

Marco Mirolli

Curriculum Vitae

Personal Details

Nationality	Italian
Date of birth	29/3/1977
Place of birth	Siena (SI), Italy
Position	Researcher at the Institute of Cognitive Sciences and Technologies, National Research Council (ISTC-CNR)
Address	Via San Martino della Battaglia, 44, 00185, Roma, Italy
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Education

July 2006	PhD in Cognitive Sciences, Università di Siena. Thesis: “An Artificial Life Approach to the Evolution of Language: Preliminary experiments”, Supervisors: Prof. Cristiano Castelfranchi, Prof. Sandro Nannini
January 2004	Master in Cognitive Sciences, Università di Siena
July 2003	Oxford Connectionist Summer School, held by Prof. Kim Plunkett and Prof. Edmund T. Rolls
September 2001	Degree in Philosophy (Magna cum Laude), Università di Siena. Thesis: “L'intenzionalità in Daniel Dennett” (“Intentionality in Daniel Dennett”). Supervisors: Prof. Sandro Nannini, Prof. Giuseppe Varnier

Research Experiences

October 2012 - present	Researcher (permanent) at the Institute of Cognitive Sciences and Technologies
July 2009 – September 2012	Researcher (fixed term) at the Institute of Cognitive Sciences and Technologies in the Cognitive Systems, Interaction and Robotics project funded by the European Commission “ IM-CLeVeR ” (Intrinsically Motivated Cumulative Learning Versatile Robots)
July 2008 – June 2009	Researcher (fixed term) at the Institute of Cognitive Sciences and Technologies in the Cognitive Systems, Interaction and Robotics project funded by the European Commission “ ITALK ” (Integration

and Transfer of Action and Language Knowledge in Robots)

- March 2004 – June 2008** Research fellow at the Institute of Cognitive Sciences and Technologies in the future and emerging technologies (FET) project funded by the European Commission “**ECAgents**” (Embodied and Communicating Agents)
- March-July 2005** Visiting Researcher at the Adaptive Behaviour & Cognition Group, University of Plymouth, Plymouth, UK, with Prof. Angelo Cangelosi
- December 2002 - February 2004** Research fellow at the Institute of Cognitive Sciences and Technologies in the European Science Foundation (ESF) project “**OMLL**” (Origin of Man, Language and Languages)
- June-August 2002** Research fellow at the University of Siena in the future and emerging technologies (FET) project funded by the European Commission “**ALFEBIITE**” (A Logical Framework for Ethical Behaviour between Inhabitants in the Information Trading Economy of the Universal Information Ecosystem)

Teaching

- 2015-2016** Course on “Artificial Intelligence and Elements of Programming” (54 hours) at the Suor Orsola Benincasa University of Naples, for the degree in Sciences and Techniques of Cognitive Psychology
- 2014-2015** Course on “Artificial Intelligence and Elements of Programming” (54 hours) at the Suor Orsola Benincasa University of Naples, for the degree in Sciences and Techniques of Cognitive Psychology
- 2013-2014** Course on “Artificial Intelligence and Elements of Programming” (54 hours) at the Suor Orsola Benincasa University of Naples, for the degree in Sciences and Techniques of Cognitive Psychology
- 2013-2014** Module of “Logic and Critical Thinking” (15 hours) at the LUISS University of Rome, interfaculty course
- 2012-2013** Module of “Logic and Critical Thinking” (15 hours) at the LUISS University of Rome, interfaculty course
- 2009-2010** Course on “Computational Neurosciences: basic models” (half course: 24 hours) at La Sapienza University of Rome, for the Faculty of Psychology

Institutional Roles

- 2012 - present** Member of the Editorial Board of the International Journal Topoi: An International Review of Philosophy
- 2007 - present** Review Editor of the international journal Frontiers in Neurobotics
- 2010 - present** Responsible of research line on Computational Embodied Neuroscience for the Life Sciences Department of CNR

12/06/2014	External examiner for the PhD viva of Dr. Paul Grouchy at the Institute of Aerospace Studies of the University of Toronto
2006-2012	Co-Director (with Gianluca Baldassarre) of LOCEN: Laboratory of Computational Embodied Neuroscience at the Institute of Cognitive Sciences and Technologies

Organizational activities

(Co-) Chair	<ul style="list-style-type: none"> • International Workshop on Intrinsically Motivated Cumulative Learning (Venezia, Novembre 2009) • Second Workshop on Artificial Life (WIVA2) (Roma, Marzo 2005)
Promoting committee	<ul style="list-style-type: none"> • Italian Workshop on Artificial Life and Evolutionary Computation (WIVACE) (Sampieri, Ragusa, Settembre 2007) • Third Italian Workshop on Artificial Life (WIVA3) (Siena, Settembre 2006) • Second Workshop on Artificial Life (WIVA2) (Roma, Marzo 2005)
Organizing committee	<ul style="list-style-type: none"> • Final OMLL Conference (Roma, Dicembre 2007) (chair of the organizational committee) • 6th International Conference on the Evolution of Language (EVLANG6) (Roma, Aprile 2006)
Scientific committee	<ul style="list-style-type: none"> • Special Session on Evolutionary Robotics of the IEEE Congress of Evolutionary Computation (CEC) 2010 (Barcelona, Luglio 2010) • 8th International Conference on Development and Learning (ICDL 2009) (Shangai, Giugno 2009) • Special Session on Evolutionary Robotics of the IEEE Congress of Evolutionary Computation (CEC) 2009 (Trondheim, Maggio 2009) • WIVACE 2008, Workshop Italiano di Vita Artificiale e Computazione Evolutiva (Venezia, Settembre 2008) • 8th International Conference on Epigenetic Robotics (Brighton, Luglio 2008) • 10th International Conference for the Simulation of Adaptive Behavior (SAB 2008) (Osaka, Luglio 2008) • Italian Workshop on Artificial Life and Evolutionary Computation (WIVACE) (Sampieri, Ragusa, Settembre 2007) • 9th International Conference for the Simulation of Adaptive Behavior (SAB 2006) (Roma, Settembre 2006) • Third Italian Workshop on Artificial Life (WIVA3) (Siena, Settembre 2006) • Second Workshop on Artificial Life (WIVA2) (Roma, Marzo 2005)

Refereeing Activities

Awards

- CNCC Essay Award for Junior Scholars (International competition for scientific essays on Consciousness founded by the European Science Foundation)

Journals

- IEEE Transactions on Autonomous Mental Development
- Frontiers in Neurorobotics, Frontiers
- Interface, Royal Society Publishing
- Neural Networks, Elsevier
- Adaptive Behavior, Sage Publications
- Connection Science, Taylor & Francis
- Plos One
- Topoi, Springer
- Cognitive Processing, Springer
- Mind & Society, Springer
- Sistemi Intelligenti, Il Mulino

Conferences

- ICRA 2015: International Conference on Robotics and Automation
- AISC 2015: Conferenza annuale della Associazione Italiana di Scienze Cognitive
- ICDL-Epirob 2014: International Conference on Development and Learning - Epirob
- AISC 2014: Conferenza annuale della Associazione Italiana di Scienze Cognitive
- ECAL 2013 workshop on Artificial Life Models of Higher Cognition
- IEEE SSCI 2013: IEEE Symposium Series on Computational Intelligence
- ECAL 2013: European Conference on Artificial Life
- IJCNN 2011: International Joint Conference on Neural Networks
- CogSci 2011: 33th annual meeting of the Cognitive Science Society
- IIEEE CEC 2010: Congress on Evolutionary Computation
- Evolang8: Eighth International Conference on the Evolution of Language (2010)
- IJCNN 2009: International Joint Conference on Neural Networks
- Epirob08: Eight International Conference on Epigenetic Robotics
- SAB 2008: Tenth International Conference on Simulation of

Adaptive Behavior

- IJCNN 2007: International Joint Conference on Neural Networks
- COGSCI 2006: Twenty-Eighth Annual Conference of the Cognitive Science Society
- IJCNN 2006: International Joint Conference on Neural Networks
- COGSCI 2005: Twenty-Seventh Annual Conference of the Cognitive Science Society
- NCPW9: Ninth Neural Computation and Psychology Workshop (2004)
- CollInt IV: Fourth International Conference on Collective Intentionality

Publications

Edited volumes

1. Cagnoni Stefano, **Mirolli Marco**, Villani Marco (2014): **Evolution, Complexity and Artificial Life**, Berlin: Springer
2. Baldassarre Gianluca, **Mirolli Marco** (2013): **Intrinsically Motivated Learning in Natural and Artificial Systems**, Berlin: Springer
3. Baldassarre Gianluca, **Mirolli Marco** (2013): **Computational and Robotic Models of the Hierarchical Organization of Behavior**, Berlin: Springer
4. Baldassarre Gianluca, Barto Andrew, **Mirolli Marco**, Redgrave Peter, Ryan Richard M., Stafford Tom (2013): **Intrinsic motivations and open-ended development in animals, humans, and robots**, Frontiers Research Topic. Cross-listed in **Frontiers in Psychology (Cognitive Science Section)** and **Frontiers in Neurobotics**
5. Nolfi Stefano, **Mirolli Marco** (2010): **Evolution of Communication and Language in Embodied Agents**, Berlin: Springer
6. Baldassarre Gianluca, Marocco Davide, **Mirolli Marco** (2006): **La via italiana alla vita artificiale**, special issue of *Sistemi Intelligenti*, 1 (Italian)

Journals

1. Fiore Vincenzo G., Mannella Francesco, **Mirolli Marco**, Latagliata Emanuele Claudio, Valzania Alessandro, Cabib Simona, Dolan Raymond J., Puglisi-Allegra Stefano, Baldassarre Gianluca (2015) Corticolimbic catecholamines in stress: a computational model of the appraisal of controllability. *Brain Structure and Function*, 220(3): 1339-1353
2. Baldassarre Gianluca, Stafford Tom, **Mirolli Marco**, Redgrave Peter, Ryan Richard M., Barto Andrew (2014) Intrinsic motivations and open-ended development in animals, humans, and robots: an

overview. *Frontiers in Psychology*, 5:985

3. Gigliotta Onofrio, **Mirolli Marco**, Nolfi Stefano (2014) Communication based dynamic role allocation in a group of homogeneous robots. *Natural Computing*, 13: 391-402
4. Taffoni Fabrizio, Tamilia Eleonora, Focaroli Valentina, Formica Domenico, Ricci Luca Di Pino Giovanni, Baldassarre Gianluca, **Mirolli Marco**, Guglielmelli Eugenio, Keller Flavio (2014) Development of goal-directed action selection guided by intrinsic motivations: an experiment with children. *Experimental Brain Research*, 232(7): 2167-2177
5. Polizzi di Sorrentino Eugenia, Sabbatini Gloria, Truppa Valentina, Bordonali Anna, Taffoni Fabrizio, Formica Domenico, Baldassarre Gianluca, **Mirolli Marco**, Guglielmelli Eugenio, Visalberghi Elisabetta (2014) Exploration and learning in capuchin monkeys (*Sapajus spp.*): the role of action-outcome contingencies, *Animal Cognition*, 17(5): 1081-1088
6. Paglieri Fabio, Addessi Elsa, De Petrillo Francesca, Laviola Giovanni, **Mirolli Marco**, Parisi Domenico, Petrosino Giancarlo, Ventricelli Marialba, Zoratto Francesca, Adriani Walter (2014) Nonhuman gamblers: Lessons from rodents, primates, and robots, *Frontiers in Behavioral Neuroscience*, 8:33
7. Fiore Vincenzo G., Sperati Valerio, Mannella Francesco, **Mirolli Marco**, Gurney Kevin, Friston Karl, Dolan Raymond J., Baldassarre Gianluca (2014) Keep focussing: striatal dopamine multiple functions resolved in a single mechanism tested in a simulated humanoid robot, *Frontiers in Psychology* 5:124
8. Santucci Vieri G., Baldassarre Gianluca, **Mirolli Marco** (2013) Which is the best intrinsic motivation signal for learning multiple skills?, *Frontiers in Neurobotics*, 7:22
9. Barto Andrew, **Mirolli Marco**, Baldassarre Gianluca (2013). Novelty or Surprise?, *Frontiers in Psychology*, 4:907
10. **Mirolli Marco**, Santucci Vieri, Baldassarre Gianluca (2013): Phasic dopamine as a prediction error of intrinsic and extrinsic reinforcements driving both action acquisition and reward maximization: A simulated robotic study, *Neural Networks*, 39: 40-51
11. Baldassarre Gianluca, Mannella Francesco, Fiore Vincenzo G., Redgrave Peter, Gurney Kevin, **Mirolli Marco** (2013): Intrinsically motivated action-outcome learning and goal-based action recall: A system-level bio-constrained computational model, *Neural Networks*, 41: 168-187
12. Chersi Fabian, **Mirolli Marco**, Pezzulo Giovanni, Baldassarre Gianluca (2013): A spiking neuron model of the cortico-basal ganglia circuits for goal-directed and habitual action learning, *Neural Networks*, 41: 212-224
13. **Mirolli Marco** (2012): Representations in Dynamical Embodied

Agents: Re-Analyzing a Minimally Cognitive Model Agent, *Cognitive Science*, 36: 870-895.

14. Taffoni Fabrizio, Vespignani Massimo, Formica Domenico, Cavallo Giuseppe, Polizzi di Sorrentino Eugenia, Sabbatini Gloria, Truppa Valentina, **Mirolli Marco**, Baldassarre Gianluca, Visalberghi Elisabetta, Keller Flavio, Guglielmelli Eugenio (2012): A mechatronic platform for behavioral analysis on nonhuman primates, *Journal of Integrative Neuroscience*, 11(1): 87-101.
15. **Mirolli Marco**, Parisi Domenico (2011): La societa' nella mente (attraverso il linguaggio), *Sistemi Intelligenti*, 2: 309-317 (Italian).
16. **Mirolli Marco**, Parisi Domenico (2011): Towards a Vygotskyan Cognitive Robotics: The Role of Language as a Cognitive Tool, *New Ideas in Psychology*, 29: 298-311.
17. **Mirolli Marco**, Tomassino Ferrauto, Stefano Nolfi (2010): Categorisation through Evidence Accumulation in an Active Vision System, *Connection Science*, 22(4): 331-354.
18. **Mirolli Marco**, Mannella Francesco, Baldassarre Gianluca (2010): The Roles of The Amygdala in the Affective Regulation of Body, Brain, and Behaviour, *Connection Science*, 22(3): 215-245.
19. Baldassarre Gianluca, **Mirolli Marco** (2010): What are the Key Open Challenges for Understanding Autonomous Cumulative Learning of Skills?, *Autonomous Mental Development Newsletter*, 7(2): 2-9 (target column with commentaries and response).
20. **Mirolli Marco**, Parisi Domenico (2009): Language as a Cognitive Tool, *Minds and Machines*, 19(4): 517-528.
21. **Mirolli Marco**, Parisi Domenico (2008): How producer biases can favor the evolution of communication: An analysis of evolutionary dynamics, *Adaptive Behavior*, 16(1): 27-52.
22. **Mirolli Marco** (2006) Vita artificiale e linguaggio, *Sistemi Intelligenti*, 1: 133-142 (Italian).
23. Baldassarre Gianluca, Marocco Davide, **Mirolli Marco** (2006): La via italiana alla vita artificiale, *Sistemi Intelligenti*, 1: 3-6 (Italian).
24. **Mirolli Marco**, Parisi Domenico (2005): How can we explain the emergence of a language that benefits the hearer but not the speaker? *Connection Science*, 17(3-4): 307-324.
25. **Mirolli Marco** (2002): A naturalistic perspective on intentionality. Interview with Daniel Dennett, *Mind & Society*, 6 (3): 1-12.

Book chapters & Conference Proceedings

1. Santucci Vieri G., Baldassarre Gianluca, **Mirolli Marco** (2014): Autonomous selection of the “what” and the “how” of learning: an intrinsically motivated system tested with a two armed robot: *Proceedings of the IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob2014)*: 1-6.
2. Gigliotta Onofrio, **Mirolli Marco** (2014): Evolution of communication-based collaborative behavior in homogeneous robots. In Sayama H., Rieffel J., Risi S., Doursat R., Lipson H.

- (Eds.) *Artificial Life 14. Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems*. Cambridge MA, MIT Press: 673-680.
3. Santucci Vieri G., Baldassarre Gianluca, **Mirolli Marco** (2014) Cumulative learning through intrinsic reinforcements. In S. Cagnoni, M.Mirolli, M. Villani (eds.): *Evolution, Complexity and Artificial Life*. Berlin: Springer: 107-122
 4. **Mirolli Marco**, Baldassarre Gianluca (2013): Functions and Mechanisms of Intrinsic Motivations: The Knowledge vs. Competence Distinction. In Baldassarre G. and Mirolli M. (Eds.) *Intrinsically Motivated Learning in Natural and Artificial Systems*. Berlin, Springer Verlag: 49-72.
 5. Baldassarre Gianluca, **Mirolli Marco** (2013): Deciding Which Skill to Learn When: Temporal-Difference Competence-Based Intrinsic Motivation (TD-CB-IM). In Baldassarre G. and Mirolli M. (Eds.) *Intrinsically Motivated Learning in Natural and Artificial Systems*. Berlin, Springer Verlag: 257-278.
 6. Fabrizio Taffoni, Domenico Formica, Giuseppina Schiavone, Maria Scorgia, Alessandra Tomassetti, Eugenia Polizzi di Sorrentino, Gloria Sabbatini, Valentina Truppa, Francesco Mannella, Vincenzo Fiore, **Marco Mirolli**, Gianluca Baldassarre, Elisabetta Visalberghi, Flavio Keller, and Eugenio Guglielmelli (2013): The “Mechatronic Board”: A Tool to Study Intrinsic Motivations in Humans, Monkeys, and Humanoid Robots. In Baldassarre G. and Mirolli M. (Eds.) *Intrinsically Motivated Learning in Natural and Artificial Systems*. Berlin, Springer Verlag: 411-432.
 7. Baldassarre Gianluca, **Mirolli Marco** (2013): Intrinsically Motivated Learning Systems: An Overview. In Baldassarre G. and Mirolli M. (Eds.) *Intrinsically Motivated Learning in Natural and Artificial Systems*. Berlin, Springer Verlag: 1-14.
 8. Baldassarre Gianluca, **Mirolli Marco** (2013): Computational and Robotic Models of the Hierarchical Organization of Behavior: An Overview. In Baldassarre G. and Mirolli M. (Eds.) *Computational and Robotic Models of the Hierarchical Organization of Behavior*. Berlin, Springer Verlag: 1-10.
 9. Santucci Vieri Giuliano, Baldassarre Gianluca, **Mirolli Marco** (2013): Intrinsic motivation signals for driving the acquisition of multiple tasks: A simulated robotic study. In R.L. West, T.C. Stewart (Eds.): *Proceedings of the 12th International Conference on Cognitive Modelling (ICCM2013)*. Carleton University: 59-64
 10. Santucci Vieri Giuliano, Baldassarre Gianluca, **Mirolli Marco** (2012): A bio-inspired learning signal for the cumulative learning of different skills. In Cagnoni Stefano, Mirolli Marco and Villani Marco (Eds.): *Proceedings of the Italian Workshop of Artificial Life and Evolutionary Computation (WIVACE2012)*. Dip. Scienze Sociali. Universita' di Parma: E1-12

11. Tommasino Paolo, Caligiore Daniele, **Mirolli Marco**, Baldassarre Gianluca (2012): Reinforcement Learning Algorithms that Assimilate and Accommodate Skills with Multiple Tasks: Proceedings of the IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob2012): 1-6
12. Santucci Vieri Giuliano, Baldassarre Gianluca, **Mirolli Marco** (2012): Intrinsic Motivation Mechanisms for Competence Acquisition. Proceedings of the IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob2012): 1-6
13. Taffoni Fabrizio, Formica Domenico, Zompanti Alessandro, **Mirolli Marco**, Baldassarre Gianluca, Keller Flavio, Guglielmelli Eugenio (2012): A Mechatronic Platform for Behavioral Studies on Infants. Proceedings of The Fourth IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob2012)
14. Santucci Vieri Giuliano, Baldassarre Gianluca, **Mirolli Marco** (2010): Biological cumulative learning requires intrinsic motivation: A simulated robotic study on the development of visually-guided reaching. In Johansson Birger, Sahin Erol and Balkenius Christian (Eds.): Proceedings of the Tenth International Conference on Epigenetic Robotics (EpiRob2010). Lund, Lund University Cognitive Studies (149)
15. Caligiore Daniele, **Mirolli Marco**, Parisi Domenico, Baldassarre Gianluca (2010): A Bioinspired Hierarchical Reinforcement Learning Architecture for Modeling Learning of Multiple Skills with Continuous States and Actions. In Johansson Birger, Sahin Erol and Balkenius Christian (Eds.): Proceedings of the Tenth International Conference on Epigenetic Robotics (EpiRob2010). Lund, Lund University Cognitive Studies (149)
16. Mannella Francesco, **Mirolli Marco**, Baldassarre Gianluca (2010): The interplay of pavlovian and instrumental processes in devaluation experiments: a computational embodied neuroscience model tested with a simulated rat. In Toss C.R. and Ruxton G.D. (Eds.): Modelling Perception with Artificial Neural Networks. Cambridge, Cambridge University press: 93-113
17. **Mirolli Marco**, Nolfi Stefano (2010): Evolving communication in embodied agents: Theory, Methods, and Evaluation. In Nolfi S. and Mirolli M. (Eds.): Evolution of Communication and Language in Embodied and Situated Agents. Berlin, Springer Verlag: 105-121
18. **Mirolli Marco**, Parisi Domenico (2010): Producer Biases and Kin Selection in the Evolution of Communication: How the Phylogenetic and the Adaptive Problems of Communication can be solved. In Nolfi S. and Mirolli M. (Eds.): Evolution of Communication and Language in Embodied and Situated Agents. Berlin, Springer Verlag: 135-159
19. Nolfi Stefano, **Mirolli Marco** (2010): Evolving communication in

- embodied agents: Assessment and Open Challenges. In Nolfi S. and Mirolli M. (Eds.): *Evolution of Communication and Language in Embodied and Situated Agents*. Berlin, Springer Verlag: 215-220
20. Ferrauto Tomassino, Tuci Elio, **Mirolli Marco**, Massera Gianluca, Nolfi Stefano (2009): Two examples of active categorisation processes distributed over time. In L. Cañamero, P-Y. Oudeyer, C. Balkenius (Eds.), *Proceedings of the Ninth International Conference on Epigenetic Robotics*. Lund, Lund University Cognitive Studies 146: 49-56
 21. Tummolini Luca, **Mirolli Marco**, Castelfranchi Cristiano (2009): The Evolution of Stigmergy: A Simulative Approach to Indirect Communication of Behavioral Messages with Implicit Signals. In Adelinde M. Uhrmacher; Danny Weyns (Eds.) *Agents, Simulation and Applications*. London, Taylor & Francis: 243-265
 22. Gigliotta Onofrio, **Mirolli Marco**, Nolfi Stefano (2009): Who is the learder? Dynamic role allocation through communication in a population of homogeneous robots. In Serra R., Villani M., Poli I. (Eds.): *Artificial Life and Evolutionary Computation. Proceedings of Wivace 2008*. Singapore, World Scientific: 167-177
 23. Venditti Alberto, **Mirolli Marco**, Parisi Domenico, Baldassarre Gianluca (2009): A neural-network model of the dynamics of hunger, learning, and action vigor in mice. In Serra R., Villani M., Poli I. (Eds.): *Artificial Life and Evolutionary Computation. Proceedings of Wivace 2008*. Singapore, World Scientific: 131-142
 24. Fiore Vincenzo, Mannella Francesco, **Mirolli Marco**, Gurney Kevin, Baldassarre Gianluca (2008): Instrumental conditioning driven by neutral stimuli: A model tested with a simulated robotic rat. In Schlesinger M., Berthouze L., Balkenius C. (eds.), *Proceedings of the Eight International Conference on Epigenetic Robotics: Modeling Cognitive Development in Robotic Systems*. Lund, Lund University Cognitive Studies 139: 13-20
 25. Mannella Francesco, **Mirolli Marco**, Baldassarre Gianluca (2008): Computational principles underlying the functioning of amygdala in the affective regulation of behaviour. In Low R., Morse A., Ziemke T., (orgs.), *The role of emotion in adaptive behaviour and cognitive robotics, SAB2008 workshop*. Skovde, University of Skovde. (Osaka, Japan, 11-12 July 2008): E1-10
 26. Mannella Francesco, Zappacosta Stefano, **Mirolli Marco**, Baldassarre Gianluca (2008): A computational model of the amygdala nuclei's role in second order conditioning. In Asada M., Hallam J.C.T., Meyer, J.-A., Tani J. (eds.), *From Animals to Animats 10: Proceedings of the Tenth International Conference on the Simulation of Adaptive Behavior (SAB2008)*. LNAI 5040. Berlin, Springer Verlag: 321-330
 27. Mannella Francesco, **Mirolli Marco**, Baldassarre Gianluca (2007): The role of amygdala in devaluation: a model tested with a simulated robot. In Luc Berthouze; G. Prince Dhristiopher;

Michael Littman; Hideki Kozima and Christian Balkenius (Eds.) Proceedings of the Seventh International Conference on Epigenetic Robotics (EpiRob2007). Lund, Lund University Cognitive Studies: 77-84

28. **Mirolli Marco**, Ceconi Federico, Parisi Domenico (2007): A Neural Network Model for Explaining the Asymmetries between Linguistic Production and Linguistic Comprehension. In S. Vosniadou, D. Kayser, A. Protopapas (Eds.) Proceedings of the European Cognitive Science Conference 2007. Hove, Lawrence Erlbaum: 670-675
29. Schembri Massimiliano, **Mirolli Marco**, Baldassarre Gianluca (2007): Evolving childhood's length and learning parameters in an intrinsically motivated reinforcement learning robot. In Luc Berthouze; G. Prince Dhristiopher; Michael Littman; Hideki Kozima and Christian Balkenius (Eds.) Proceedings of the Seventh International Conference on Epigenetic Robotics (EpiRob2007). Lund, Lund University Cognitive Studies: 141-148
30. Schembri Massimiliano, **Mirolli Marco**, Baldassarre Gianluca (2007): Evolution and learning in an intrinsically motivated reinforcement learning robot. In Fernando Almeida y Costa; Luis Mateus Rocha; Ernesto Costa; Inman Harvey and Antonio Coutinho (Eds.) Advances in Artificial Life. Proceedings of the 9th European Conference on Artificial Life. Berlin, Springer: 294-333
31. Schembri Massimiliano, **Mirolli Marco**, Baldassarre Gianluca (2007): Evolving internal reinforcers for an intrinsically motivated reinforcement-learning robot. In Yiannis Demiris; Denis Mareschal; Brian Scassellati and John Weng (Eds.) Proceedings of the 6th International Conference on Development and Learning. London, Imperial College: E1-6
32. Parisi Domenico, **Mirolli Marco** (2007): The emergence of language: How to simulate it. In C. Lyon, C. Nehaniv and A. Cangelosi (Eds.) Emergence of Communication and Language. Berlin, Springer Verlag: 269-286
33. Parisi, Domenico, Mirolli Marco (2007): Steps Towards Artificial Consciousness: A Robot's Knowledge of Its Own Body, In AAAI Fall Symposium on "AI and Consciousness: Theoretical Foundations and Current Approaches"
34. **Mirolli Marco**, Parisi Domenico (2006): Talking to oneself as a selective pressure for the emergence of language. In A. Cangelosi, A.D.M. Smith and K. Smith (Eds.) Proceedings of the 6th International Conference on the Evolution of Language. Singapore, World Scientific: 214-221
35. **Mirolli Marco**, Ceconi Federico, Parisi Domenico (2006): Un modello neurale per spiegare le asimmetrie tra produzione e comprensione linguistica. In A. Greco, C. Penco, G. Sandini, R. Zaccaria (Eds.) Scienze Cognitive e Robotica. Atti del Terzo Convegno Nazionale di Scienze Cognitive. Genova, Erga Edizioni:

165-169 (Italian)

36. **Mirolli Marco**, Parisi Domenico (2005): Language as an aid to categorization: A neural network model of early language acquisition. In A. Cangelosi, G. Bugmann and R. Borisyuk (Eds.) *Modelling Language, Cognition and Action*. Proceedings of the 9th Neural Computation and Psychology Workshop. Singapore, World Scientific: 97-106
37. **Mirolli Marco**, Parisi Domenico (2004): Language, altruism, and docility: How cultural learning can favour language evolution. In J. B. Pollack, M. Bedau, P. Husbands, T. Ikegami and R. A. Watson (Eds.) *Artificial Life IX: Proceedings of the Ninth International Conference on the Simulation and Synthesis of Living Systems*. Cambridge (MA), MIT Press: 182-187
38. **Mirolli Marco**, Parisi Domenico (2003): Artificial Organisms that Sleep. In W. Banzhaf, T. Christaller, P. Dittrich, J. T. Kim, and J. Ziegler (Eds.) *Advances in Artificial Life*. Proceedings of the 7th European Conference on Artificial Life. Berlin, Springer Verlag: 377-386

Conference abstracts

1. Fiore Vincenzo, Mannella Francesco, **Mirolli Marco**, Cabib Simona, Puglisi-Allegra Stefano and Baldassarre Gianluca (2009): A Computational Model of Stress Coping in Rats. *Frontiers in Computational Neuroscience*. Conference Abstract: Bernstein Conference on Computational Neuroscience. doi: 10.3389/conf.neuro.10.2009.14.050
2. Mannella Francesco, **Mirolli Marco**, Baldassarre Gianluca (2009): A Computational Model of Goal-Driven Behaviours and Habits in Rats. *Frontiers in Computational Neuroscience*. Conference Abstract: Bernstein Conference on Computational Neuroscience. doi: 10.3389/conf.neuro.10.2009.14.022
3. Baldassarre Gianluca, **Mirolli Marco**, Mannella Francesco, Caligiore Daniele, Visalberghi Elisabetha, Natale Francesco, Truppa Valentina, Sabbatini Gloria, Guglielmelli Eugenio, Keller Flavio, Campolo Domenico, Redgrave Peter, Gurney Kevin, Stafjord Tom, Triesch Jochen, Weber Cornelius, Rothkopf, Constantin, Nehmzow Ulrich, Condell Joan, Siddique Mia, Lee Mark, Huelse Martin, Schmidhuber Juergen, Gomez Faustino, Foester Alexander, Togelius Julian, Barto Andrew (2009): The IM-CLeVeR project: intrinsically motivated cumulative learning versatile robots. In Canamero L., Oudeyer P.Y., Balkenius C. (Eds.), *Proceedings of the Ninth International Conference on Epigenetic Robotics: Modeling Cognitive Development in Robotic Systems*. Lund, Lund University Cognitive Studies 146: 189-190
4. Baldassarre Gianluca, **Mirolli Marco** (2009): Il progetto IM-CLeVeR: Intrinsically motivated cumulative learning versatile robots. In Miglino Orazio, Ponticorvo Michela, Rega Angelo, Rubinacci Franco (Eds.): *Modelli, sistemi e applicazioni di Vita Artificiale e Computazione Evolutiva*. Atti del VI Workshop Italiano di Vita Artificiale e Computazione Evolutiva (WIVACE

2009), Napoli: Fridericiana Editrice Universitaria: 43-46

5. **Mirolli Marco** (2007): Perché Neanche una Scienza Cognitiva ‘Incarnata’ Può Fare a Meno delle Rappresentazioni: Nuove Analisi di un ‘Comportamento Minimamente Cognitivo’. Atti del Workshop Italiano di Vita Artificiale e Computazione Evolutiva, Sampieri (RG)
6. **Mirolli Marco** (2006): Bias di produzione nell'evoluzione della comunicazione. Atti del Terzo Workshop Italiano di Vita Artificiale, Siena
7. **Mirolli Marco**, Parisi Domenico (2005) Linguaggio e categorizzazione: Un modello neurale dell'apprendimento del lessico. Atti del Secondo Workshop Italiano di Vita Artificiale, Roma.
8. **Mirolli Marco** (2003): Evoluzione della comunicazione in reti neurali ecologiche. Atti del Primo Workshop Italiano di Vita Artificiale, Arcavacara di Rende (CS)
9. **Mirolli Marco**, Parisi Domenico (2003): Evoluzione del sonno in una popolazione di reti neurali artificiali. Atti del Congresso Nazionale di Psicologia Sperimentale, Bari

Theses

1. **Mirolli Marco** (2006): An Artificial Life Approach to the Evolution of Language: Preliminary experiments, thesis for the PhD in Cognitive Sciences, University of Siena
2. **Mirolli Marco** (2001): L'intenzionalità in Daniel Dennett, thesis for the Master (Laurea) in Philosophy, University of Siena (Italian)

Presentations

Invited Talks

1. “Intrinsic Motivation Reconsidered”, Institute of Robotics and Mechatronics, University of Toronto, Toronto, 13 June 2014
2. “The IM-CLeVeR Project” (with Gianluca Baldassarre) EpiRob 2009, Venezia, 12-14 Novembre 2009
3. “The role of talking to oneself in the evolution of language.” OMLL Final Conference, Roma, 12-14 December 2007
4. “Neural Networks and Agent Based Modeling.” Workshop: From Observations and Experiments to Modeling Styles, ISTC-CNR, Rome, 11-12 October 2007
5. Course on “Vita artificiale ed evoluzione della comunicazione”, Scuola Estiva in Computazione Evolutiva e Vita Artificiale (SECEVitA 2007), Sampieri (Ragusa), 31 August - 4 September 2007 (“Artificial Life and the evolution of communication”, Summer school on Evolutionary Computation and Artificial Life) (Italian)
6. “Artificial Life models of language”, Symposium in memory of

Marica De Vincenzi on Biological and psychological bases of language, Università Gabriele D'annunzio di Chieti-Pescara, Genuary 2007

7. “Il linguaggio come strumento del pensiero: Teoria e simulazioni”, Workshop Italiano su Linguaggio e Scienze Cognitive, Università di Trieste, Maggio 2006 (“Language as a cognitive tool: Theory and simulations”, Italian Workshop on Language and the Cognitive Sciences) (Italian)
8. Discussant of Deborah Tollefsen: “From Extended Mind to Collective Mind”, Conference on Collective Intentionality IV, Università di Siena, October 2004

Presentations

1. “Integrating competence-based and knowledge-based intrinsic motivations” IM-CLeVeR International Workshop, Venezia, 15-17 Novembre 2009
2. “Apprendimento cumulativo e motivazioni intrinseche: un modello neurale gerarchico testato su un robot simulato”, VI Workshop Italiano di Vita Artificiale e Computazione Evolutiva 2009, Napoli, 23-25 Novembre 2009
3. “Verso una epistemologia naturalistica della vita artificiale: vari usi delle simulazioni come strumenti per la scienza”, Workshop Italiano di Vita Artificiale e Computazione Evolutiva 2008, Venezia, 8-10 Settembre 2008
4. “A computational model of hunger, perceived reward and vigor in experiments of operand conditioning with mice”, Workshop Italiano di Vita Artificiale e Computazione Evolutiva 2008, Venezia, 8-10 Settembre 2008
5. “Steps towards artificial consciousness: A robot’s knowledge of its own body.” AAAI Fall Symposium on Consciousness and Artificial Intelligence: Theoretical foundations and current approaches, Washington DC, 8-11 November 2007
6. “Perché Neanche una Scienza Cognitiva ‘Incarnata’ Può Fare a Meno delle Rappresentazioni: Nuove Analisi di un ‘Comportamento Minimamente Cognitivo’” Workshop Italiano di Vita Artificiale e Computazione Evolutiva, Sampieri (RG), 5-7 September 2007 (“Why even an 'embodied' cognitive science cannot do without representations: New analyses of a 'minimally cognitive behavior'”, Italian Workshop on Artificial Life and Evolutionary Computation) (Italian)
7. “Un modello neurale per spiegare le asimmetrie tra produzione e comprensione linguistica”, Terzo Convegno Nazionale di Scienze Cognitive, Università di Genova, 26-27 October 2006 (“A neural model for explaining the asymmetries between linguistic production and linguistic comprehension”, Third National Congress on Cognitive Sciences) (Italian)
8. “Language as a Cognitive Tool: Computational models of a philosophical topic.” International Conference on Computation

and Philosophy (i-CaP), Laval, France, 3-5 May 2006

9. "Talking to oneself as a selective pressure for the emergence of language." 6th International Conference on the Evolution of Language (EVOLANG6), Università 'La Sapienza' di Roma, 12-15 April 2006
10. "Come il linguaggio aiuta la categorizzazione." Secondo Workshop Italiano di Vita Artificiale, ISTC-CNR, Roma 2-5 March 2005 ("How language aids categorization", 2nd Italian Workshop on Artificial Life) (Italian)
11. "How Language Can Help Categorization: Effects of social, private and inner speech." 9th Neural Computation and Psychology Workshop (NCPW9), University of Plymouth, Regno Unito, 8 - 10 September 2004
12. "Language emerges only in kin-related groups or if it is used to talk to oneself." 5th International Conference on the Evolution of Language (EVOLANG5), Leipzig, 31 March - 3 April 2004
13. "Evoluzione del sonno in una popolazione di reti neurali." XVII Congresso Nazionale dell'AIP-Sezione Sperimentale, Bari, 21-25 September 2003 ("Evolution of sleep in a population of neural networks", XVII National Congress of the Italian Association of Psychology) (Italian)
14. "Artificial Organisms that Sleep." 7th European Conference on Artificial Life (ECAL7), Dortmund, Germania, 14-17 September 2003
15. "Evoluzione della comunicazione in reti neurali ecologiche." Primo Workshop Italiano di Vita Artificiale, Università della Calabria a Rende, Cosenza, 5-6 September 2003 ("Evolution of communication in ecological neural networks", 1st Italian Workshop on Artificial Life)

Posters

1. "The IM-CLeVeR Project: intrinsically motivated cumulative learning versatile robots." 9th International Conference on Epigenetic Robotics (EpiRob 2009), Venezia, 12-14 Novembre 2009
2. "Rappresentazioni in agenti 'incarnati' e 'dinamici'. Verso una nuova scienza cognitiva rappresentazionale." 4° Convegno Nazionale di Scienze Cognitive: "Cognizione, Complessità, Cittadinanza", Roma, 28-29 Novembre 2007
3. "Evolution and Learning in an Intrinsically Motivated Reinforcement Learning Robot." 9th European Conference on Artificial Life (ECAL2007), Lisbon, 10-14 Settembre 2007
4. "Language, Altruism and Docility: How Cultural Learning Can Favour Language Evolution". 9th International Conference on the Simulation and Synthesis of Living Systems (ALife9), Boston, USA, 12-15 Settembre 2004
5. "Artificial Life Models of the Evolution of Language: Language as an Aid to Thought". Origins of Man, Language and Languages

(OMLL) Conference, Leipzig, 3-6 Aprile 2004

6. "Genetic, Cognitive and Social Pressures in the Evolution of Language". 1st European Conference on Complex Systems, Torino, 5 - 7 Dicembre 2004

Languages

Italian Native

English Fluent

Programming Skills

Operating Systems Mac, Linux, and Windows

Programming languages C, C++, Python, Matlab, LaTeX, HTML