza University (B)	Machine Learning (Course Leader, 3 CFU)
2019/2020	Sapienza University (B)	Programming Techniques (Course co-Leader, 6 CFU)
2019/2020	Sapienza University (B)	Algorithms and Data Structures (Course Leader, 6 CFU)
2018/2019	Sapienza University (A)	Smart Objects (Course co-Leader, 3 CFU)
2018/2019	Sapienza University (B)	Programming Techniques (Course co-Leader, 6 CFU)
2018/2019	Sapienza University (B)	Algorithms and Data Structures (Course Leader, 6 CFU)
2017/2018	Sapienza University (B)	Algorithms and Data Structures (Course Leader, 6 CFU)
2017/2018	Sapienza University (A)	Smart Objects (Course Leader, 6 CFU)
2016/2017	Sapienza University (B)	Algorithms and Data Structures (Course Leader, 6 CFU)
2016/2017	Sapienza University (A)	Smart Objects (Course Leader, 6 CFU)
2015/2016	Sapienza University (A)	Smart Objects (Course Leader, 6 CFU)
2013/2014	Sapienza University (B)	Foundations of Programming (Course Leader, 6 CFU)
2013/2014	Sapienza University (B)	Great Ideas in ICT (PhD course, Lecturer)
2012/2013	Sapienza University (B)	Foundations of Programming (Course Leader, 6 CFU)
2011/2012	Sapienza University (B)	Foundations of Programming (Lecturer, 3 CFU)
2010/2011	Imperial College, London, UK (C)	Databases (Teaching Assistant) (Course Leader: Prof. P. Mc Brien) Programming (Teaching Assistant)
2010/2011	Imperial College, London, UK (C)	(Course Leader: Prof. A.J. Field)
2009/2010	Sapienza University (B)	Software Design (Tutor, 3 CFU) (Course Leader: Prof. G. De Giacomo)
2009/2010	(Guest Sapienza University (B) Lecturer)	Formal Methods for Software and Services (Course Leader: Prof. G. De Giacomo)
2008/2009	Sapienza University (B)	Software Design (Tutor, 3 CFU) (Course Leader: Prof. G. De Giacomo)
2008/2009	(Guest Sapienza University (B) Lecturer)	Formal Methods for Software and Services (Course Leader: Prof. G. De Giacomo)
2008/2009	Sapienza University (B) Lecturer)	Elective in Software and Services (Guest) (Course Leader: Prof. G. De Giacomo)
2007/2008	Sapienza University (B)	Software Design I (Tutor) (Course Leader: Prof. G. De Giacomo)
2007/2008	Sapienza University (B) Lecturer)	Seminars in Software Engineering (Guest) (Course Leader: Prof. G. De Giacomo)
2006/2007	Sapienza University (B)	Software Design I (Tutor) (Course Leader: Prof. G. De Giacomo)

A : M. Sc. in Product Design, Faculty of Architecture

B : B. Sc./M. Sc. in Engineering in Computer Science and Control Engineering, Faculty of Information Engineering, Informatics, and Statistics

C : B. Eng. in Computing, Faculty of Engineering

Awards and Honours

Year	Title
2018	Test of Time Award at the 22nd International Conference on Database Theory (ICDT'19): Alin Deutsch, Richard Hull, Fabio Patrizi and Victor Vianu, <i>Automatic Verification of Data-centric Business Processes</i> .
2013	Best Paper Award at the 7th International Conference on Web Reasoning and Rule Systems (RR-2013): Diego Calvanese, Giuseppe De Giacomo, Marco Montali and Fabio Patrizi, <i>Verification and Synthesis in Description Logic Based Dynamic Systems</i> .
2011	RMIT Melbourne (Vic, AU) Visiting Researcher's Award.

Funding Information

Year	Title	Program	Grant Value
2018	DRAPE: Data-aware Automatic Process Execution (PI)	Progetti Medi - Sapienza University of Rome Finanziamento delle Attività	~ 11.000 (2 years)
2017	-	Base di Ricerca - Sapienza University of Rome Mobilità di Ricercatori e	~ 3.000e
2014	from Components of Processes that Manipulate Data (PI)	Ricercatrici - Provincia Autonoma di Bolzano - Alto Adige	~ 130.000e (2 years)

Research Activity

The research activity of Fabio Patrizi concerns theoretical, methodological, and practical aspects in different areas of **Computer Science** and **Artificial Intelligence**. He has developed tools and techniques based on **Formal Methods** for the solution of problems that arise in the areas of **Knowledge Representation** and **Reasoning about Action**, non-standard forms of **Planning in Artificial Intelligence**, **Reinforcement Learning**, **Service-oriented Computing**, and **Business Processes**. All the results of his research have been published in top-level conferences in relevant areas. He collaborates with internationally renowned researchers. His research activity has been carried out in Rome (Italy), London (UK), Bolzano (Italy), and San Diego (CA, USA). His main research accomplishments in all the areas of interest are summarized below, together with the respective publication venues (see Publication List for a fully comprehensive list of publications).

Non-Markovian rewards and Reinforcement Learning with Restraining Bolts (AAAI'18,

ICAPS'19) This line of work concerns Reinforcement Learning in a context where rewards are not *local* but depend on the whole evolution of the system. The contribution related to this problem is twofold. Firstly, a formalism based on the temporal logic LDL_f for the representation of non-Markovian rewards has been proposed and investigated. The proposed approach extends previous work with respect to reward expressivity and led to an elegant automata construction for building a Markovian model equivalent to the non-Markovian one (but that can be manipulated with standard tools). Secondly, the formalism was used to express desired non-Markovian constraints on top of the (possibly non-Markovian) rewards, so as to restrain (hence *restraining bolts*) the behavior learnt by the reinforcement learning agent. Such constraints do not have to be defined in terms of the features accessible to the agent, yet they represent restrictions (or *Restraining Bolts*) that the agent must be subject to when operating.

Behavior Composition (AAAI'07, KR'08, PhD Thesis (2009), ICAPS'09, AAAI'10, AIJ (2013), ICAPS'14) Fabio Patrizi has proposed, together with Giuseppe De Giacomo (Sapienza University of Rome, Italy) and Sebastian Sardina (RMIT, Melbourne, VIC, AU), a formal framework and a solution technique for the problem of *behavior composition*. The problem consists in coordinating

a set of available reactive agents with the aim of realizing a desired high-level procedure that would not be realizable by any of the available agents alone. This line of work is based on a bridge between AI and Formal Verification&Synthesis techniques, where temporal logics are used as a mean to express the requirements on the coordination of the agents, while the coordination strategy is obtained by applying synthesis techniques. The achieved results have led to the implementation of an actual system for the composition of smart devices in an intelligent house, in the context of the EU-funded STREP project SM4All (SMart homes for All).

Planning Programs (AAMAS'10, ICAPS'11, AIJ (2016)) Fabio Patrizi is one of the proposers of a new form of declarative agent programming paradigm, known as *planning programs*. These are goal networks which provide a high-level representation of the desired behavior of some agent, in terms of the goals the agent needs to achieve and maintain, while operating in a dynamic domain. In a first foundational work, in collaboration with Giuseppe De Giacomo and Sebastian Sardina, he has devised a sound and complete solution technique for the general problem, based on the use of Formal Synthesis techniques. In a further work, co-authored with Alfonso Gerevini and Alessandro Saetti (Brescia University, Italy) he has devised an efficient planning-based technique, specialized for deterministic domains. Such works led to the submission of a further work to the *Artificial Intelligence Journal (AIJ)*, currently under its second review round.

Verification of Multi-Agent Systems for Artifact-Centric Scenarios (IJCAI'11, KR'12, JAIR (2013)) He collaborates with Alessio Lomuscio (Imperial College, London, UK) and Francesco Belardinelli (Universit  d'Evry, France), on the problem of model checking multi-agent systems against epistemic first-order extensions of temporal specifications, in the context of artifact-centric scenarios (where business processes are represented in a modular way, in terms of process fragments and data structures). This research, carried out as part of the EU-funded STREP project ACSI (Artifact-centric Service Interoperation), has shown that, in systems with an infinite number of states having a relational structure, a *boundedness condition* on the number of elements is sufficient to guarantee decidability of the verification task, in the case of a branching-time, first-order logic, with unrestricted use of quantifiers. This intuition and the corresponding approach proved useful, and have been exploited, also in other areas such as Reasoning about Action.

Verification of Action Theories (KR'12, IJCAI'13, ECAI'14, AAMAS'14, Studia Logica (2015), AIJ (accepted with minor revision, 2016), KR'16, AAI'16) In this line of work, a boundedness condition has been exploited for verification purposes in the context of Action Theories expressed in Situation Calculus. Together with Giuseppe De Giacomo, Yves L  p  rance (York University, Toronto, CA), Diego Calvanese (Free University of Bozen-Bolzano), and Sebastian Sardina (RMIT University, Melbourne, Vic (AU)) he has developed an abstraction technique for the verification of first-order μ -calculus specifications, used to characterize the models of a given theory. The boundedness condition and related notions isolated in previous work proved particularly useful also in this context.

Progression of Action Theories (IJCAI'13, KR'14, JELIA'14) Together with Stavros Vassos (Sapienza University), he has identified a class of practically-relevant progressable

action theories, expressed in the Situation Calculus. This research was inspired by the boundedness condition isolated in previous work and has contributed to broadening the set of known progressable action theories, in addition to drawing a clear picture of their classification.

Synthesis of infinite plans (KR'10, IJCAI'11, IJCAI'13): he has investigated the problem of automatically building infinite plans that satisfy specifications expressed in temporal logics, and devised corresponding solution techniques. He has contributed to devising two approaches to encode the problem as standard (classical or nondeterministic) planning, with the aim of making state-of-the-art solvers available for their solution. Together with Hector Geffner (Universitat Pompeu Fabra, Barcelona, Spain) and Nir Lipovetzky (University of Melbourne, Vic, AU), he has devised a translation scheme that allows to transform the search for an infinite plan satisfying an LTL property (in nondeterministic domains) into an instance of standard conditional planning. This work contributed to put forward planning as a viable alternative to solve problems, such as Formal Synthesis, arising in other areas than AI.

Service Composition (IJFCS (2008), IEEE Data Eng. Bulletin (2008), ICWS'07, WS-FM'09, Web Services Foundations (2014)): he has worked on this line of research during his PhD, following the work previously initiated by his group, which led to the definition of the so-called Roman Model. In his PhD thesis, he has generalized previous results by proposing a solution technique based on the notion of simulation between transition systems. This improved the previous techniques in term of time complexity and robustness. This approach has laid the bases of the results achieved in the context of Behavior Composition

Data Abstraction Techniques for Verification and Synthesis (ICDT'09, ICSOC'11, ICSOC'12, RR'13, IJCAI'15, CAISE'19): he started working on this topic as a visiting scholar at UCSD, during his PhD, when he collaborated with Alin Deutch, Victor Vianu (UCSD, San Diego, CA, USA), and Rick Hull (IBM Watson Research Center, Hawthorne, NY, Usa) to a work on the verification of artifact-centric business processes. The resulting paper, published at ICDT 2009, is one of his most cited ones (172 citations, according to Google Scholar, July 2015). He has kept working on this topic in connection with many of the research lines mentioned above, such as Behavior Composition, Verification of MAS and Action theories, and Service Composition. This research is having a practical impact on the formal analysis, verification and synthesis in so called *Artifact-based Business Processes*.

Recently, the abstraction approach has been applied also to dynamic systems whose state is described in terms of an ontology (expressed in Description Logic). The work describing this extension, co-authored with Giuseppe De Giacomo, Diego Calvanese and Marco Montali (Free University of Bozen-Bolzano) was awarded Best Paper at RR'13.

Constraint Satisfaction Problems (ISMIS'06, ECAI'06, CPAIOR'06, Annals OR (2009), Constraints (2008)): in the beginning of his PhD, together with Marco Cadoli, he has focussed on problems related to CSP, in particular on comparing different solution approaches based on the use of ASP engines, SAT, and commercial solvers, and investigated the possibility of decomposing a problem into smaller and easier ones, in order to obtain performance improvements.

Summary of Scientific Achievements

Product type	Number
International Journal Papers	10
International Conference Papers	38
International Workshop Papers	10
Edited Works	2
Contributions to Scientific Books	2
National Journal Papers	1
National Conference Papers	2

Impact Measures

(As of April 07, 2020, including all products from 2005, according to Google Scholar)

Type	Value
Total Citations	1492

H-index	19
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National Scientific Habilitation Requirements

On April 4, 2017, Fabio Patrizi obtained the National Scientific Habilitation for the function of Associate Professor for sector 09/H1.

Research Projects & Fundings

Fabio Patrizi is, or has been, involved in the following research projects:

Title	Role	Funding Agency
Verification and Synthesis from Components of Processes that Manipulate Data	Principal Investigator	Provincia Autonoma di Bolzano - Alto Adige
Artifact-centric service interoperation	Participant	EU Commission
SM4All (SMart homes for All)	Participant	EU Commission

In 2002-2004, as an undergraduate student, he has been member of the robotic soccer team, led by Prof. Daniele Nardi, "SPQR-Legged" at DIAG - Sapienza Università di Roma. As a team member, he has participated in the following international competitions: RoboCup 2002 (Fukuoka, Japan); RoboCup 2003 (Padova, Italy); RoboCup 2004 (Lisbona, Portugal). Further, he has carried out research and software development activities concerning, in particular, probabilistic planning and robotic vision.

Professional Service

Fabio Patrizi is regularly involved in the main events and activities organized by the scientific community, related to his research areas.

Conference and Workshop Organization

Event	Role
ACTIONS@KR 2018 (KR Workshop on Reasoning about Actions and Processes: Highlights of Recent Advances)	co-organizer
ICSOC 2013 (11th International Conference on Service Oriented Computing)	PhD Symposium co-chair

CILC 2012 (9th Italian Convention on Computational Logic) Organizing Committee Chair

PC or SPC Membership

Fabio Patrizi is regularly invited as a PC or SPC member of several top-level conferences: AAI (SPC in 2019,2020), IJCAI (SPC in 2019,2020), ICDT, AAMAS, ECAI, KR, ICAPS, BPM, IROS, ICSOC.

Journal Reviewing and Editorial Service

Fabio Patrizi is regularly invited as a reviewer in the following top-level international journals: AIJ, JAIR, JODS, IJFCS, TKDE, JLC, TODS, TSC, TWEB, JINFCO, Studia Logica, JCSS, TOCL, COMIND.

He served as a Guest Editor for the international journal "Computing".

From Jun 2015 to March 2019, he has served as moderator for the selection of the papers submitted to the Artificial Intelligence section of the *Computing Research Repository* (CORR, www.arxiv.org).

Paper Presentations

He has presented the results of his research in the following events:

Year	Event	Paper
2014	14th European Conference on Logics in Artificial Intelligence (JELIA'14)	Action Theories over Generalized Databases with Equality Constraints
2013	23rd International Joint Conference on Artificial Intelligence (IJCAI'13)	Fair LTL Synthesis for Non-Deterministic Systems using Strong Cyclic Planners
2012	10th International Conference on Service-oriented Computing (ICSOC'11)	Verification of GSM-based Artifact-Centric Systems Through Finite Abstraction
2011	22nd International Joint Conference on Artificial Intelligence (IJCAI'11)	Computing Infinite Plans for LTL Goals Using a Classical Planner
2010	12th International Conference on the Principles of Knowledge Representation and Reasoning (KR'10)	Generalized Planning with Loops under Strong Fairness Constraints
2009	6th International Workshop on Web Services and Formal Methods (WS-FM'09)	Automated Composition of Nondeterministic Stateful Services
2009	4th European Young Researchers Workshop on Service-oriented Computing (YRSOC'09)	An Introduction to Simulation-based Techniques for Automated Service Composition
2007	IEEE 2007 International Conference on Web Services (ICWS 2007)	Automatic Workflows Composition of Mobile Services
2006	3rd International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems	On the separability of subproblems in Benders decompositions

Invited Talks

He has been invited to give the following talks at national and international institutions:

Date	Inviting Institution	Title
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May 2014	Free University of Bozen/Bolzano (Italy)	Action Theories over Generalized Databases with Equality Constraints
Dec 2011	RMIT University, Melbourne, Vic (AU)	Verification of Deployed Artifact Systems via Data Abstraction
Nov 2011	Free University of Bozen/Bolzano (Italy)	Verification of Deployed Artifact Systems via Data Abstraction
Feb 2010	University of Brescia (Italy)	Two-player Game Structures for Service Composition, Synthesis and Generalized Planning
Feb 2010	University of Brescia (Italy)	Automated Service Composition and Synthesis
Feb 2008 Diego	University of California, San (CA, USA)	Automatic Composition of Services

Conference Tutorials

Fabio Patrizi has been selected as a tutorial lecturer at the 24th International Joint Conference on Artificial Intelligence (IJCAI'15). Tutorial Title: *Automatic Synthesis & Composition of Agent Behaviors*.

List of Publications

International Journals

- [IJ10] Diego Calvanese, Giuseppe De Giacomo, Marco Montali, Fabio Patrizi. First-order μ -calculus over Generic Transition Systems and Applications to the Situation Calculus. *Information & Computation*, 259(3): 328-347. Elsevier. 2018. Impact Factor 2016: 1.050.
- [IJ9] Giuseppe De Giacomo, Yves Lespérance, Fabio Patrizi. Bounded Situation Calculus Action Theories. *Artificial Intelligence Journal (AIJ)*, 237:172-203. Elsevier. 2016. Impact Factor 2016: 4.797.
- [IJ8] Giuseppe De Giacomo, Alfonso Emilio Gerevini, Fabio Patrizi, Alessandro Saetti, Sebastian Sardina. Agent Planning Programs. *Artificial Intelligence (AIJ)*, 231:64-106. Elsevier. 2016. Impact Factor 2016: 4.797.
- [IJ7] Giuseppe De Giacomo, Yves Lespérance, Fabio Patrizi, Stavros Vassos. Progression and Verification of Situation Calculus Agents with Bounded Beliefs. *Studia Logica*, 104(4): 705-739 (2016). Springer. 2016. Impact Factor 2018: 0.589
- [IJ6] Francesco Belardinelli, Alessio Lomuscio, Fabio Patrizi. Verification of Agent-Based Artifact Systems. *J. Artif. Intell. Res. (JAIR)*, 51: 333-376 (2014). AAAI Press. 2014. Impact Factor 2016: 2.284.
- [IJ5] Giuseppe De Giacomo, Fabio Patrizi, Sebastian Sardina. Automatic Behavior Composition Synthesis. *Artificial Intelligence (AIJ)*, 196: 106-142. Elsevier. 2013. Impact Factor 2016: 4.797.
- [IJ4] Marco Cadoli and Fabio Patrizi. On the separability of subproblems in Benders decompositions. *Annals of Operations Research*, 171:27-43. Springer Netherlands. 2009. Impact Factor 2018: 1.709.
- [IJ3] Daniela Berardi, Fahima Cheikh, Giuseppe De Giacomo, Fabio Patrizi. Automatic service composition via simulation. *International Journal of Foundations of Computer Science*, 19(2):429-451. World Scientific. 2008. Impact Factor 2018: 0.459.
- [IJ2] Diego Calvanese, Giuseppe De Giacomo, Maurizio Lenzerini, Massimo Mecella, Fabio Patrizi. Automatic Service Composition and Synthesis: the Roman Model. *IEEE Data Engineering Bulletin*, 31(3):18-22. IEEE Computer Society. 2008. Impact Factor 2014: n/a.
- [IJ1] Toni Mancini, Davide Micaletto, Fabio Patrizi, Marco Cadoli. Evaluating ASP and commercial solvers on the CSPLib. *Constraints*, 13(4):407-436. Springer Netherlands. 2008. Impact Factor 2018: 1.054.

International Conferences

(For each entry, the corresponding ranking according to the GII-GRIN conference rating is reported – see <http://www.consortio-cini.it:8080/consultazioneclassificazioni/>.)

- [IC38] Giuseppe De Giacomo, Marco Favorito, Luca Iocchi, Fabio Patrizi. Foundations for Restraining Bolts: Reinforcement Learning with LTLf/LDLf restraining specifications. In *Proceedings of the 29th International Conference on Automated Planning and Scheduling (ICAPS-19)*. To appear. GII-GRIN conference rating: A.
- [IC37] Diego Calvanese, Marco Montali, Fabio Patrizi and Andrey Rivkin. Modeling and In-Database Management of Relational, Data-Aware Processes. In *Proceedings of the 31st International Conference on Advanced Information Systems Engineering (CAISE-19)*. To appear. 2019. GII-GRIN conference rating: A.

- [IC36] Ronen I. Brafman, Giuseppe De Giacomo, Fabio Patrizi. LTLf/LDLf Non-Markovian Rewards. In *Proceedings of the 32nd AAAI Conference on Artificial Intelligence (AAAI-18)*. pp. 1771-1778. AAAI Press. 2018. GII-GRIN conference rating: A++.
- [IC35] Giuseppe De Giacomo, Fabrizio Maria Maggi, Andrea Marrella, Fabio Patrizi. On the Disruptive Effectiveness of Automated Planning for LTLf-based Trace Alignment. In *Proceedings of the 31st AAAI Conference on Artificial Intelligence (AAAI-17)*. pp. 3555-3561. AAAI Press. 2017. GII-GRIN conference rating: A++.
- [IC34] Diego Calvanese, Marco Montali, Fabio Patrizi, Michele Stawowy. Plan Synthesis for Knowledge and Action Bases. In *Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI'16)*. pp. 1022-1029. AAAI Press. 2016. GII-GRIN conference rating: A++.
- [IC33] Giuseppe De Giacomo, Yves Lespérance, Fabio Patrizi, Sebastian Sardina. Verifying ConGolog Programs on Bounded Situation Calculus Theories. In *Proceeding of the 30th AAAI Conference on Artificial Intelligence (AAAI'16)*, pp. 950-956. AAAI Press. 2016. GII-GRIN conference rating: A++.
- [IC32] Diego Calvanese, Giuseppe De Giacomo, Marco Montali, Fabio Patrizi. On First-Order μ -Calculus over Situation Calculus Action Theories. In *Proceeding of the 15th International Conference on the Principles of Knowledge Representation and Reasoning (KR'16)*, pp. 411-420. AAAI Press. 2016. GII-GRIN conference rating: A+.
- [IC31] Diego Calvanese, Giuseppe De Giacomo, Marco Montali, Fabio Patrizi. Description Logic Based Dynamic Systems: Modeling, Verification, and Synthesis. In *Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI'15)*, pp. 4247-4253. 2015. GII-GRIN conference rating: A++.
- [IC30] Giuseppe De Giacomo, Valsamis Ntouskos, Fabio Patrizi, Stavros Vassos, Davide Aversa. Service Composition in Virtual Environments Based on Videogame Engines In *Proceedings of the 8th IEEE International Conference on Service Oriented Computing & Applications (SOCA'15)*, pp. 101-107. 2015. GII-GRIN conference rating: W.
- [IC29] Fabio Patrizi, Stavros Vassos. Action Theories over Generalized Databases with Equality Constraints. In *Proceedings of the 14th European Conference on Logics in Artificial Intelligence (JELIA'14)*, pp. 472-485. Springer. 2014. GII-GRIN conference rating: B.
- [IC28] Giuseppe De Giacomo, Yves Lespérance, Fabio Patrizi, Stavros Vassos. LTL Verification of Online Executions with Sensing in Bounded Situation Calculus. In *Proceedings of 21st European Conference on Artificial Intelligence (ECAI'14)*, pp. 369-374. IOS Press. 2014. GII-GRIN conference rating: A.
- [IC27] Giuseppe De Giacomo, Fabio Patrizi, Sebastian Sardina. Building Virtual Behaviors from Partially Controllable Available Behaviors in Nondeterministic Environments. In *Proceedings of the 24th International Conference on Automated Planning and Scheduling (ICAPS'14)*, pp. 523,526. AAAI Press. 2014. GII-GRIN conference rating: A.
- [IC26] Fabio Patrizi, Stavros Vassos. Action Theories over Generalized Databases with Equality Constraints (Extended Abstract). In *Proceeding of the 14th International Conference on the Principles of Knowledge Representation and Reasoning (KR'14)*, (Electronic Proceedings). AAAI Press. 2014. GII-GRIN conference rating: A+.

- [IC25] Giuseppe De Giacomo, Yves Lespérance, Fabio Patrizi, Stavros Vassos. Progression and Verification of Situation Calculus Agents with Bounded Beliefs. In *Proceedings of the 13th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2014)*, pp. 141–148. IFAA- MAS/ACM. 2014. GII-GRIN conference rating: A++.
- [IC24] Fabio Patrizi, Nir Lipovetzky, Hector Geffner. Fair LTL Synthesis for Non-Deterministic Systems using Strong Cyclic Planners. In *Proceedings of the 23rd International Joint Conference on Artificial Intelligence (IJCAI'13)*, pp. 2343-2349. AAAI Press. 2013. GII-GRIN conference rating: A++.

- [IC23] Giuseppe De Giacomo, Yves Lespérance, Fabio Patrizi. Bounded Epistemic Situation Calculus Theories. In *Proceedings of the 23rd International Joint Conference on Artificial Intelligence (IJCAI'13)*, pp. 846-853. AAAI Press. 2013. GII-GRIN conference rating: A++.
- [IC22] Stavros Vassos, Fabio Patrizi. A Classification of First-Order Progressable Action Theories in Situation Calculus. In *Proceedings of the 23rd International Joint Conference on Artificial Intelligence (IJCAI'13)*, pp. 1132-1138. AAAI Press. 2013. GII-GRIN conference rating: A++.
- [IC21] Diego Calvanese, Giuseppe De Giacomo, Marco Montali, Fabio Patrizi. Verification and Synthesis in Description Logic Based Dynamic Systems (Best Paper Award). In *Proceedings of the 7th International Conference on Web Reasoning and Rule Systems (RR'13)*, pp. 50-64. Springer. 2013. (Best Paper Award). GII-GRIN conference rating: W.
- [IC20] Francesco Belardinelli, Alessio Lomuscio, Fabio Patrizi. Verification of GSM-based Artifact-Centric Systems Through Finite Abstraction. In *Proceedings of the 10th International Conference on Service-Oriented Computing (ICSOC'12)*, pp. 17-31. Springer. 2012. GII-GRIN conference rating: A-.
- [IC19] Matteo Leonetti, Luca Iocchi, Fabio Patrizi. Automatic Generation and Learning of Finite-State Controllers. In *Proceedings of the 15th International Conference on Artificial Intelligence: Methodology, Systems, and Applications (AIMSA'12)* pp. 135-144. Springer. 2012. GII-GRIN conference rating: W.
- [IC18] Francesco Belardinelli, Alessio Lomuscio, Fabio Patrizi. An Abstraction Technique for the Verification of Artifact-Centric Systems. In *Proceeding of the 13th International Conference on the Principles of Knowledge Representation and Reasoning (KR'12)*, pp. 319-328. AAAI Press. 2012. GII-GRIN conference rating: A+.
- [IC17] Giuseppe De Giacomo, Yves Lespérance, Fabio Patrizi. Bounded Situation Calculus Action Theories and Decidable Verification. In *Proceeding of the 13th International Conference on the Principles of Knowledge Representation and Reasoning (KR'12)*, pp. 467-477. AAAI Press. 2012. GII-GRIN conference rating: A+.
- [IC16] Francesco Belardinelli, Alessio Lomuscio, Fabio Patrizi. Verification of Deployed Artifact Systems via Data Abstraction. In *Proceedings of the 9th International Conference on Service-Oriented Computing (ICSOC'11)*, pp. 142-156. Springer. 2011. GII-GRIN conference rating: A-.
- [IC15] Francesco Belardinelli, Alessio Lomuscio, Fabio Patrizi. A Computationally-Grounded Semantics for Artifact-Centric Systems and Abstraction Results. In *Proceedings of the 22nd International Joint Conference on Artificial Intelligence (IJCAI'11)*, pp. 738-743. AAAI Press. 2011. GII-GRIN conference rating: A++.
- [IC14] Fabio Patrizi, Nir Lipovetzky, Giuseppe De Giacomo, Hector Geffner. Computing Infinite Plans for LTL Goals Using a Classical Planner. In *Proceedings of the 22nd International Joint Conference on Artificial Intelligence (IJCAI'11)*, pp. 2003-2008. AAAI Press. 2011. GII-GRIN conference rating: A++.
- [IC13] Alfonso E. Gerevini, Fabio Patrizi, Alessandro Saetti. An Effective Approach to Realizing Planning Programs. In *Proceedings of the 21st International Conference on Automated*

Planning and Scheduling (ICAPS'11), pp. 323-326. AAAI Press. 2011. GII-GRIN conference rating: A.

[IC12] Giuseppe De Giacomo, Paolo Felli, Fabio Patrizi, Sebastian Sardina. Two-Player Game Structures for Generalized Planning and Agent Composition. In *Proceedings of the 24th AAAI Conference on Artificial Intelligence (AAAI'10)*, pp. 297-302. AAAI Press. 2010. GII-GRIN conference rating: A++.

[IC11] Giuseppe De Giacomo, Fabio Patrizi, Sebastian Sardina. Generalized Planning with Loops under Strong Fairness Constraints. In *Proceedings of the 12th International Conference on the Principles of Knowledge Representation and Reasoning (KR'10)*, pp. 351-361. AAAI Press. 2010. GII-GRIN conference rating: A+.

- [IC10] Giuseppe De Giacomo, Fabio Patrizi, Sebastian Sardina. Agent Programming via Planning Programs. In *Proceedings of the 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS'10)*, pp. 491–498. IFAAMAS, 2010. GII-GRIN conference rating: A++.
- [IC9] Riccardo De Masellis, Claudio Di Ciccio, Massimo Mecella, Fabio Patrizi. Smart Home Planning Programs. In *Proceedings of the 7th International Conference on Service Systems and Service Management (ICSSSM'10)*, pp. 377–382. IEEE Society, 2010. GII-GRIN conference rating: W.
- [IC8] Giuseppe De Giacomo, Riccardo De Masellis, Fabio Patrizi. Composition of Partially Observable Services Exporting their Behaviour. In *Proceedings of the 19th International Conference on Automated Planning and Scheduling (ICAPS'09)*, pp. 90–97. AAAI Press, 2009. GII-GRIN conference rating: A.
- [IC7] Alin Deutsch, Rick Hull, Fabio Patrizi, Victor Vianu. Automatic Verification of Data-Centric Business Processes. In *Proceedings of the 12th International Conference on Database Theory (ICDT'09)*, pp. 252–267. ACM, 2009. GII-GRIN conference rating: A.
- [IC6] Sebastian Sardina, Fabio Patrizi, Giuseppe De Giacomo. Behavior Composition in the Presence of Failure. In *Proceedings of the 11th International Conference on Principles of Knowledge Representation and Reasoning (KR'08)*, pp. 640–650. AAAI Press, 2008. GII-GRIN conference rating: A+.
- [IC5] Giuseppe De Giacomo, Fabio Patrizi, Sebastian Sardina. Automatic Synthesis of a Global Behavior from Multiple Distributed Behaviors. In *Proceedings of the 22nd Conference on Artificial Intelligence (AAAI'07)*, pp. 1063–1069. AAAI Press, 2007. GII-GRIN conference rating: A++.
- [IC4] Giuseppe De Giacomo, Massimiliano de Leoni, Massimo Mecella, Fabio Patrizi. Automatic Workflows Composition of Mobile Services. In *Proceedings of the 2007 IEEE Conference on Web Services (ICWS'07)*, pp. 823–830. IEEE Society, 2007. GII-GRIN conference rating: A-.
- [IC3] Marco Cadoli, Toni Mancini, Fabio Patrizi. SAT as an Effective Solving Technology for Constraint Problems. In *Proceedings of the 16th International Symposium on Methodologies for Intelligent Systems (ISMIS'06)*, pp. 540–549. Springer, 2006. GII-GRIN conference rating: B-.
- [IC2] Marco Cadoli, Toni Mancini, Fabio Patrizi. Evaluating ASP and commercial solvers on the CSPLib. In *Proceedings of the 17th European Conference on Artificial Intelligence (ECAI'06)*, pp. 68–72. IOS Press, 2006. GII-GRIN conference rating: A.
- [IC1] Marco Cadoli, Fabio Patrizi. On the Separability of subproblems in Benders Decompositions. In *Proceedings of the 3rd International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems (CP-AI-OR'06)*, pp. 74–88. Springer, 2006. GII-GRIN conference rating: B-.

International Workshops

- [IW10] Diego Calvanese, Marco Montali, Fabio Patrizi, Michele Stawowy. Synthesizing and Executing Plans in Knowledge and Action Bases. In *Proceedings of the 29th International*

Workshop on Description Logics (DL'16). CEUR Workshop Proceedings. 2016.

- [IW9] Diego Calvanese, Marco Montali, Fabio Patrizi, Andrey Rivkin. Implementing Data-Centric Dynamic Systems over a Relational DBMS. In *Proceedings of the 9th Alberto Mendelzon International Workshop on Foundations of Data Management*. CEUR Workshop Proceedings. 2015.
- [IW8] Diego Calvanese, Giuseppe De Giacomo, Marco Montali, Fabio Patrizi. Dynamic Systems Based on Description Logics: Formalization, Verification, and Synthesis. In *Proceedings of the 26th International Workshop on Description Logics (DL'13)*, pp. 573-586. CEUR Workshop Proceedings. 2013.
- [IW7] Giuseppe De Giacomo, Fabio Patrizi. Automated composition of nondeterministic stateful services. In *Proceedings of the 6th International Workshop on Web Services and Formal Methods (WS-FM'09)*. 2009.

- [IW6] Giuseppe De Giacomo, Fabio Patrizi, Sebastian Sardina. Solving high-level planning programs (Extended Abstract). In *Proceedings of the ICAPS 2009 Workshop on Generalized Planning: Macros, Loops, Domain Control (GenPlan'09)*. 2009.
- [IW5] Fabio Patrizi. An introduction to simulation-based techniques for automated service composition. In *Proceedings of the 4th European Young Researchers Workshop on Service Oriented Computing (YRSOC'09)*. 2009.
- [IW4] Fabio Patrizi, Giuseppe De Giacomo. Composition of services that share an infinite-state black-board (Extended Abstract). In *Proceedings of the 7th International Workshop on Information Integration on the Web (IIWeb09)*. 2009.
- [IW3] Silvia Bonomi, Valerio Colaïanni, Fabio Patrizi, Damiano Pozzi, Ruggero Russo, Massimo Mecella. SWSCE - An automatic semantic web service composition engine. In *Proceedings of the 1st International Workshop on Emergent Semantics and Cooperation in Open Systems (ESTEEM'08)*. 2008.
- [IW2] Marco Cadoli, Toni Mancini, Davide Micaletto, Fabio Patrizi. Evaluating ASP and commercial solvers on the CSPLib (Preliminary work). In *Proceedings of the 20th Workshop on Logic Programming (WLP'06)*. 2006.
- [IW1] Angelo Biagetti, Alessandro Farinelli, Luca Iocchi, Daniele Nardi, Fabio Patrizi. Experiments with the RoboCup rescue simulator in a post earthquake emergency italian scenario. In *Proceedings of SSRR 2004, IEEE International Workshop on Safety, Security, and Rescue Robotics*. 2004.

Edited Works

- [EW2] Marlon Dumas, Richard Hull, Fabio Patrizi Guest editorial: Special Issue on Data and Artifact-centric Business Processes. *Computing*, 98(4): 343-344. Springer. 2016.
- [EW1] Alessio Lomuscio, Surya Nepal, Fabio Patrizi, Boualem Benatallah, Ivona Brandic Service-Oriented Computing - ICSOC 2013 Workshops - CCSA, CSB, PASCEB, SWESE, WESOA, and PhD Symposium. Revised Selected Papers. Springer. 2014.

Contributions to Edited Works

- [B4] Giuseppe De Giacomo, Massimo Mecella, Fabio Patrizi. Automated Service Composition Based on Behaviors: The Roman Model. In *Web Services Foundations 2014*. Ed.: Athman Bouguettaya, Quan Z. Sheng, Florian Daniel, pp 189-214. Springer. 2014.
- [B3] Alessandro Russo, Massimo Mecella, Marco Montali, Fabio Patrizi Towards a Reference Implementation for Data Centric Dynamic Systems. Business Process Management In *Business Process Management Workshops - BPM 2013 International Workshops, Revised Papers*. Ed.: Niels Lohmann, Minseok Song, Petia Wohed, pp 141-154. Springer. 2014.
- [B2] Giuseppe De Giacomo, Fabio Patrizi. Automated Composition of Nondeterministic Stateful Services. In *Web Services and Formal Methods, 6th International Workshop, WS-FM 2009 (LNCS 6194)*. Ed.: Jianwen Su, Cosimo Laneve, pp. 147-160. Springer. 2010.

- [B1] Alessandro Farinelli, Luca Iocchi, Daniele Nardi, Fabio Patrizi. Task Assignment with Dynamic Token Generation. In *Monitoring, Security, and Rescue Techniques in Multiagent Systems*. Ed.: Barbara Dunin-Keplicz, Andrzej Jankowski, Andrzej Skowron, Marcin Szczuka, pp. 467-478. Springer. 2005.

National Journals

- [NJ1] Alessandro Farinelli, Luca Iocchi, Daniele Nardi, Fabio Patrizi. A multi agent system approach for emergency intervention: experimental analysis and evaluation. *Intelligenza Artificiale*, 2(1): 47-53. 2005.

National Conferences

- [NC2] Diego Calvanese, Marco Montali, Fabio Patrizi, Andrey Rivkin. Implementing Data-Centric Dynamic Systems over a Relational DBMS. *Proceedings of the 23rd Italian Symposium on Advanced Database Systems (SEBD'15)*. 2015.
- [NC1] Marco Cadoli, Toni Mancini, Fabio Patrizi. SAT as an effective solving technology for constraint problems. *Atti del CILC 2005, Convegno Italiano di Logica Computazionale*. 2005.

National Workshops

- [NW2] Diego Calvanese, Giuseppe De Giacomo, Marco Montali, Fabio Patrizi. Verification and Synthesis in Description Logic Based Dynamic Systems (Abridged Version). In *Proceedings of the Workshop AI Meets Business Processes 2013*. pp. 71-80. CEUR Workshop Proceedings. 2013
- [NW1] Marco Cadoli, Toni Mancini, Fabio Patrizi. SAT as an effective solving technology for constraint problems. *Atti della Giornata di Lavoro: Analisi sperimentale e benchmark di algoritmi per l'Intelligenza Artificiale*. 2005.

Theses

- [MT] Fabio Patrizi. *Pianificazione condizionale probabilistica per robot mobili in ambienti dinamici*. M. Sc. Thesis in Computer Engineering, Sapienza University of Rome, Italy. December 2003.
- [PT] Fabio Patrizi. *Simulation-based techniques for automated service composition*. Ph. D. Thesis, Sapienza University of Rome, Italy. September 2009.