

Address:
ISTC-CNR
via S.Martino della Battaglia, 44
00185 Roma, Italy
tel: +39 06 44595 214
fax: +39 06 44595 243

Vito Trianni

Nationality: Italian
Date of Birth: September 11th, 1976
Place of Birth: Casarano (LE) - ITALY
E-mail: vtrianni@ulb.ac.be
WWW: <http://www.istc.cnr.it/people/vito-trianni>

Education and Research Experience

- from 16/12/2011:** **Tenured Researcher** at the Institute of Cognitive Sciences and Technologies (ISTC-CNR), National Research Council, Rome, Italy
- 02/01/2012–01/02/2014:** **Visiting researcher** at IRIDIA, Université Libre de Bruxelles, Bruxelles, Belgium
- 01/10/2010–15/12/2011:** **Researcher** at IRIDIA, Université Libre de Bruxelles, Bruxelles, Belgium
- 01/06/2007–30/09/2010:** **Researcher** at the Institute of Cognitive Sciences and Technologies (ISTC-CNR), National Research Council, Rome, Italy
- 01/04/2005–31/05/2007:** **Postdoc research fellow** at the Institute of Cognitive Sciences and Technologies (ISTC-CNR), National Research Council, Rome, Italy, under the supervision of Dr. S. Nolfi
- 01/10/2002–26/06/2006:** **Ph.D. student** at the Applied Sciences Faculty, Université Libre de Bruxelles, Bruxelles, Belgium, under the supervision of Prof. M. Dorigo
- 01/10/2001–30/09/2002:** **Research fellow** at IRIDIA, Université Libre de Bruxelles, Bruxelles, Belgium, within the *Marie Curie Early Stage Research Training* programme. Research theme: “Metamorphic Robotic Systems”
- 01/03/2001–30/09/2002:** **Ph.D. student** in Computer Science Engineering at the Politecnico di Milano, Milan, Italy — Minor research theme and thesis on “Assembly-level Software Power Estimation”. Work performed under the supervision of Ing. Carlo Brandolese and Prof. D. Sciuto — Major research theme started at the Laboratory of Artificial Intelligence and Robotics (AIRLab), under the supervision of Prof. A. Bonarini
- 15/09/2000–06/07/2001:** **Master student** in Information Technology at CEFRIEL, Milan, Italy. Work performed at the Electronic Automation Area under the supervision of Prof. W. Fornaciari, Prof. F. Salice e Prof. D. Sciuto
- 05/01/1999–10/07/1999:** **Student of the *Programme International*** at the École Polytechnique, Palaiseau, Paris, Majeure d’Informatique, stage d’option scientifique (thesis) at the Centre de Mathématiques Appliquées (CMAP) under the supervision of Prof. M. Schoenauer
- 15/09/1994–17/10/2000:** **Student** at the Faculty of Computer Science Engineering, Politecnico di Milano, Milan, Italy. Thesis performed at the Laboratory of Artificial Intelligence and Robotics (AIR-Lab), under the supervision of Prof. A. Bonarini
- other studies:** “Discrete Mathematics”, Politecnico di Milano, (24h), 2001-2002
“Dynamic agencies”, Politecnico di Milano (24h), 2001-2002
“Models and Logic in Computer Science”, Politecnico di Milano (24h), 2001-2002
“Stochastic models for discrete systems, Politecnico di Milano (24h), 2001-2002
“Electronic Design Automation”, CEFRIEL (40h), 2000-2001
“Advanced Transmission Systems”, CEFRIEL (40h), 2000-2001
“Middleware & Security”, CEFRIEL (40h), 2000-2001

Academic Qualifications

- 26/06/2006:** **Ph.D.** in Applied Sciences obtained at IRIDIA, Faculty of Applied Sciences, Université Libre de Bruxelles, Bruxelles, Belgium. Supervisor: Prof. Marco Dorigo. Thesis title: “On the Evolution of Self-Organising Behaviours in a Swarm of Autonomous Robots”. Awarded with the “European Doctorate” label
- 02/07/2003:** **Diplôme d’Études Approfondies (DEA)** in Applied Sciences - Université Libre de Bruxelles, Bruxelles, Belgium. Thesis title: “Evolution of Coordinated Motion Behaviours in a Group of Self-Assembled Robots”
- 06/07/2001:** **Master Diploma** in Information Technology obtained at CEFRIEL, Milan, Italy, within the Electronic Design Automation area. Thesis title: “Assembly-level Software Power Estimation: a Methodology for Dynamic Effects Analysis”. Mark: 100/100 cum Laude
- 17/10/2000:** **Laurea** in Computer Science Engineering obtained at the Politecnico di Milano, Milan, Italy. Thesis title: “Cooperazione e Comunicazione: Apprendimento di Comportamenti Cooperativi in Sistemi Multi-Agente” (in Italian). Mark: 100/100 cum Laude
- 10/07/1999:** **Diploma** of the Programme International obtained at the École Polytechnique, Palaiseau, Paris, France. Thesis title: “Robotique Évolutionnaire: Apprentissage d’un Contrôleur Neuronal pour le Khepera” (in French). Mark: Très Honorable

Teaching experience

- 08/03/2013:** **Invited Lecture** on Evolutionary Robotics within the course “New research trends in AI”, Master II of Polytechnic, Université Libre de Bruxelles
- 24/02/2012:** **Invited Lecture** on Evolutionary Robotics within the course “Research trends in AI”, Master II of Polytechnic, Université Libre de Bruxelles
- 23/02/2012–01/03/2012:** **Lecturer** within the course “INFO-H-414 Swarm Intelligence”, Master II of Polytechnic, Université Libre de Bruxelles, responsible for the module on Particle Swarm Optimisation
- 31/03/2011:** **Invited Lecture** on Evolutionary Robotics within the course “Research trends in AI”, Master II of Polytechnic, Université Libre de Bruxelles
- 23/06/2008:** **Seminar** “A Dynamical Systems Approach to Behavioural Analysis” (4h) at the ISTC-CNR
- 01/10/2004–01/03/2005:** **Lectures** on “Evolutionary Robotics” (12h) for the Ph.D. students in Applied Sciences at IRIDIA, Université Libre de Bruxelles
- 01/09/2001 – 31/10/2001:** **Lectures** in “C++ Programming”, XIV Master in Information Technology, CEFRIEL
- 01/09/2001 – 20/12/2001:** **Lectures** in “Cultura Tecnologica del Progetto - Informatica” (Fundamentals in Computer Science), Industrial Design Faculty, Politecnico di Milano - Bovisa
- Sept 1999 – July 2000:** **Tutoring** in Statistics and Computer Science at SPEU - Servizi Preparazione Esami Universitari, Milan, Italy

Supervision and tutoring

- From 01/04/2012:** **Co-supervisor** of *Touraj Soleymani*, within the doctoral school in Applied Sciences at the Université Libre de Bruxelles
- From 09/01/2012:** **Co-supervisor** of *Roman Miletitch*, within the doctoral school in Applied Sciences at the Université Libre de Bruxelles
- From 01/05/2011:** **Co-supervisor** of *Andreagiovanni Reina*, within the doctoral school in Applied Sciences at the Université Libre de Bruxelles

- 01/11/2009–30/01/2010:** **Tutor** of *Giuseppe Morlino*, Ph.D. student in Computer Science, Università di Roma “La Sapienza”, within the project “Exploring the foundations of Swarm Cognition” financed by the Institute of Cognitive Sciences and Technologies (ISTC-CNR)
- 01/10/2006–30/09/2010:** **Co-supervisor** of *Valerio Sperati* within the PhD in Cognitive Psychology, Università di Roma “La Sapienza”
- 01/09/2004–11/11/2008:** **Tutor** of *Christos Ampatzis* within the Ph.D. in Applied Sciences. Thesis title: “On the evolution of autonomous time-based decision-making and communication in collective robotics”, Université Libre de Bruxelles
- 01/04/2005–31/09/2005:** **Tutor** of *Philippe Duchesne* within the DEA (Diplôme d’Études Approfondies) in Cognitive Sciences. Thesis title: “Évolution d’un comportement de synchronisation par des agents collaboratifs” (in French), Université Libre de Bruxelles
- 01/12/2004–31/05/2005:** **Co-supervisor** of *David Tran Dinh Dũng* within the Master in Applied Sciences. Thesis title: “Simulation 3D d’un groupe de robots” (in French), Université Libre de Bruxelles
- 07/01/2004–30/09/2004:** **Co-supervisor** of *Stefano Lanza* within the “Laurea” degree in Computer Science Engineering. Thesis title: “Active Vision in a Collective Robotics Domain”, Politecnico di Milano

Keynotes, Talks and Tutorials

- 2013 **Invited talk:** “Swarm Cognition. From Natural to Artificial Systems (and back)”. Storns seminar series, ISTC-CNR, Rome, Italy, May the 24th, 2013
- **Keynote:** “Robotics, from Humanoids to Swarms”. European Schools Science Symposium 2013, Brussels, Belgium, March the 13th, 2013
- 2012 **Keynote:** “Evolution, self-organisation and swarm robotics”. Research Days 2012, Klagenfurt, Austria, July 14th, 2012
- **Invited speech:** “A FET success story.. or not?”. ICT Competitiveness Week, Session on Future and Emerging Technologies, Brussels, Belgium, September the 18th, 2012
- **Seminar:** “Engineering Methods for Swarm Robotics”. IRIDIA-ULB, Brussels, Belgium, March the 23rd, 2012
- 2010 **Seminar:** “Evolution, Self-Organisation and Swarm Robotics”. ISTC-CNR, Rome, Italy, September 13th
- **Talk:** “Re-Engineering Evolution: A Study In Self-Organising Synchronisation”. *Artificial Life XII, Twelfth International Conference on the Synthesis and Simulation of Living Systems*. Odense, Denmark, August 21st
- **Invited Talk:** “Evolution, Self-Organisation and Swarm Robotics”. Dipartimento di Informatica e Sistemistica, Università di Roma “La Sapienza”, Rome, Italy, May 27th
- 2009 **Talk:** “Swarm Cognition and Artificial Life”. *The 10th European Conference on Artificial Life (ECAL’09)*. Budapest, Hungary, September 16h, 2009
- **Keynote:** “Swarm Cognition and Artificial Life”. *The Swarm Cognition Workshop, 31th International Meeting of the Cognitive Science Society (CogSci’09)*. Amsterdam, The Netherlands, July 29th, 2009
- 2008 **Keynote:** “Self-Organisation in Natural and Artificial Systems”. *La Notte Bianca della Ricerca*. Istituto Superiore di Sanità, Rome, Italy, November 13th, 2008.
- **Talk:** “Self-Organising Sync in a Robotic Swarm”. *The 11th International Conference on Artificial Life (ALife XI)*. Winchester, UK, 5–8 August 2008
- **Talk:** “Self-Organising Sync in a Robotic Swarm”. *The 1st International Workshop on Non-Linear Dynamics and Synchronization (INDS-08)*. Klagenfurt, Austria, 18–19 July 2008
- **Invited Talk:** “Self-Organising Sync in a Robotic Swarm. A Dynamical Systems View”. *Embodied Cognition Symposium*. Maastricht, The Netherlands, June 25th, 2008
- 2007 **Invited Talk:** “Embodied Agent-Based Modelling”. *From Data to Models Workshop*. ISTC-CNR, Rome, Italy, 11–12 October 2007

- **Talk:** “From Solitary to Collective Behaviours: Decision Making and Cooperation”. *The 9th European Conference on Artificial Life (ECAL 2007)*. Lisbon, Portugal, 10–14 September 2007
- **Talk:** “Evolutionary Robotics for Self-Organising Behaviours”. *Workshop Italiano di Vita Artificiale e Computazione Evolutiva (WIVACE-07)*. Sampieri (Ragusa), 5–7 September 2007
- **Talk:** “Minimal communication strategies for self-organising synchronisation behaviours”. *The 1st IEEE Symposium on Artificial Life*, Honolulu, Hawaii, 1–5 April 2007
- 2006 **Tutorial:** “On the Evolution of Self-Organising Behaviours in a Swarm of Autonomous Robots”. *Ph.D. public defence tutorial and live robotic demonstration*. Université Libre de Bruxelles, Bruxelles, Belgium, June 26th, 2006
- 2004 **Talk:** “Evolution of direct communication for a swarm-bot performing hole avoidance”. *The 4th International Workshop Ant Colony Optimization and Swarm Intelligence (ANTS 2004)*, Bruxelles, Belgium, 5–8 September 2004
- **Talk:** “The SWARM-BOTS project”. *The 1st International Workshop on Swarm Robotics, Simulation of Adaptive Behaviour Conference*, Santa Monica, CA, USA, July 17th, 2004
- **Talk:** “Evolving functional self-assembling in a swarm of autonomous robots”. *The 8th International Conference on Simulation of Adaptive Behaviour Conference (SAB-04)*, Santa Monica, CA, USA, 13–17 July 2004
- **Talk:** “Hole avoidance: Experiments in coordinated motion on rough terrain”. *The 8th International Conference on intelligence Autonomous Systems (IAS-8)*, Amsterdam, The Netherlands, 10–13 March 2005. Best Paper Award
- 2003 **Talk:** “Evolving aggregation behaviors in a swarm of robots”. *The 7th European Conference on Artificial Life (ECAL 2003)*, Dortmund, Germany, 14–17 September 2003

Editorial and Organisational Activities

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| Editorial boards | Since 2012 , member of the editorial board of the <i>Swarm Intelligence</i> Journal, published by Springer Verlag, Berlin, Germany |
| - | Since 2012, member of the editorial board of the Italian journal <i>Sistemi Intelligenti</i> , edited by Il Mulino, Bologna, Italy |
| - | Since 2009, member of the editorial board of <i>Paladyn, Journal of Behavioral Robotics</i> , edited by Versita, Poland |
| Guest editor | <i>Special Issue on Swarm Cognition</i> for the journal <i>Swarm Intelligence</i> (volume 5, number 1, 2011), together with Dr. Elio Tuci and Prof. Kevin Passino. |
| Conference/Workshop organisation | Organiser of the workshop on <i>Collective Behaviours and Social Dynamics</i> , within the 12th European Conference on Artificial Life (ECAL 2013). September the 2nd 2013, Taormina, Italy. |
| - | Local organisation support for the 11th European Conference on Artificial Life (ECAL 2011), 8–12 August 2011, Paris, France |
| - | Organiser of the <i>Swarm Cognition Workshop</i> , within the Annual Meeting of the Cognitive Science Society (CogSci 2009). June the 29th 2009, Amsterdam, The Netherlands |
| Expert Referee | In 2013, referee for phd projects for the Institute for Complex Systems, Paris, France |
| - | In 2010, referee for the Belgian National Research Funds (<i>FNRS - Fonds National de la Recherche Scientifique</i>) |
| - | In 2009, referee for the French National Research Agency (<i>ANR - Agence Nationale de la Recherche</i>). |

Reviewer for International Journals:

IEEE Transactions on Evolutionary Computation
 IEEE Transactions on Robotics
 IEEE Transactions on Systems, Man, and Cybernetics - B
 IEEE Transactions on Neural Networks
 IEEE/ASME Transactions on Mechatronics
 ACM Transactions on Autonomous and Adaptive Systems
 Artificial Life
 Swarm Intelligence
 Adaptive Behaviour
 Autonomous Robots
 Robotics and Autonomous Systems
 Swarm and Evolutionary Computation
 Robotica
 Connection Science
 Cognitive Systems Research
 Neural Computing & Applications
 Intelligent Service Robotics
 Journal on Self Computing
 ACTA Futura Journal
 Scholarpedia

Reviewer for International Conferences:

European Conference on Artificial Life (ECAL)
 Artificial Life (ALIFE)
 Simulation of Adaptive Behaviours (SAB)
 Genetic and Evolutionary Computation Conference (GECCO)
 International Conference on Swarm Intelligence (ANTS)
 International Conference on Robotics and Automation (ICRA)
 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
 Towards Autonomous Robotic Systems (TAROS)
 IEEE Congress on Evolutionary Computation (IEEE CEC)
 IEEE Symposium Series on Computational Intelligence (SSCI)
 International Conference on Parallel Problem Solving from Nature (PPSN)
 International Symposium on Distributed Autonomous Robotics Systems (DARS)
 International Conference on Autonomous Agents and Multiagent Systems (AAMAS)
 International Conference on Reconfigurable Mechanisms and Robots (ReMAR)
 The Annual Meeting of the Cognitive Science Society (COGSCI)
 International Conference on Evolutionary Computation (ICEC)
 Conference on Artificial General Intelligence (AGI)
 International Micro Air Vehicle Conference (IMAV)
 Evolutionary Computation Theory and Applications (ECTA)

Committees and Juries

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| 2013 | Member of the Jury for the Ph.D. 1st year advancement report of Roman Miletitch, Ph.D. student at IRIDIA-CoDE-ULB, September the 30th 2013, Brussels, Belgium. |
| 2013 | Member of the Jury for the Ph.D. 1st year advancement report of Touraj Soleymani, Dhananjay Ipparthi, Gabriele Valentini and Gianpiero Francesca, Ph.D. students at IRIDIA-CoDE-ULB, 5 June 2013, Brussels, Belgium. |
| 2012 | Member of the Ph.D. Jury of Miguel Duarte, Ph.D. student at the University Institute of Lisbon, ISCTE-IUL. |

- 2011 **Member of the Ph.D. Jury** of Alexandre Campo, Ph.D. student at IRIDIA-CoDE-ULB — private defence passed on the 29/04/2011, public defence passed on the 24/05/2011, Brussels, Belgium
- 2011 **Member of the Jury** for the scientific advancement report within the Ph.D. program of Manuele Brambilla, Ph.D. student at IRIDIA-CoDE-ULB — defence passed on the 26/05/2011

International Research Projects

H²Swarm: Hierarchical Heterogeneous Swarm Collaborative project founded by the EUROCORES–EuroBioSAS Programme of the European Science Foundation (ESF).

Brief description: The project studies the intra- and inter-group dynamics supporting coordination and cooperation within swarms of heterogeneous robots. The project features both a theoretical component—dedicated to the understanding of the evolutionary mechanisms leading to the emergence of hierarchical, heterogeneous organisations—and an applied component—dedicated to the implementation of coordinated and cooperative strategies in heterogeneous robotic swarms.

Role: I organised and coordinated the proposal preparation and submission to the ESF. I am the principal scientific investigator within the IRIDIA-ULB unit, responsible of the scientific and organisational activities of IRIDIA-ULB, and co-supervisor of two Ph.D. students sponsored by the project. I pursue two parallel research directions within H²Swarm: on the one hand, I study the mechanisms leading to coordinated effort in heterogeneous swarms, especially in the context of a foraging and 3D construction scenario. On the other hand, I study the evolutionary mechanisms that lead to collaboration and mutualism in heterogeneous populations, and exploit evolutionary robotics as a modelling tool. Within the project, I actively coordinate the networking among the project partners. I proposed and organised the “Workshop on Collective Behaviours and Social Dynamics” within the 12th European Conference on Artificial Life (ECAL 2013) as a networking event between H²Swarm and DRUST, another ESF-founded project. The workshop received a 10K€ founding from ESF, which was awarded under my personal initiative.

Years: 2011–2014

Project Funding: 0.8M€.

Swarmanoid: Towards Humanoid Robotic Swarms STREP project founded by the Future and Emerging Technologies programme of the Information Society Technologies of the European Commission (IST-FET project, grant IST-022888)

Brief description: The project aimed at designing and prototyping an innovative distributed robotic system, composed of a swarm of heterogeneous robots able of coordination and cooperation. Three robotic platforms were designed and prototyped: the *foot-bot*, a small-size wheeled robot, the *hand-bot*, a robot capable of climbing standard office furniture, and the *eye-bot*, a flying robot for indoor operations. The project demonstrated the capabilities of heterogeneous robotic swarms in a real-world scenario in which the three platforms collaborated to retrieve desired objects in a 3D human-made environment.

Role: I was the principal scientific investigator within the ISTC-CNR, responsible of the scientific and organisational activities of the unit. I co-supervised one Ph.D. student sponsored by the project. I was a member of the Scientific Committee of the project, a steering committee that coordinates the exchange of scientific results, hypotheses, research ideas, and implement any action required by the project planning. In particular, I was the coordinator of the activities of Workpackage 5 “Communication” dedicated to the communication strategies to support coordination and collaboration among heterogeneous robots. I also took active part to the Workpackage 4 “Control”, dedicated to the control strategies for heterogeneous swarms, and Workpackage 3 “Simulation” dedicated to the development of ARGoS, a custom-tailored simulator for large-scale collective robotics systems.

Years: 2006–2010

Project funding: 2.73M€ (UE: 2.5M€).

ECAgents: Embodied and Communicating Agents IP research project founded by the Future and Emerging Technologies programme of the Information Society Technologies of the European Commission (IST-FET project, grant 001940)

Brief description: The project aimed at providing a better understanding of the role of communication in collections of embodied and situated agents using the methodological and theoretical tools of complex systems

and computer science. The studies ranged from communication in robotic swarms to the establishment of a proto-language in artificial agents, from the understanding of the evolutionary preconditions for the emergence of communication to the development of mobile tools for portable devices.

Role: I joined the project in 2006 and actively worked on it for about 18 months. During this period, I was involved in the study of the evolutionary dynamics leading to the emergence of group synchronisation in robotic swarms. I was member of the Scientific Committee and participated to the project meetings, providing feedback and suggestions on the planning of the project activities.

Years: 2004–2008

Project funding: 7.12M€ (UE: 4,3M€)

SWARM-BOTS: Swarms of self-assembling artefacts STREP project founded by the Future and Emerging Technologies programme of the Information Society Technologies of the European Commission (IST-FET project, grant IST-2000-31010)

Brief description: The SWARM-BOTS project aimed at the design and implementation of self-organising and self-assembling artefacts called swarm-bots. A novel autonomous robot was developed, with the unique capability of docking to other similar platforms to create a large physical structure capable of solving problems that the individual robots could not cope with (e.g., navigating on rough terrain, passing over large gaps, pulling heavy weights).

Role: I carried out my Ph.D. studies actively working on the project. I focused on the evolution of self-organising behaviours for such a swarm of self-assembling robots, and produced several interesting control strategies for coordinated motion, collective decisions and self-assembly. I proved the feasibility of the evolutionary approach for swarm robotics in several real-world demonstrators. A revised version of the Ph.D. thesis has been published as a book within the series “Studies on Computational Intelligence” by Springer Verlag. I was member of the Scientific Committee for the whole project duration. Within the IRIDIA-ULB bode, I was responsible of the organisational activities within the Workpackage 4 “Control”, managing the redaction of project reports and ensuring the meeting of internal and EU-requested deadlines.

Years: 2001–2005

Project funding: 2.17M€ (UE: 1M€)

POET: Power Optimisation for Embedded sysTems Collaborative research project founded by the Future and Emerging Technologies programme of the Information Society Technologies of the European Commission (IST-FET project, grant IST-2000-30125)

Brief description: The POET project aimed at the development of a new design methodology and a tool suite for power estimation and optimisation in heterogeneous embedded system-on-chip designs.

Role: at the early stages of my scientific career, I was a technical consultant at CEFRIEL for 9 months, during which I developed a model for assembly-level execution-time estimation in complex computing architectures (pipelined and/or superscalar processors), as well as a simulator for assembly instruction timing and power consumption estimation.

Years: 2001–2004

Project funding: 6.12M€(UE: 3.55M€)

Awards, Prizes and Fellowships

27/05/2013:

Founding for networking activities within the EUROCORES programme (10K€) awarded by the European Science Foundation within the context of the H²Swarm project. The proposed networking activity was a workshop on “Collective Behaviours and Social Dynamics” to be held during the 12th European Conference on Artificial Life (ECAL 2013, Taormina, Italy) on September the 2nd, 2013. The workshop featured presentations from both H²Swarm and DRUST, another ESF-founded project within the programme EUROCORES-EuroUnderstanding. Additionally, the workshop features renowned international experts and contributed presentation selected from submitted proposals.

- 09/08/2011:** **AAAI-2011 Best Video Award** for the video “Swarmanoid. The Movie”, which demonstrates the results obtained within the Swarmanoid project. Twenty-fifth Conference on Artificial Intelligence (AAAI 2011), San Francisco, CA, 7–11 August 2011
- 27/06/2011:** **Founding for a three-years research project** (approximately 250K€) from the Fonds Nationale de la Recherche Scientifique (FNRS), Bruxelles, Belgium, awarded for the project “Cognition in Robotic Swarms” (project discontinued on 16/12/2011 due to the tenured research position awarded by ISTC-CNR)
- 26/10/2010:** **Best Student Paper Award** obtained for a paper in collaboration with Giuseppe Morlino and Elio Tuci, presented at the International Conference on Evolutionary Computation (ICEC 2010), Valencia, Spain, 24–26 October 2010
- 20/06/2009:** **Founding for innovative projects** (7.5K€) obtained from ISTC-CNR, Rome, Italy, within the internal call “Idee Nuove”
- 12/03/2004:** **Best Paper Award** obtained at the 8th International Conference on Intelligent Autonomous Systems (IAS-8), Amsterdam, The Netherlands
- 01/10/2001–30/09/2002:** **Fellowship** obtained within the *Marie Curie Early Stage Research Training* programme, at IRIDIA, Université Libre de Bruxelles, Belgium
- 016/09/2000–05/07/2001:** **Fellowship** for the XIII Master in Information Technology obtained at CEFRIEL, Milan, Italy. (12900€ founded by Italtel)
- 01/01/1999–14/07/1999:** **Fellowship** from the Erasmus Program of the European Community, in order to take part to the Programme International of the École Polytechnique, Palaiseau, Paris, France

Media Coverage

- 12/08/2010 The Economist, *Riders on a swarm*, short interview for the preparation of an article about the frontiers of swarm intelligence
- 29-07/2009 La Repubblica, *Sfrutta meccanismi naturali per risolvere calcoli complessi*, short interview on the potential of bio-inspired techniques in engineering

Bibliometrics

- Google Scholar** H-INDEX : 20
 Number of items: 60
 Total Citation: 1336
 Without Self Citations: n.a.
- ISI Indexed Citations** H-INDEX : 11
 Number of items: 30
 Total Citation: 352
 Without Self Citations: 315

Languages

Mother tongue: Italian

Other languages:

	Writing skills	Reading skills	Verbal skills
English	Excellent	Excellent	Excellent
French	Good	Excellent	Excellent
Spanish	Basic	Good	Good

Publications

Books

- B. 1 V. Trianni. *Evolutionary Swarm Robotics. Evolving Self-Organising Behaviours in Groups of Autonomous Robots*, volume 108 of *Studies in Computational Intelligence*. Springer Verlag, Berlin, Germany, 2008

International Journals

- IJ. 1 M. Dorigo, D. Floreano, L.M. Gambardella, F. Mondada, S. Nolfi, T. Baaboura, M. Birattari, M. Bonani, M. Brambilla, A. Brutschy, D. Burnier, A. Campo, A.L. Christensen, A. Decugniere, G. Di Caro, F. Ducatelle, E. Ferrante, A. Förster, J. Martinez Gonzales, J. Guzzi, V. Longchamp, S. Magnenat, N. Mathews, M. Montes de Oca R. OGrady, C. Pinciroli, G. Pini, P. Rétonnaz, J. Roberts, V. Sperati, T. Stirling, A. Stranieri, T. Stützle, V. Trianni, E. Tuci, A.E. Turgut, and F. Vaussard. Swarmanoid: a novel concept for the study of heterogeneous robotic swarms. *IEEE Robotics & Automation Magazine*, 2013 [ISI](#)
- IJ. 2 C. Pinciroli, V. Trianni, R. O’Grady, G. Pini, A. Brutschy, M. Brambilla, N. Mathews, E. Ferrante, G. Di Caro, F. Ducatelle, M. Birattari, L.M. Gambardella, and M. Dorigo. ARGoS: A modular, parallel, multi-engine simulator for multi-robot systems. *Swarm Intelligence*, 6(4):271–295, 2012 [ISI](#)
- IJ. 3 V. Trianni and S. Nolfi. Engineering the evolution of self-organizing behaviors in swarm robotics: A case study. *Artificial Life*, 17(3):183–202, 2011 [ISI](#)
- IJ. 4 V. Sperati, V. Trianni, and S. Nolfi. Self-organised path formation in a swarm of robots. *Swarm Intelligence*, 5(2):97–119, 2011 [ISI](#)
- IJ. 5 V. Trianni, E. Tuci, K. M. Passino, and J. A. R. Marshall. Swarm cognition: an interdisciplinary approach to the study of self-organising biological collectives. *Swarm Intelligence*, 5(1):3–18, 2011 [ISI](#)
- IJ. 6 V. Trianni, E. Tuci, and K. M. Passino. Special issue on Swarm Cognition. *Swarm Intelligence*, 5(1):1–2, 2011 [ISI](#)
- IJ. 7 V. Trianni and S. Nolfi. Self-organising sync in a robotic swarm. A dynamical system view. *IEEE Transactions on Evolutionary Computation*, 13(4):722–741, 2009 [ISI](#)
- IJ. 8 C. Ampatzis, E. Tuci, V. Trianni, A. L. Christensen, and M. Dorigo. Evolving self-assembly in autonomous homogeneous robots: Experiments with two physical robots. *Artificial Life*, 15(4):465–484, 2009 [ISI](#)
- IJ. 9 V. Sperati, V. Trianni, and S. Nolfi. Evolving coordinated group behaviours through maximization of mean mutual information. *Swarm Intelligence*, 2(2–4):73–95, 2008 [ISI](#)
- IJ. 10 C. Ampatzis, E. Tuci, V. Trianni, and M. Dorigo. Evolution of signaling in a multi-robot system: Categorization and communication. *Adaptive Behaviour*, 16(1):5–26, 2008 [ISI](#)
- IJ. 11 G. Baldassarre, V. Trianni, M. Bonani, F. Mondada, M. Dorigo, and S. Nolfi. Self-organised coordinated motion in groups of physically connected robots. *IEEE Transactions on Systems, Man and Cybernetics - Part B: Cybernetics*, 37(1):224–239, 2007 [ISI](#)
- IJ. 12 V. Trianni and M. Dorigo. Self-organisation and communication in groups of simulated and physical robots. *Biological Cybernetics*, 95:213–231, 2006 [ISI](#)
- IJ. 13 E. Tuci, R. Groß, V. Trianni, F. Mondada, M. Bonani, and M. Dorigo. Cooperation through self-assembling in multi-robot systems. *ACM Transactions on Autonomous and Adaptive Systems*, 1(2):115–150, 2006 [ISI](#)
- IJ. 14 V. Trianni, S. Nolfi, and M. Dorigo. Cooperative hole avoidance in a *swarm-bot*. *Robotics and Autonomous Systems*, 54(2):97–103, 2006 [ISI](#)
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