

# CURRICULUM VITAE

MATTEO MATTEUCCI

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## ADDRESS

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## PERSONAL DETAILS

Gender: Male  
Date of birth: 23th of April, 1974  
Place of birth: Nuoro, Italy  
Present Citizenship: Italian

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## EDUCATION

04/2000–03/2003 PhD in Computer Engineering and Automation at the Department of Electronics and Information of Politecnico di Milano (Milan, Italy).

**Thesis title:** *Evolutionary Learning of Adaptive Models within a Bayesian Framework*

**Advisor:** Prof. Andrea Bonarini

08/2001–08/2002 Master of Science in *Knowledge Discovery and Data Mining* at the Center for Automatic Learning and Discovery of Carnegie Mellon University (Pittsburgh, PA).

**Thesis title:** *ELeaRNT: Evolutionary Learning of Rich Neural Network Topologies*

**Advisor:** Prof. Manuela Veloso

07/1993–04/1999 Laurea Degree in Computer Engineering (100/100 *Cum Laude*) at Politecnico di Milano (Milan, Italy).

**Thesis title:** *Fuzzy and crisp knowledge representation in reinforcement learning algorithms applied to situated agents*

**Advisor:** Prof. Andrea Bonarini

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## TEACHING EXPERIENCE

**Lectures Series on "Machine Learning":** Teaching Assistant for the “Knowledge Engineering and Expert Systems” courses (Prof. Andrea Bonarini) in the Graduate Program in Computer Engineering at Politecnico di Milano.

**Lectures Series on "C Language":** Teaching Assistant for the “Computer Science” and “Fundamentals of Computer Science” courses (Prof. Andrea Bonarini) in the Graduate Program in Computer Engineering at Politecnico di Milano.

**Lectures Series on "LISP Language":** Teaching Assistant for the “Artificial Intelligence” course (Prof. Marco Somalvico) in the Graduate Program in Computer Engineering at Politecnico di Milano.

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## RESEARCH INTERESTS & EXPERIENCE

**Machine Learning** Neural networks, fuzzy logic, genetic algorithms, learning classifier systems, and machine learning algorithms in general. Presently working on the development of a methodology to design automatic learning algorithms starting from the application specification in terms of adaptability and performances. Developing an automatic tool for the genetic evolution of neural network topologies to be applied in different applications.

**Knowledge Engineering** Symbolic programming, software agents, and adaptation in robotic and software agents. Implementation of LISP automatic theorem provers for first order logic and modal logic, used as a teaching support in the Artificial Intelligence course at Politecnico di Milano. Development and implementation of the reactive control component for a autonomous surveillance robot working on the MURST project CERTAMEN (Hybrid Cognitive Architectures for Effective Autonomous Robots), and for a team of robots playing in the RoboCup international competition.

**Autonomous Robotics** Algorithms for robotics, and robot learning. Development and implementation of mobile robot control architecture using

fuzzy behavior and motivation. Presently applying machine learning to behavior coordination and definition in order to achieve context online adaptation. Middlewares for communication and control.

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## PUBLICATIONS

### A. International Journals

1. A. Bonarini, C. Bonacina, M. Matteucci. "An approach to the design of reinforcement function in real world, agent based applications" in IEEE Transactions on Systems, Man, and Cybernetics - Part B, 31(3), pp 288-301, 2001. (Extended Version of E2).
2. A. Bonarini, G. Invernizzi, T. H. Labella, M. Matteucci. "An architecture to coordinate fuzzy behaviors to control an autonomous robot" in Fuzzy Sets and Systems special issue on Fuzzy Set Techniques for Intelligent Robotic Systems, 134(1), pp 101 - 115, 2002.

### B. Book Chapters

1. A. Bonarini, C. Bonacina, M. Matteucci. "Fuzzy and Crisp representation of real-valued input for learning classifier systems". Learning Classifier System: From Foundation to Application, P. L. Lanzi, W. Stolzmann, S. W. Wilson, LNAI, Springer-Verlag, Berlin DE, 2000. (Extended version of D1).

### C. Patents

1. C.Alippi, G.D'Angelo, M. Matteucci, G.Pasquettaz, V.Piuri, F.Scotti. "A real time quality monitoring system for laser welding". Patent N° TO2002A000508, registered June the 14th 2002. EU Validity.

### D. Proceedings

1. A. Bonarini, C. Bonacina, M. Matteucci. "Fuzzy and Crisp representation of real-valued input for learning classifier systems" in Proceedings of IWLCS99, AAAI Press, Cambridge MA, 1999.
2. A. Bonarini, M. Matteucci. "Learning context motivation in coordinated behaviors" in Proceedings of the Sixth Intelligent Autonomous Systems Conference (IAS-6), IOS Press, Amsterdam NL, ppg 519-526, 2000.
3. A. Bonarini, G. Invernizzi, T. H. Labella, M. Matteucci. "Context and motivation in coordinating fuzzy behaviors" in Proc. of AI\*IA 2000 - 7th Symposium Italian Association for Artificial Intelligence, Milano I, ppg 87-92, 2000.

4. A. Bonarini, M. Matteucci, M. Restelli. "Concepts for anchoring in robotics", in Proceedings of AI\*IA 2001 - 8th Symposium of Italian Association for Artificial Intelligence, Bari I, 2001.
5. A. Bonarini, G. Invernizzi, F. M. Marchese, M. Matteucci, M. Restelli, D. G. Sorrenti. "Fun2maS: the Milan Robocup Team" in A. Birk, S. Coradeschi (Eds.) RoboCup 2001 - Robot Soccer World Cup V, Lecture Notes in Computer Science, Springer Verlag, Berlin (D), 2001.
6. A. Bonarini, M. Matteucci, M. Restelli. "A framework for robust sensing in multi-agent systems" RoboCup 2001 - Robot Soccer World Cup V, Lecture Notes in Computer Science, Springer Verlag, Berlin D, 2001.
7. R. Cassinis, P. Meriggi, A. Bonarini, M. Matteucci. "Device Communities Development Toolkit: An Introduction" in Proceedings of EUROBOT'01, Lund Sweden, 2001.
8. A. Bonarini, M. Matteucci, M. Restelli. "Anchoring: do we need new solutions to an old problem or do we have old solutions for a new problem?" in Proceedings of AAAI Fall Symposium, 2001.
9. E. Eneva, K. Kumaraswami, M. Matteucci. "WEKKEM: A Study in Fractal Dimension and Dimensionality Reduction" in Proceedings of First Workshop on Fractals and Self-similarity in Data Mining: Issues and Approaches, 2002.

#### **E. Technical Reports**

1. M. Matteucci. "Fuzzy Learning Classifier System: Issues and Architecture", Technical Report Nř 99.71, Dipartimento di Elettronica e Informazione - Politecnico di Milano, Milano I, 1999.
2. A. Bonarini, C. Bonacina, M. Matteucci. "A framework to support the reinforcement function design in real world, agent-based, application" Technical Report N 99.73, Politecnico di Milano, 1999.
3. M. Matteucci. "ELeaRNT: Evolutionary Learning of Rich Neural Network Topologies", Technical Report N CMU-CALD-02-103, Carnegie Mellon University, Pittsburgh PA, 2002.
4. M. Matteucci. "Compound techniques for quality analysis in automotive laser welding", Technical Report N 2002.40, Dipartimento di Elettronica e Informazione - Politecnico di Milano, Milano I, 2002.
5. M. Matteucci. "Publish/Subscribe Middleware for Robotics: Requirements and State of the Art", Technical Report N 2003.3, Dipartimento di Elettronica e Informazione - Politecnico di Milano, Milano I, 2003.

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## AWARDS & AFFILIATIONS

**2002–2003:** Winner of a one-year Research Fellowship for Young Researcher from Politecnico di Milano. Research title: *Self-Adaptation in Dynamic Environment Using Transductive Learning and Boosting*

**2001–2002:** Winner of Rotary Academic-Year Ambassadorial Scholarships for one academic year of study in foreign country

**2000–2003:** Member of AI\*IA (*Artificial Intelligence Italian Association*)

**1999–2003:** Member of the PMAI&R Project (*Politecnico di Milano Artificial Intelligence and Robotics Project*)