LUCA IOCCHI
Curriculum Vitae

Roma, 24/12/2018

Highlights

Current position: Associate Professor at Sapienza University of Rome since 2011.

Teaching (since 1998)
   41 courses (246 total CFU)
   15.2 CFU per year average on last 5 years (7.8 undergraduate, 7.4 graduate)
   Most of the courses with more than 100 students
   8 PhD students supervised (since 2012)
   6 Master theses with a scientific publication (since 2014)
   7 student competitions (main organizer or co-chair)

Research and scientific services
   Research interests: hot topics at the intersection of **artificial intelligence and robotics**
   with applications in **several realistic scenarios**.
   20 scientific events (main organizer or co-chair)
   9 scientific competitions (main organizer or co-chair)

Awards
   - **3 Best paper awards**
   - 2 Demo/Innovation awards
   - 1 International scientific competition award

Funding
   1.65 M€ total grants received for projects as PI or co-PI since 2001
      - **6** International projects as PI or co-PI of Sapienza unit
      - **3** National projects with multiple partners
      - **8** Company/industrial projects

Publications
   160 publications (DBLP)**, h-index 36** (Google scholar)
   Most relevant works (Google scholar citations):
      - Multi-robot system classification (survey paper)   373 cit.
      - Petri Net Plans (theory and implementation of high-level representation of plans)   211 cit.
      - RoboCup@Home (design and analysis of performance of scientific competition)   145 cit.
   53 high-quality papers (Q1/Q2 Journals, A+/A/B/B- rated conferences) since 2008
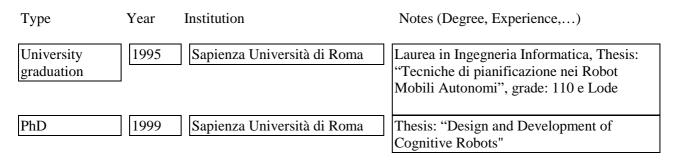   **4.82 per year** average number of high-quality papers
   14 Q1 journals in the 16 selected publications

   All bibliographic parameters significantly above any threshold used for Full Professors.

Part I – General Information

Full Name	LUCA IOCCHI
Date of Birth	23/3/1970
Place of Birth	ROMA
Citizenship	ITALIAN
E-mail	iocchi@diag.uniroma1.it
Web site	www.diag.uniroma1.it/~iocchi
Spoken Languages	Italian, English

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,…)
University graduation	1995	Sapienza Università di Roma	Laurea in Ingegneria Informatica, Thesis: "Tecniche di pianificazione nei Robot Mobili Autonomi", grade: 110 e Lode
PhD	1999	Sapienza Università di Roma	Thesis: "Design and Development of Cognitive Robots"

Part III – Appointments

Highlights

Current position:
  - **Professore Associato** (Associate Professor) at Sapienza University of Rome since 2011.

Previous relevant positions:
  - **Ricercatore** (Assistant Professor) at Sapienza University of Rome, 2002-2011
  - **Visiting Researcher** (Computer Scientist) at SRI International (USA), 1999-2000 and 2004-05
  - **Visiting Professor** at University of Caen (France), 2015

Academic Appointments

Start	End	Institution	Position
Nov 1998	Oct 1999	Fondazione Ugo Bordoni, Roma	Borsa di studio (scholarship)
Nov 1999	Apr 2000	Stanford Research Institute, CA, USA	Research Engineer
2000	Feb 2002	Sapienza Università di Roma	Post-Doc
Mar 2002	Set 2011	Sapienza Università di Roma	Ricercatore (Assistant Professor) confirmed since March 2005)
Apr 2004	Gen 2005	Stanford Research Institute, CA, USA	Visiting researcher Computer Scientist (in congedo Sapienza per motivi di studio)
Ott 2011	current	Sapienza Università di Roma	Associate Professor (confirmed since October 2014)
1 Feb 2015	28 Feb 2015	University of Caen, France	Visiting Professor

Part IV – Teaching experience

Highlights
Teaching activities within the Laurea degree in Ingegneria Informatica (Computer Science in Engineering) at Sapienza University of Rome since 1998 (**21 academic years,** including 2018/19)
- **21 undergraduate courses** (158 total CFU)
- **20 graduate courses** (88 total CFU)

Most of the courses with more than 100 students
Average of last 5 years **15.2 CFU per year** (7.8 undergraduate, 7.4 graduate)
Statistics from A.Y. 2017/2018:
- 18 CFU (9 undergraduate, 9 graduate)
- 181 hours of face-to-face lectures
- 284 exams registered (as reported by Infostud system).

3 Visiting Professors invited in the last 3 academic years
8 PhD students supervised since 2012.
6 Master theses resulted in a scientific publication in the last 5 years.
7 student competitions organized at national and European level.
210 high school students involved in projects within the Alternanza Scuola-Lavoro program in the last 4 years to promote computer science, artificial intelligence and robotics disciplines.

IV.1 University courses

Tutor

Year	Institution	Lecture/Course
1998-99	Sapienza Università di Roma	Linguaggi e Traduttori / Diploma di Ingegneria Informatica
2000-01	Sapienza Università di Roma	Linguaggi e Traduttori / Diploma di Ingegneria Informatica

Professore a contratto

Year	Institution	Lecture/Course
1998-99	Sapienza Università di Roma	Fondamenti di Informatica I (II modulo) / Diploma di Ingegneria Informatica
2000-01	Sapienza Università di Roma	Fondamenti di Informatica (10 CFU) / Corso di Laurea in Ingegneria Informatica
2001-02	Sapienza Università di Roma	Fondamenti di Informatica (10 CFU) / Corso di Laurea in Ingegneria Informatica

Incarichi didattici nei Corsi di Laurea in Ingegneria Informatica (vari ordinamenti, inclusa sede di Latina), Ingegneria Aerospaziale)

Year	Institution	Lecture/Course
2002-03	Sapienza Università di Roma	Fondamenti di Informatica (10 CFU)
2003-04	Sapienza Università di Roma	Tecniche di Programmazione (5 CFU) Laboratorio di Programmazione (5 CFU)
2004-05	Sapienza Università di Roma	Tecniche di Programmazione (5 CFU)
2005-06	Sapienza Università di Roma	Apprendimento Automatico (5 CFU) Tecniche di Programmazione (5 CFU)

2006-07	Sapienza Università di Roma	Apprendimento Automatico (5 CFU) Tecniche di Programmazione (5 CFU)
2007-08	Sapienza Università di Roma	Apprendimento Automatico (5 CFU) Tecniche di Programmazione (5 CFU)
2008-09	Sapienza Università di Roma	Fondamenti di Informatica 1 (12 CFU) Apprendimento Automatico (6 CFU)
2009-10	Sapienza Università di Roma	Programmazione e Metodi Numerici (9 CFU) Machine Learning (6 CFU)
2010-11	Sapienza Università di Roma	Programmazione e Metodi Numerici (9 CFU) Machine Learning (6 CFU)
2011-12	Sapienza Università di Roma	Progettazione del Software (6 CFU) Machine Learning (6 CFU)
2012-13	Sapienza Università di Roma	Progettazione del Software (9 CFU) Machine Learning (6 CFU)
2013-14	Sapienza Università di Roma	Progettazione del Software (9 CFU) Machine Learning (6 CFU)
2014-15	Sapienza Università di Roma	Progettazione del Software (9 CFU) Learning in Autonomous Systems (3 CFU) Artificial Intelligence and Machine Learning (3 CFU)
2015-16	Sapienza Università di Roma	Tecniche di Programmazione (6 CFU) Learning in Autonomous Systems (3 CFU) Human-Robot Interaction (3 CFU)
2016-17	Sapienza Università di Roma	Programmazione Orientata agli Oggetti (6 CFU) Probabilistic Reasoning and Learning (3 CFU within Artificial Intelligence) Human-Robot Interaction (3 CFU within Elective in Artificial Intelligence)
2017-18	Sapienza Università di Roma	Tecniche di Programmazione (9 CFU) Probabilistic Reasoning and Learning (3 CFU within Artificial Intelligence) Machine Learning (3 CFU) Human-Robot Interaction (3 CFU within Elective in Artificial Intelligence)
2018-19	Sapienza Università di Roma	Tecniche di Programmazione (9 CFU) Machine Learning (6 CFU) Human-Robot Interaction (4 CFU within Elective in Artificial Intelligence)

Teaching books

1. D. Calvanese, G. De Giacomo, C. Demetrescu, L. Iocchi, D. Nardi. "Lezioni di Tecniche di Programmazione" Esculapio, 2004.
2. D. Calvanese, G. De Giacomo, C. Demetrescu, L. Iocchi, D. Nardi. "Lezioni di Fondamenti di Informatica" Esculapio, 2003.

Visiting Professors

Visiting professors invited for 3 months to teach Master courses (funded though Sapienza calls for visiting professors)

2016/17 – Prof. Marc Hanheide, University of Lincoln, UK
2017/18 – Prof. Mary Ellen Foster, University of Glasgow, UK
2018/19 – Prof. Ron Petrick, Heriot-Watt University, UK (visit planned for Spring 2019)

IV.2 PhD contributions

Member of Board of Professors of PhD in Engineering in Computer Science (Dottorato di Ingegneria Informatica), Sapienza University of Rome, since 2002.

Former and current PhD students

1. Luca Marchetti   (21 cycle)
2. Domenico Bloisi   (22 cycle)
3. Matteo Leonetti   (23 cycle)
4. Andrea Pennisi   (27 cycle)
5. Nguyen Duc Thien   (27 cycle)
6. Fabio Previtali   (28 cycle)
7. Paola Ferrarelli   (32 cycle)
8. Lorenzo Brigato   (34 cycle)

PhD Evaluation Committees

1. Politecnico di Milano, 2017
2. University of Bordeaux, France, 2017
3. University of Caen, France, 2017

IV.3 Master thesis supervision

Supervision of an average of 5 Master theses per year on hot topics in Artificial Intelligence and Robotics.

7 Master thesis supervised in A.Y. 2017/2018.

Recent Master theses with scientific publications (graduate student in bold face)

1. **F. Del Duchetto**, A. Kucukyilmaz, L. Iocchi, M. Hanheide. Do Not Make the Same Mistakes Again and Again: Learning Local Recovery Policies for Navigation From Human Demonstrations". IEEE Robotics and Automation Letters 3(4), pp. 4084 - 4091, 2018.
2. **Serena Leggeri**, Andrea Esposito, Luca Iocchi: Task-oriented Conversational Agent Self-learning Based on Sentiment Analysis. NL4AI@AI*IA Workshop 2018: 4-15
3. **Valerio Sanelli**, Michael Cashmore, Daniele Magazzeni, Luca Iocchi: Short-Term Human-Robot Interaction through Conditional Planning and Execution. ICAPS 2017: 540-548
4. **Eugenio Sebastiani**, Raphaël Lallement, Rachid Alami, Luca Iocchi: Dealing with On-line Human-Robot Negotiations in Hierarchical Agent-Based Task Planner. ICAPS 2017: 549-557
5. **Fabio Maria Carlucci**, Lorenzo Nardi, Luca Iocchi, Daniele Nardi: Explicit representation of social norms for social robots. IROS 2015: 4191-4196
6. **Lorenzo Nardi**, Luca Iocchi: Representation and Execution of Social Plans through Human-Robot Collaboration. ICSR 2014: 266-275

IV.4 Other activities

Promotion of computer science, artificial intelligence, and robotics techniques within high schools.

Year	Institution	Lecture/Course
2015-16	Sapienza Università di Roma	Alternanza Scuola-Lavoro Building and Programming mobile robots (Costruzione e programmazione di robot mobili) 20 hours, 23 students, 4 schools
2016-17	Sapienza Università di Roma	Alternanza Scuola-Lavoro Building and Programming mobile robots (Costruzione e programmazione di robot mobili) 20 hours, 30 students, 6 schools
2017-18	Sapienza Università di Roma	Alternanza Scuola-Lavoro - Nonnibot (70 hours, 41 students, 8 schools) - Lab2GO Robotica (60 hours, 72 students, 6 schools)
2018-19	Sapienza Università di Roma	Alternanza Scuola-Lavoro - Lab2Go Robotica (60 hours, 44 students, 8 schools)

Organization of student competitions

1. RoboCupJunior Italian Open, Montesilvano (PE), Italy, May 26-28, 2017, co-chair
2. RoboCup@Home Education, 2017, Main organizer
3. NonniBot, 2018, Main organizer
4. European RoboCupJunior Championship 2018, co-chair
5. European RoboCup@Home Education, 2018, Main organizer
6. School Robot Challenge, World Robot Summit 2018, co-chair
7. European RoboCup@Home Education, 2019, Main organizer

Relevant Personnel Selection Committees

1. RTD-B (assistant professor) Politecnico di Milano, 2018

Part V - Society memberships, Awards and Honors

Highlights
Main contribution to international scientific organizations
- since 2014, RoboCup Federation, member of Board of Trustees
- 2008-2013, RoboCup@Home, Executive Committee
Awards
- 3 Best paper awards
- 2 demo/innovation awards
- 1 international scientific competition award

A major contribution given to the scientific community has been in the coordination of activities related to the definition, organization and evaluation of scientific competitions, in particular within the RoboCup Federation (RCF).

Since 2008, Luca Iocchi actively worked at the establishment of RoboCup@Home, which is now the most important world-wide scientific robot competition for domestic and service robots. Roboup@Home has currently about 50 teams active worldwide and is attracting sponsorship from industrial partners interested in evaluating service robots in home and public environments.

Within RCF, Luca Iocchi has taken several important roles, including: responsible of the IT infrastructure (web sites, servers, etc.), responsible of the selection of projects funded by RCF, responsible of the selection of the standard platform for RoboCup@Home (competition among robot provider companies), contact person for RCF sponsorship.

Memberships

Year	Title
2008-2013	Member of Executive Committee of RoboCup@Home
2012-2016	Coordinator of AI*IA Working Group on Robotics
Since 2010	Coordinator of Italian RoboCup Regional Committee
Since 2013	Member of Board of Trustees of RoboCup Federation

Also member of scientific organizations, such as IEEE, AAAI, AI*IA.

Awards and Honors

Year	Title
1999	Top Paper Award WebNet'99
2006	Best Paper Award RoboCup 2006
2008	Best Robotics Demo Award AAMAS 2008
2014	Best Paper Award RoboCup 2014
2017	RoboCup@Home SSPL 2017 (robot competition) – 3rd Place (Scientific leader)
2018	Canada-Italy Innovation Award

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

> **Highlights**
>
> Research in Artificial Intelligence and Robotics and its application to solve many practical problems attracted several opportunities for funding. Institutional research projects funded by national and international public agencies and industrial research projects funded by private companies interested in technology transfer provided financial support to carry out the research.
>
> **Total grants** received for projects as PI or co-PI since 2001 is **above 1.6 M€**

International projects

Grants as main PI - _Principal Investigator of Sapienza unit (involved as single main investigator in all the phases of preparing the proposals and running the project)._

Year	Title
2009-11	Multi-robot environmental monitoring
2011-13	Smart Monitoring of Complex Public Scenes
2014-17	COACHES

Grants as co-PI - _co-Principal Investigator of Sapienza unit (i.e., collaborating as main investigator in all the phases of preparing the proposals and running the project)._

Year	Title
2016-18	Robotics Coordination Action for Europe Two (RockEU2) [1]
2018-21	European Robotics League plus Smart Cities Robot Competitions (SciRoc) [1]
2019-21	A European AI On Demand Platform and Ecosystem (AI4EU) [1]

[1] Co-PI Daniele Nardi

National projects with multiple partners - _Principal Investigator of Sapienza/DIAG unit_

Year	Title
2009-12	Context-Aware Mobility Platform
2011-12	Advanced System for 3D Real-Time Virtual Advertising
2013-14	Jump Traffic Jam

University projects

Year	Title
2001-02	Design and development of Soccer Robots
2002-03	Observation and tracking of mobile targets through stereo-vision
2008-10	Intelligent Systems for exploration and surveillance of complex and dynamic environments
2012-13	Laser technology for street analysis

Part VII – Research Activities

Highlights

Research at the intersection of **artificial intelligence and robotics** where innovative scientific techniques have been experimented in several application domains and in realistic scenarios and divulgated through scientific publications in high-quality venue and open-source implementations used by several research groups worldwide.

Scientific areas
Cognitive Robotics
Knowledge Representation and Reasoning
Multi-robot Cooperation
Robot Perception
Robot Learning
Human-Robot Interaction
Robot security

Application domains
Robot soccer
Social/service robots in public spaces
Rescue robots
Educational robots
Intelligent surveillance systems

Contributions in **High-level plan formalisms**, **Plan robustification**, **Robot plan learning**, **Intelligent video analysis**, and **Robot benchmarking through scientific competitions** boosted worldwide research to achieve the ambitious goal of deploying intelligent robots in real application scenarios.

Organization of scientific events
   - 3 guest editor of international journals
   - 14 chair/co-chair of international workshops/conferences
   - 3 tutorials at international conferences
   - 9 main or co-organizer of scientific competitions

Evaluation of international research
   - 4 Expert in evaluation of EU proposals
   - 1 Reviewer for EU research project
   - 5 Evaluation of research proposals by international agencies

VII.1 Summary of research interests

Finding practical solutions of real problems with a scientific approach guided most of the research work, thus resulting in proper combinations of methodological/theoretical analysis and implementation/experimental evaluation. All the proposed innovative techniques proposed in the fields of knowledge representation, multi-robot coordination, robot learning, human-robot interaction, etc. have been fully and extensively tested in realistic scenarios, often involving physical robots operating in real environments populated by humans. This approach has been the source of valuable experience on practical integration of artificial intelligence techniques in robotics; such experience has been divulgated in many different kinds of scientific events, including scientific robot competitions and educational robotics.

Recent research achievements

An important research issue when adopting artificial intelligent techniques in robotic applications is the difficulty in applying model-based approaches to real scenarios, when modeling (i.e., approximating) the reality make solutions often ineffective. The research carried out in the last years included the definition of novel **High-level plan formalisms** for representation of robot and multi-robot plans and for reasoning under uncertainty and learning in partially known environments. Petri Net Plans (PNP) [1] provides for a basic theoretical and practical framework to build complex robotic applications. It has been successfully used in many different application domains, ranging from multi-robot soccer teams to social robots interacting with

people. PNP is also released as an open-source software integrated with ROS (Robot Operating System used in most robotic applications) and ROSPlan (a planning interface for ROS) and it is used by several research groups worldwide and within some European Projects external to Sapienza.

Robot plans often fail because of non-modeled features (e.g., action preconditions or effects) in the reasoning phase. Recently, the problem of **Plan robustification** has been proposed, consisting in improving robustness of plans by integrating new features (information or knowledge) about the environment that are not modeled and thus not available at planning/reasoning time. Plan robustification can be applied both from rules provided by expert users or with learning based on experience. International collaborations are currently active to investigate this concept more in details.

Integrating planning and learning techniques is also a very effective approach for solving complex robotic tasks, as planning can reduce the search space with respect to model-free learning, while learning can provide for adaptivity at execution time to unpredicted situations. Novel ways for **Robot plan learning** using reinforcement learning techniques have been developed and their effectiveness on robotic applications have been extensively evaluated with experiments in real scenarios. Also in this stream, international collaboration is on-going to further develop these techniques and evaluate them in other application domains.

One of the most critical features for an intelligent system to properly interact with the environment and with people is given by its perception abilities. In this context, we proposed novel techniques for **Intelligent video analysis** that have been successfully deployed in real systems (e.g., ARGOS in Venice), in European projects (e.g., COACHES), also by other research groups worldwide.

Finally, the concept of **Robot benchmarking through scientific competitions** has been developed within the RoboCup@Home competition that has become the largest worldwide competition on service robots. The RoboCup@Home model has been used as a reference for new initiatives in the field, such as the European Robotics League, the World Robot Summit Competitions, and other RoboCup leagues. In addition to having involved more than 50 teams worldwide, several European research projects used the RoboCup@Home benchmarking model to evaluate the results of the developed solutions.

In summary, the integration of artificial intelligence and robotics requires the solution of several problems related to matching the assumptions underlying some AI techniques with the features of the real scenarios. High-level plan formalisms, plan robustification and plan learning are very important research streams to achieve the ambitious goal of deploying intelligent robots in real application scenarios.

[1] Petri Net Plans (PNP) web site: http://pnp.diag.uniroma1.it

VII.2 Organization of scientific initiatives

Guest Editor of international journals

1. Expert Systems 30(2): 99-100 (2013). Special section on Pattern recognition and artificial intelligence for human behaviour analysis.
2. Journal of Intelligent and Robotic Systems 66 (1-2): 183-186 (2012). Special issue on Domestic Service Robots in the Real World.
3. Journal of Intelligent and Robotic Systems 76 (1): 3-4 (2014). Special Issue on Advances in Domestic Service Robots in the Real World.

Chair or co-chair of scientific events

1. International Workshop on Planning and real-time monitoring of rescue operations, Foligno (Italy), 2002.
2. International Workshop on Synthetic Simulation and Robotics to Mitigate Earthquake Disasters, Padova (Italy), 2003.
3. International Workshop on Robot Vision, Barcelona (Spain), 2007.
4. International Workshop on Robotic Perception, Funchal, Madeira (Portugal), 2008.
5. SIMPAR Workshop on Mini and Micro UAV for Security and Surveillance, Venezia (Italy), 2008.
6. International RoboCup Symposium, Suzhou (China), 2008.
7. AI*IA Workshop on Pattern Recognition and Artificial Intelligence for Human Behaviour Analysis (PRAI*HBA), Reggio Emilia (Italy), 2009.
8. SIMPAR Workshop on Domestic Service Robots in the Real World, Darmstadt (Germany), 2010

9. Italian Workshop on Artificial Intelligence and Robotics (AIRO), Pisa, Italy, Dec. 10, 2014
10. IJCAI Workshop on Autonomous Mobile Service Robots (USA), 2016
11. ERF 2017 Workshop on HRI in public spaces with naive users - Edimburgh, UK, - March 22, 2017
12. Artificial Intelligence for Human-Robot Interaction (AI-HRI) AAAI Fall Symposium, Arlington, Virginia USA, November 9-11, 2017
13. International Conference Educational Robotics (EduRobotics), Sapienza, Roma, October 11, 2018
14. Artificial Intelligence for Human-Robot Interaction (AI-HRI) AAAI Fall Symposium, Arlington, Virginia USA, October 18-20, 2018

Tutorials at international conferences

1. AAAI Tutorial on RoboCup - Austin, USA - Jan 26, 2015
2. ICAPS 2017 Tutorial on AI Planning for Robotics and Human-Robot Interaction, Pittsburgh USA - June 19, 2017
3. Spanish Robotics Conference 2018 RoboCup@Home Tutorial – Valladolid, Spain. June 14, 2018

Organization of scientific competitions

1. RoboCup@Home 2008, Executive Committee
2. RoboCup@Home 2009, Executive Committee
3. RoboCup@Home 2010, Executive Committee
4. RoboCup@Home 2011, Executive Committee
5. RoboCup@Home 2012, Executive Committee
6. RoboCup@Home 2013, Executive Committee
7. RoboCup Mediterranean Open, Rome (Italy), 2010, Main organizer
8. RoboCup Mediterranean Open, Rome (Italy), 2011, Main organizer
9. ERL-SR Local Tournament - Peccioli, Italy - January 30-February 3, 2017, Main organizer

Scientific services

Reviewer for most important journals in Artificial Intelligence and Robotics, including AI Journal, JAAMAS, RAS, Autonomous Robot, etc.

Member of Senior Program Committee, Program Committee and Review Committee for most important conferences in Artificial Intelligence and Robotics, including IJCAI, AAAI, AAMAS, ICAPS, KR, IROS, ICRA, RoboCup.

VII.3 Evaluation of research

Evaluation committees (European Community)

1. European Research Council Peer Reviewer 2009
2. FP7-SME-2013 – Independent Expert evaluation of the proposals
3. H2020-PHC-2015– Independent Expert evaluation of the proposals
4. RIA-FET-OPEN-2019 – Independent Expert evaluation of the proposals

Evaluation of EU Research Projects

1. FP7 MOnarCH Project – External reviewer on 2014, 2015, 2016

Evaluation of research project proposals (International agencies)

1. NOW Netherlands Organisation for Scientific Research, 2012
2. ISF Israel Science Foundation, 2013
3. GACR Czech Science Foundation, 2013
4. NSERC National Sciences and Engineering Research Council of Canada, 2014
5. ANR Agence nationale de la recherche, France, 2014, 2015

VII.4 Research software development and technology transfer

Open-Source software (main developer)

1. Petri Net Plans (pnp.diag.uniroma1.it)
2. Multi-Robot Patrolling simulator (github.com/davidbsp/patrolling_sim)

Standard data-sets for benchmarking

1. MarDCT Maritime Detection, Classification, and Tracking (www.dis.uniroma1.it/~labrococo/MAR)

Technology Transfer and development of systems deployed in public environments

Within the development of the ARGOS project, the ARGOS system composed by about 40 survey cells and the related software for intelligent video-surveillance has been developed and deployed in the city of Venice and it is currently working since 2007.

References:
- www.argos.venezia.it (official site)
- www.diag.uniroma1.it/~iocchi/ARGOS (technical description)

Part VIII – Summary of Scientific Achievements

Highlights

Bibliographic metrics of scientific production show that **all the parameters are significantly above any threshold** that has been recently used for evaluation of scientific research.

Abilitzione Scientifica Nazionale ASN 2013 (MR = reference value, PC = actual value on 2013)

	MR	PC
#normalized journal articles	13	19
#normalized citations	13.48	34.177
#H-C index	6	9

Sapienza PhD membership and premialità 2018 (VS = threshold, VD = actual value)

	VS	VD
#journal articles last 10 years	10	25
#citations 15 years	389	1470
#H-index 15 years	11	19

Bibliographic parameters are also above all the thresholds applied to Full Professors.

16 selected publications listed in Part IX-B: **14 in Q1**, 2 in Q2 (SJR 2017 ranking)

Product type	Number	Data Base	Start	End
Papers [international]	160	DBLP	1996	2018
Papers [international]	157	Scopus	1996	2018
Papers [international]	173	Google Scholar [1]	1996	2018

Bibliometric parameter	Value	Source
Total Impact factor [2]	29.70	JCR
Average Impact factor [2]	1.86	JCR
Total Impact factor IF 2017 [3]	34.97	JCR
Average Impact factor IF 2017 [3]	2.19	JCR
Number of documents [1]	173	Google scholar
Total Citations [1]	4333	Google scholar
Average Citations per Product [1]	25.05	Google scholar
Hirsch (H) index	36	Google scholar
Normalized H index [4]	1.56	Google scholar
Number of documents	157	Scopus
Total Citations	1703	Scopus
Average Citations per Product	10.85	Scopus
Hirsch (H) index	22	Scopus
Normalized H index [4]	0.96	Scopus

[1] Number of products in Google Scholar that have received at least 1 non self-citation.
[2] Total/average impact factor computed with IF of the publication year of 16 articles reported in Part IX-B.
[3] Total/average impact factor computed with IF 2017 of 16 articles reported in Part IX-B.
[4] H index divided by the academic seniority, that is 23 years, starting from 1996.

Part IX– Selected Publications

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Highlights

Most relevant publications

<u>Article</u> (or group of articles published in different forms)   <u>Nr. of citations (Scholar)</u>

1. **Multirobot systems: a classification focused on coordination** (2004)   **373**
   Survey of multi-robot systems based on coordination mechanisms that has been an important contribution to development and comparison of many methods and techniques in the field.
2. **PetriNetPlans: high-level representation of plans** (2006, 2008, 2011)   **211**
   Theoretical analysis and practical implementation of a model to represent high-level actions and plans for robot and multi-robot system inspired many technological solutions and practical application in many fields.
3. **RoboCup@Home: scientific competitions and benchmark** (2009, 2015)   **145**
   Design, development, performance evaluation and analysis of the results of the most important scientific competition for home and service robots, including reference benchmarks for many relevant real-world applications.

4.82 products per year among **Q1/Q2 journals** and **A+/A/B/B- conferences**, since 2008 [*]

High-quality relevant publications in the last 11 years (2008-2018)

Articles in Journals in SJR **Q1**	14
Articles in Journals in SJR **Q2**	7
Papers in Conferences rated **A+**	9
Papers in Conferences rated **A**	4
Papers in Conferences rated **B/B-**	19
Total	**53**
Average Q1/Q2 journal articles per year	1.91
Average A+/A conference papers per year	1.18
Average B/B- conference papers per year	1.73
Average high-quality papers per year	**4.82**

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[*] Journal ranking provided by SJR 2017, conference ranking according to GII-GRIN-SCIE (GGS) 2018.

Summary of overall publication record (1996-2018)

Number of publications for each type, according to DBLP and SJR Journal rating and GII-GRIN-SCIE (GGS) Conference Rating.

Publication type		Number

Journal articles
    SJR Q1   21
    SJR Q2   7
		38

Conference papers
    A+ Conferences   14
    A/A- Conferences   11
    B/B- Conferences   33
		112

Other publications		10
TOTAL		**160**

Last 10 years publications (2008-2018)

Journal articles (indexed on Scopus)

SJR 2017 Q1

1. Daniele Calisi, Luca Iocchi, Daniele Nardi, Carlo Matteo Scalzo, Vittorio A. Ziparo: Context-based design of robotic systems. Robotics and Autonomous Systems 56(11): 992-1003 (2008)
2. Andrea Cherubini, Francesca Giannone, Luca Iocchi, M. Lombardo, Giuseppe Oriolo: Policy gradient learning for a humanoid soccer robot. Robotics and Autonomous Systems 57(8): 808-818 (2009)
3. Luca Iocchi, Thomas Lukasiewicz, Daniele Nardi, Riccardo Rosati: Reasoning about actions with sensing under qualitative and probabilistic uncertainty. ACM Trans. Comput. Log. 10(1): 5:1-5:41 (2009)
4. Andrea Cherubini, Francesca Giannone, Luca Iocchi, Daniele Nardi, Pier Francesco Palamara: Policy gradient learning for quadruped soccer robots. Robotics and Autonomous Systems 58(7): 872-878 (2010)
5. Domenico Daniele Bloisi, Andrea Pennisi, Luca Iocchi: Background modeling in the maritime domain. Mach. Vis. Appl. 25(5): 1257-1269, 2014.
6. Maurilio Di Cicco, Luca Iocchi, Giorgio Grisetti: Non-Parametric Calibration for Depth Sensors, Robotics and Autonomous Systems, vol. 74, pp. 309-317, 2015.
7. Luca Iocchi, Dirk Holz, Javier Ruiz-del-Solar, Komei Sugiura, Tijn van der Zant: RoboCup@Home: Analysis and results of evolving competitions for domestic and service robots. Artif. Intell. 229: 258-281 (2015)
8. Francesco Amigoni, Emanuele Bastianelli, Jakob Berghofer, Andrea Bonarini, Giulio Fontana, Nico Hochgeschwender, Luca Iocchi, Gerhard K. Kraetzschmar, Pedro U. Lima, Matteo Matteucci, Pedro Miraldo, Daniele Nardi, Viola Schiaffonati: Competitions for Benchmarking: Task and Functionality Scoring Complete Performance Assessment. IEEE Robot. Automat. Mag. 22(3): 53-61 (2015)
9. Matteo Leonetti, Luca Iocchi, Peter Stone: A synthesis of automated planning and reinforcement learning for efficient, robust decision-making. Artif. Intell. 241: 103-130 (2016)
10. Andrea Pennisi, Domenico Daniele Bloisi, Luca Iocchi: Online real-time crowd behavior detection in video sequences. Computer Vision and Image Understanding 144: 166-176 (2016)
11. Guglielmo Gemignani, Roberto Capobianco, Emanuele Bastianelli, Domenico Daniele Bloisi, Luca Iocchi, Daniele Nardi: Living with robots: Interactive environmental knowledge acquisition. Robotics and Autonomous Systems 78: 1-16 (2016)
12. Alessandro Farinelli, Luca Iocchi, Daniele Nardi: Distributed on-line dynamic task assignment for multi-robot patrolling. Auton. Robots 41(6): 1321-1345 (2017)

13. Fabio Previtali, Domenico Daniele Bloisi, Luca Iocchi: A distributed approach for real-time multi-camera multiple object tracking. Mach. Vis. Appl. 28(3-4): 421-430 (2017)
14. Domenico Daniele Bloisi, Andrea Pennisi, Luca Iocchi: Parallel multi-modal background modeling. Pattern Recognition Letters 96: 45-54 (2017)

SJR 2017 Q2

1. Stefano Pellegrini, Luca Iocchi: Human Posture Tracking and Classification through Stereo Vision and 3D Model Matching. EURASIP J. Image and Video Processing 2008 (2008)
2. Daniele Calisi, Luca Iocchi, Daniele Nardi, Gabriele Randelli, Vittorio A. Ziparo: Improving Search and Rescue Using Contextual Information. Advanced Robotics 23(9): 1199-1216 (2009)
3. Domenico Daniele Bloisi, Luca Iocchi: Argos - a Video Surveillance System for boat Traffic Monitoring in Venice. IJPRAI 23(7): 1477-1502 (2009)
4. T. Wisspeintner, T. Van Der Zant,, L. Iocchi, S. Schiffer. RoboCup@Home scientific competition and benchmarking for domestic service robots Interaction Studies, 10 (3): 392-426 (2009)
5. Vittorio A. Ziparo, Luca Iocchi, Pedro U. Lima, Daniele Nardi, Pier Francesco Palamara: Petri Net Plans - A framework for collaboration and coordination in multi-robot systems. Autonomous Agents and Multi-Agent Systems 23(3): 344-383 (2011)
6. Gabriele Randelli, Taigo Maria Bonanni, Luca Iocchi, Daniele Nardi: Knowledge acquisition through human-robot multimodal interaction. Intelligent Service Robotics 6(1): 19-31 (2013)
7. Duc Thien Nguyen, Annalisa Terracina, Luca Iocchi, Massimo Mecella: Robotic Teaching Assistance for the "Tower of Hanoi" Problem. IJDET 14(1): 64-76 (2016)

SJR 2017 Q3 and below or not rated

1. Andrea Pennisi, Domenico Bloisi, Claudio Gaz, Luca Iocchi, Daniele Nardi: Novel Patterns and Methods for Zooming Camera Calibration. Journal of WSCG 21(1): 59-67 (2013)
2. L. Iocchi, L. Novelli, L. Tombolini, M. Vianello. Automatic real-time river traffic monitoring based on artificial vision techniques. Int. Journal of Social Ecology and Sustainable Development, 1 (2): 40-51 (2010)
3. Francesco Del Duchetto, Ayse Küçükyilmaz, Luca Iocchi, Marc Hanheide: Do Not Make the Same Mistakes Again and Again: Learning Local Recovery Policies for Navigation From Human Demonstrations. IEEE Robotics and Automation Letters 3(4): 4084-4091 (2018) [*]

[*] New IEEE journal not yet indexed in Scopus.

Conferences (Rating A+ according to GII-GRIN-SCIE (GGS) Conference Rating)

1. Vittorio A. Ziparo, Luca Iocchi, Daniele Nardi, Pier Francesco Palamara, Hugo Costelha: Petri net plans: a formal model for representation and execution of multi-robot plans. AAMAS (1) 2008: 79-86
2. Pier Francesco Palamara, Vittorio A. Ziparo, Luca Iocchi, Daniele Nardi, Pedro U. Lima, Hugo Costelha: A robotic soccer passing task using petri net plans. AAMAS (Demos) 2008: 1711-1712
3. Daniele Calisi, Andrea Censi, Luca Iocchi, Daniele Nardi: OpenRDK: A modular framework for robotic software development. IROS 2008: 1872-1877
4. Matteo Leonetti, Luca Iocchi: Improving the performance of complex agent plans through reinforcement learning. AAMAS 2010: 723-730
5. Vittorio A. Ziparo, Luca Iocchi, Matteo Leonetti, Daniele Nardi: On-line robot execution monitoring using probabilistic action duration. AAMAS 2010: 1521-1522
6. Vittorio A. Ziparo, Luca Iocchi, Matteo Leonetti, Daniele Nardi: A probabilistic action duration model for plan selection and monitoring. IROS 2010: 4716-4721
7. Andrea D'Agostini, Daniele Calisi, Alberto Leo, Francesco Fedi, Luca Iocchi, Daniele Nardi: Experimental evaluation of teamwork in many-robot systems. AAMAS 2011: 1327-1328
8. Luca Iocchi, Luca Marchetti, Daniele Nardi: Multi-robot patrolling with coordinated behaviours in realistic environments. IROS 2011: 2796-2801
9. Fabio Maria Carlucci, Lorenzo Nardi, Luca Iocchi, Daniele Nardi: Explicit representation of social norms for social robots. IROS 2015: 4191-4196

Conferences (Rating A according to GII-GRIN-SCIE (GGS) Conference Rating**)**

1. Matteo Leonetti, Luca Iocchi, Subramanian Ramamoorthy: Reinforcement Learning through Global Stochastic Search in N-MDPs. ECML/PKDD (2) 2011: 326-340
2. Luca Iocchi, Laurent Jeanpierre, Maria Teresa Lazaro, Abdel-Illah Mouaddib: A Practical Framework for Robust Decision-Theoretic Planning and Execution for Service Robots. ICAPS 2016: 486-494
3. Valerio Sanelli, Michael Cashmore, Daniele Magazzeni, Luca Iocchi: Short-Term Human-Robot Interaction through Conditional Planning and Execution. ICAPS 2017: 540-548
4. Eugenio Sebastiani, Raphaël Lallement, Rachid Alami, Luca Iocchi: Dealing with On-line Human-Robot Negotiations in Hierarchical Agent-Based Task Planner. ICAPS 2017: 549-557

Conferences (Rating B/B- according to GII-GRIN-SCIE (GGS) Conference Rating**)**

1. Pier Francesco Palamara, Vittorio A. Ziparo, Luca Iocchi, Daniele Nardi, Pedro U. Lima: Teamwork Design Based on Petri Net Plans. RoboCup 2008: 200-211
2. Domenico Daniele Bloisi, Luca Iocchi: Rek-Means: A k-Means Based Clustering Algorithm. ICVS 2008: 109-118
3. Luca Marchetti, Diana Nobili, Luca Iocchi: Improving tracking by integrating reliability of multiple sources. FUSION 2008.
4. Domenico Daniele Bloisi, Luca Iocchi, Luca Marchetti, Dorothy Ndedi Monekosso, Paolo Remagnino: An Adaptive Tracker for Assisted Living. AVSS 2009: 164-169
5. Thomas Wisspeintner, Tijn van der Zant, Luca Iocchi, Stefan Schiffer: RoboCup@Home: Results in Benchmarking Domestic Service Robots. RoboCup 2009: 390-401
6. Gabriele Randelli, Luca Marchetti, Francesco A. Marino, Luca Iocchi: Multi-agent Behavior Composition through Adaptable Software Architectures and Tangible Interfaces. RoboCup 2010: 278-290
7. Matteo Leonetti, Luca Iocchi: LearnPNP: A Tool for Learning Agent Behaviors. RoboCup 2010: 418-429
8. Ricardo Dodds, Luca Iocchi, Pablo Guerrero, Javier Ruiz-del-Solar: Benchmarks for Robotic Soccer Vision. RoboCup 2011: 427-439
9. Tijn van der Zant, Luca Iocchi: RoboCup@Home: Adaptive Benchmarking of Robot Bodies and Minds. ICSR 2011: 214-225
10. Domenico Bloisi, Luca Iocchi, Michele Fiorini, Giovanni Graziano: Camera based target recognition for maritime awareness. FUSION 2012: 1982-1987
11. Andrea Pennisi, Domenico Daniele Bloisi, Luca Iocchi, Daniele Nardi: Ground Truth Acquisition of Humanoid Soccer Robot Behaviour. RoboCup 2013: 560-567
12. Guglielmo Gemignani, Daniele Nardi, Domenico Daniele Bloisi, Roberto Capobianco, Luca Iocchi: Interactive Semantic Mapping: Experimental Evaluation. ISER 2014: 339-355
13. Emanuele Bastianelli, Giuseppe Castellucci, Danilo Croce, Luca Iocchi, Roberto Basili, Daniele Nardi: HuRIC: a Human Robot Interaction Corpus. LREC 2014: 4519-4526
14. Emanuele Bastianelli, Luca Iocchi, Daniele Nardi, Giuseppe Castellucci, Danilo Croce, Roberto Basili: RoboCup@Home Spoken Corpus: Using Robotic Competitions for Gathering Datasets. RoboCup 2014: 19-30
15. Lorenzo Nardi, Luca Iocchi: Representation and Execution of Social Plans through Human-Robot Collaboration. ICSR 2014: 266-275
16. Domenico Daniele Bloisi, Luca Iocchi, Andrea Pennisi, Luigi Tombolini: ARGOS-Venice Boat Classification. AVSS 2015
17. Andrea Pennisi, Fabio Previtali, Domenico Daniele Bloisi, Luca Iocchi: Real-time adaptive background modeling in fast changing conditions. AVSS 2015
18. Min Cheng, Xiaoping Chen, Keke Tang, Feng Wu, Andras Kupcsik, Luca Iocchi, Yingfeng Chen, David Hsu: Synthetical Benchmarking of Service Robots: A First Effort on Domestic Mobile Platforms. RoboCup 2015: 377-388
19. Luca Iocchi, Maria Teresa Lázaro, Laurent Jeanpierre, Abdel-Illah Mouaddib: Personalized Short-Term Multi-modal Interaction for Social Robots Assisting Users in Shopping Malls. ICSR 2015: 264-274

Part IX.B – 16 Selected Publications

1	D. Calisi, **L. Iocchi**, D. Nardi, C.M. Scalzo, V. A. Ziparo, "Context-based design of robotic systems", In Robotics and Autonomous Systems, vol. 56, no. 11, pp. 992-1003, **2008**	IF 2008 **1.214**	IF 2017 **2.638**	SJR 2017 **0.71 Q1**
2	A. Cherubini, F. Giannone, **L. Iocchi**, M. Lombardo, G. Oriolo, "Policy Gradient Learning for a Humanoid Soccer Robot", In Robotics and Autonomous System, vol. 57, no. 8, pp. 808-818, **2009**.	IF 2009 **1.361**	IF 2017 **2.638**	SJR 2017 **0.71 Q1**
3	D. D. Bloisi, **L. Iocchi**, "ARGOS - A Video Surveillance System for Boat Traffic Monitoring in Venice", In International Journal of Pattern Recognition and Artificial Intelligence, vol. 23, no. 7, pp. 1477-1502, **2009**.	IF 2009 **0.512**	IF 2017 **1.029**	SJR 2017 **0.31 Q2**
4	**L. Iocchi**, T. Lukasiewicz, D. Nardi, R. Rosati: Reasoning about actions with sensing under qualitative and probabilistic uncertainty. ACM Trans. Comput. Log. 10(1): 5:1-5:41, **2009**.	IF 2009 **1.212**	IF 2017 **0.731**	SJR 2017 **0.57 Q1**
5	A. Cherubini, F. Giannone, **L. Iocchi**, D. Nardi, P. F. Palamara, "Policy gradient learning for quadruped soccer robots", In Robotics and Autonomous Systems, vol. 58, no. 7, pp. 872-878, **2010**.	IF 2010 **1.313**	IF 2017 **2.638**	SJR 2017 **0.71 Q1**
6	V. A. Ziparo, **L. Iocchi**, P. U. Lima, D. Nardi, P. F. Palamara, "Petri Net Plans - A framework for collaboration and coordination in multi-robot systems", In Autonomous Agents and Multi-Agent Systems (JAAMAS), vol. 23, no. 3, pp. 344-383, **2011**.	IF 2011 **1.213**	IF 2017 **1.176**	SJR 2017 **0.43 Q2**
7	D. D. Bloisi, A. Pennisi, **L. Iocchi**, "Background modeling in the maritime domain", In Machine Vision and Applications, Springer Berlin Heidelberg, vol. 25, no. 5, pp. 1257-1269, **2014**.	IF 2014 **1.351**	IF 2017 **1.306**	SJR 2017 **0.48 Q1**
8	M. Di Cicco, **L. Iocchi**, G. Grisetti. "Non-Parametric Calibration for Depth Sensors", Robotics and Autonomous Systems, vol. 74, pp. 309-317, **2015**.	IF 2015 **1.618**	IF 2017 **2.638**	SJR 2017 **0.71 Q1**
9	F. Amigoni, E. Bastianelli, J. Berghofer, A. Bonarini, G. Fontana, N. Hochgeschwender, **L. Iocchi**, G. K. Kraetzschmar, P. U. Lima, M. Matteucci, P. Miraldo, D. Nardi, V. Schiaffonati. "Competitions for Benchmarking: Task and Functionality Scoring Complete Performance Assessment", IEEE Robotics and Automation Magazine, 22(3): pp. 53-61, **2015**.	IF 2015 **1.822**	IF 2017 **3.573**	SJR 2017 **0.75 Q1**

10	**L. Iocchi**, D. Holz, J. Ruiz-del-Solar, K. Sugiura, T. van der Zant, "RoboCup@Home: Analysis and Results of Evolving Competitions for Domestic and Service Robots", In Artificial Intelligence, vol. 229, pp. 258-281, **2015**.	IF 2015 **3.333**	IF 2017 **3.034**	SJR 2017 **0.88 Q1**
11	A. Pennisi, D. D. Bloisi, **L. Iocchi**. "Online real-time crowd behavior detection in video sequences". In Computer Vision and Image Understanding 144: 166-176, **2016**.	IF 2016 **2.498**	IF 2017 **2.391**	SJR 2017 **0.72 Q1**
12	G. Gemignani, R. Capobianco, E. Bastianelli, D. D. Bloisi, **L. Iocchi**, D. Nardi,. "Living with robots: Interactive environmental knowledge acquisition", In Robotics and Autonomous Systems 78: 1-16, **2016**.	IF 2016 **1.950**	IF 2017 **2.638**	SJR 2017 **0.71 Q1**
13	M. Leonetti, **L. Iocchi**, P. Stone. "A synthesis of automated planning and reinforcement learning for efficient, robust decision-making". In Artificial Intelligence 241: 103-130, **2016**.	IF 2016 **4.797**	IF 2017 **3.034**	SJR 2017 **0.88 Q1**
14	F. Previtali, D. D. Bloisi, **L. Iocchi**. "A distributed approach for real-time multi-camera multiple object tracking". Machine Vision and Applications, 28(3-4), pp. 421–430, **2017**.	IF 2017 **1.306**	IF 2017 **1.306**	SJR 2017 **0.48 Q1**
15	D. D. Bloisi, A. Pennisi, **L. Iocchi**. "Parallel multi-modal background modeling. Pattern Recognition Letters 96: 45-54, **2017**.	IF 2017 **1.954**	IF 2017 **1.954**	SJR 2017 **0.66 Q1**
16	A. Farinelli, **L. Iocchi**, D. Nardi. "Distributed on-line Dynamic Task Assignment for Multi-Robot Patrolling". Autonomous Robots, 41(6), pp 1321–1345, **2017**.	IF 2017 **2.244**	IF 2017 **2.244**	SJR 2017 **1.13 Q1**

Part X – Selected Dissemination Activities

Highlights
Dissemination activities included demonstrations in large public events, national TV and press.
- 3 large public events
- 8 national TV reports

Large Public Fairs

1. Maker Faire Roma 2016 (> 100,000 visitors)
1. Maker Faire Roma 2017 (> 100,000 visitors)
2. Maker Faire Roma 2018 (> 100,000 visitors)

Italian TV reports

1. ARGOS system, RAI TG1 - Nov. 10, 2007
2. Soccer robots, Superquark RAI 1 - 2008
3. Soccer robots, La Gaia Scienza, La 7 - 2009
4. Rescue Robots, RAI 3 Geo Magazine - 2011
5. Educational Robots, RAI 3 Geo Magazine - June 21, 2011
6. Robots and AI, RomaUNO TV - 2012
7. Educational robots, Ufficio Brevetti RAI 2 - May 3, 2016.
8. Social robot Diago (COACHES project), Ufficio Brevetti RAI 2 - November 8, 2016

More details on all the information provided in this CV are available on-line on the web site **www.diag.uniroma1.it/~iocchi**

Roma, 24/12/2018   Luca Iocchi