
Marco Mirolli

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
Phone	06 44 595 231
Fax	06 44 595 243
e-mail	marco.mirolli@istc.cnr.it
WWW	http://laral.istc.cnr.it/mirolli

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

From July 2008	Resercher in the Cognitive Systems, Interaction, and Robotics project founded by the European Commission “ I-TALK ” (Integration and Transfer of Action and Language Knowledge in Robots) at the ISTC-CNR
March 2004 – June 2008	Research fellow in the future and emerging technologies (FET) project

funded by the European Commission “**ECAgents**” (Embodied and Communicating Agents) at the ISTC-CNR

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 in the European Science Foundation (ESF) “**OMLL**” (Origin of Man, Language and Languages), at the ISTC-CNR

June-August 2002

Research fellow in the future and emerging technologies (FET) project funded by the European Commission “**ALFEBIITE**” (A Logical Framework for Ethical Behaviour between Infohabitants in the Information Trading Economy of the Universal Information Ecosystem) at the University of Siena

Languages

Italian Native

English Fluent

Programming Skills

Operating Systems Windows and Linux

Programming languages C, C++, Matlab

LaTeX, HTML

Organizational activities

Promoting committee

- Italian Workshop on Artificial Life and Evolutionary Computation (WIVACE 2008) (Venezia, Settembre 2008)
- Italian Workshop on Artificial Life and Evolutionary Computation (WIVACE 2007) (Sampieri, Ragusa, September 2007)
- Third Italian Workshop on Artificial Life (WIVA3) (Siena, September 2006)
- Second Workshop on Artificial Life (WIVA2) (Roma, March 2005)

Organizing committee

- Final OMLL Conference (Roma, Dicembre 2007) (chair of the organizational committee)
- 6th International Conference on the Evolution of Language (EVOLANG6) (Roma, April 2006)
- Second Workshop on Artificial Life (WIVA2) (Roma, March 2005)

Scientific committee ●

- Italian Workshop on Artificial Life and Evolutionary Computation (WIVACE 2008) (Venezia, Settembre 2008)
- 8th International Conference on Epigenetic Robotics (Brighton, July 2008)
- 10th International Conference for the Simulation of Adaptive Behavior (SAB 2008) (Osaka, July 2008)
- Italian Workshop on Artificial Life and Evolutionary Computation (WIVACE 2007) (Sampieri, Ragusa, September 2007)
- 9th International Conference for the Simulation of Adaptive Behavior (SAB 2006) (Roma, September 2006)
- Third Italian Workshop on Artificial Life (WIVA3) (Siena, September 2006)
- Second Workshop on Artificial Life (WIVA2) (Roma, March 2005)

Refereeing Activities

Journals

Frontiers in Neurorobotics, Frontiers (Review Editor)
Interface, Royal Society Publishing
Adaptive Behavior, Sage Publications
Connection Science, Taylor & Francis
Cognitive Processing, Springer
Mind & Society, Springer
Sistemi Intelligenti, Il Mulino

Conferences

International Joint Conference on Neural Networks (IJCNN)

Annual Conference of the Cognitive Science Society (CogSci)
International Conference for the Evolution of Language (EvoLang)
International Conference for the Simulation of Adaptive Behavior
(SAB)

Publications

Edited volumes

1. Nolfi Stefano, Mirolli Marco (Eds) (in preparation) Evolution of Communication and Language in Embodied and Situated Agents. Berlin: Springer Verlag
2. Baldassarre Gianluca, Marocco Davide, Mirolli Marco (2006) La via italiana alla vita artificiale, numero monografico della rivista *Sistemi Intelligenti*, 1 (Italian)

Journals

3. Gigliotta Onofrio, Mirolli Marco, Nolfi Stefano (submitted): Who is the leader? Dynamic role allocation through communication in a population of homogeneous robots, *Connection Science*
4. Mirolli Marco, Parisi Domenico (accepted): Towards a Vygotskyan Cognitive Robotics: The Role of Language as a Cognitive Tool, *New Ideas in Psychology*
5. 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
6. Mirolli Marco (2006) Vita artificiale e linguaggio, *Sistemi Intelligenti*, 1: 133-142 (Italian)
7. Baldassarre Gianluca, Marocco Davide, Mirolli Marco (2006) La via italiana alla vita artificiale, *Sistemi Intelligenti*, 1: 3-6 (Italian)
8. 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
9. Mirolli Marco (2002): A naturalistic perspective on intentionality. Interview with Daniel Dennett, *Mind & Society*, 6 (3): 1-12

Book chapters

10. Nolfi Stefano, Mirolli Marco (in press): Introduction. In Nolfi S. and Mirolli M. (Eds.) *Evolution of Communication and Language in Embodied and Situated Agents*. Berlin: Springer Verlag
11. Nolfi Stefano, Mirolli Marco (in press): Evolving communication in embodied agents: Theory, Methods and Assessment Criteria. In Nolfi S. and Mirolli M. (Eds.) *Evolution of Communication and Language in Embodied and Situated Agents*. Berlin: Springer Verlag
12. Nolfi Stefano, Mirolli Marco (in press): 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
13. Nolfi Stefano, Mirolli Marco (in press): Conclusion. In Nolfi S. and Mirolli M. (Eds.) *Evolution of Communication and Language in Embodied and Situated Agents*. Berlin: Springer Verlag
14. Mirolli Marco, Parisi Domenico (in press): The Phylogenetic and the Adaptive Problems of Communication: Insights from Modeling. In Nolfi S. and Mirolli M. (Eds.) *Evolution of Communication and Language in Embodied and Situated Agents*. Berlin: Springer Verlag
15. Tummolini Luca, Mirolli Marco and Castelfranchi Cristiano (in press): 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 (invited)
16. 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 (invited)

Conference Proceedings

17. Mirolli Marco, Parisi Domenico (submitted): Language as a cognitive tool: Computational models of a philosophical topic (submitted for i-C&P06 post-conference proceedings)
18. Mannella Francesco, Zappacosta Stefano, Mirolli Marco, Baldassarre Gianluca (2008): A Computational Model of the Amygdala Nuclei's Role in Second Order Conditioning, in 'From Animals to Animats 10: Proceedings of the 10th International Conference on the Simulation of Adaptive

Behaviour'.

19. 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 & Christian Balkenius (Eds.) Proceedings of the Seventh International Conference on Epigenetic Robotics (EpiRob2007). Lund, Lund University Cognitive Studies: 77-84
20. Mirolli Marco, Cecconi 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
21. 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 & Christian Balkenius (Eds.) Proceedings of the Seventh International Conference on Epigenetic Robotics (EpiRob2007). Lund, Lund University Cognitive Studies: 141-148
22. 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 & Antonio Coutinho (Eds.) Advances in Artificial Life. Proceedings of the 9th European Conference on Artificial Life. Berlin, Springer: 294-333
23. Schembri Massimiliano, Mirolli Marco, Baldassarre Gianluca (2007): Evolving internal reinforcers for an intrinsically motivated reinforcement-learning robot. In Yiannis Demiris; Denis Mareschal; Brian Scassellati & John Weng (Eds.) Proceedings of the 6th International Conference on Development and Learning. London, Imperial College: E1-6
24. 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
25. Mirolli Marco, Cecconi 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)

26. 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
27. 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
28. 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

29. 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) (Italian)
30. Mirolli Marco (2006): Bias di produzione nell'evoluzione della comunicazione. *Atti del Terzo Workshop Italiano di Vita Artificiale*, Siena (Italian)
31. Mirolli Marco, Parisi Domenico (2005) Linguaggio e categorizzazione: Un modello neurale dell'apprendimento del lessico. *Atti del Secondo Workshop Italiano di Vita Artificiale*, Roma (Italian)
32. Mirolli Marco (2003): Evoluzione della comunicazione in reti neurali ecologiche. *Atti del Primo Workshop Italiano di Vita Artificiale*, Arcavacara di Rende (CS) (Italian)
33. Mirolli Marco, Parisi Domenico (2003): Evoluzione del sonno in una popolazione di reti neurali artificiali. *Atti del Congresso Nazionale di Psicologia Sperimentale*, Bari (Italian)

Theses

34. Mirolli Marco (2006): An Artificial Life Approach to the Evolution of Language: Preliminary experiments, *Tesi di*

Dottorato in Scienze Cognitive, Università di Siena

35. Mirolli Marco (2001): L'intenzionalità in Daniel Dennett, Tesi di Laurea in Filosofia, Università di Siena (Italian)

Presentations

Invited Talks

“The role of talking to oneself in the evolution of language.” OMLL Final Conference, Roma, 12-14 December 2007

“Neural Networks and Agent Based Modeling.” Workshop: From Observations and Experiments to Modeling Styles, ISTC-CNR, Rome, 11-12 October 2007

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)

“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, January 2007

“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)

Discussant of Deborah Tollefsen: “From Extended Mind to Collective Mind”, Conference on Collective Intentionality IV, Università di Siena, October 2004

Presentations

“Steps towards artificial consciousness: A robot’s knowledge of its own body.” AAI Fall Symposium on Consciousness and Artificial Intelligence: Theoretical foundations and current approaches, Washington DC, 8-11 November 2007

“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)

“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)

“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

“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

“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)

“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

“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

“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)

“Artificial Organisms that Sleep.” 7th European Conference on Artificial Life (ECAL7), Dortmund, Germania, 14-17 September 2003

“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

“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

“Evolution and Learning in an Intrinsically Motivated Reinforcement Learning Robot.” 9th European Conference on Artificial Life

(ECAL2007), Lisbon, 10-14 Settembre 2007

“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

“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

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