

Fabrizio Morbini

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Artificial Intelligence, Software Engineering and Electronic Engineering Qualifications

- Expertise with automated reasoning, knowledge representation (in particular geared towards natural language), planning and robotics.
- History of programming in LISP, C, Java, Shell scripting, Perl, Python, C++, PHP, Matlab, Assembly.
- Experience working with large software systems, object oriented design, version control (svn and cvs).
- Experience with HTML, Javascript, XML, CSS; UNIX (in particular Linux); Apache and httpd; MySQL.
- Electronics: circuit design software (OrCAD, EagleCad), electronic circuit design, trouble-shooting and assembly.

Computer Science and Electronic Engineering Studies

University of Rochester

Ph.D. in Computer Science

MS in Computer Science

Rochester, NY, USA

September 2009

May 2005

Università degli Studi di Brescia

Laurea in Electronic Engineering with minor in Computer Science

Brescia, Italy

October 2002

Artificial Intelligence, Software Engineering and Electronic Engineering Experience

University of Rochester

Ph.D. Work on building a self-aware artificial agent

- Re-design of the Epilog system, a reasoning system (theorem prover) for Episodic Logic (a highly expressive logic well suited for natural language applications). The new version achieves a more than 100% increase in performance on a set of 200 problems from the TPTP dataset.
- Implemented support for 1) transparent integration between specialist inference engines and the general reasoner, 2) introspection based on a computational notion of knowing and 3) substitutional quantifiers and quotation to allow for the ability to express and reason with attitudes and meta-knowledge.

Rochester, NY, USA

2005-2009

Advising Undergraduate Robotics Team

2008-present

- Designed a team of robots with the goal of participating in Robocup. Involved mostly with design, production and debugging of electronic parts and firmware for PIC microchips.

Robert Bosch LLC Research Center

Software Engineering Intern

- Contributed to Bosch's prototype of a dialog system for in-car and call-center applications.
- Used natural language processing (e.g. semantic slots extraction, speech act classification) and machine learning techniques (e.g. maximum entropy, decision trees, information retrieval) to make domain adaptation less onerous.
- Java programming in Eclipse.

Palo Alto, CA, USA

January-August 2007

Department of Computing and Mathematics, University of Teesside

Research Assistant in the ALTERNE project

- Network coding in LISP to interface a planner with an augmented reality system based on the Unreal Tournament game engine.

Middlesbrough, UK

May-August 2003

Assyrus SRL

Junior Linux System Administrator

- Experience with Perl, PHP, shell scripting, MySQL, HTML and JavaScript; VoIP and ISDN; virtualization with VMware and user-mode linux; and security extensions to the Linux kernel (in particular RSBAC).

Brescia, Italy

May 2001-May 2003

Università degli Studi di Brescia

Extensions to the DISCOPLAN system

- Various extensions to DISCOPLAN a system that discovers invariants in planning domains:
 - Iterative method to compute constraints using hypothesis of invariants to extend the domain operators;
 - General Disjunctive invariants;
 - Strict Single-Valuedness and n-Valuedness invariants;
 - On-line system to allow the use of DISCOPLAN through the web, see: <http://zeus.ing.unibs.it:8000/>.

Brescia, Italy

2000-2002

Music classification/search project

Fall 2001

- Designed a system to automatically classify music contents based on the technique proposed by Beth Logan and Ariel Salomon. Implemented signal processing techniques using Mel-Frequency Cepstral Coefficients, K-clustering and Earth mover's distance, FFT and Simplex algorithm. Built a version running on dedicated DSPs.

Embedded web server

Summer 2000

- Developed embedded web server using micro-controller Motorola HC681; designed and realized both hardware and software components.

Teaching Experience

University of Rochester

Rochester, NY, USA

Teaching assistant for the following courses:

- *Introduction to Robotics*
- *Data Structure*
- *Computation and Formal Systems*
- *Computer Models and Limitations*

Fall 2008

Spring 2006

Fall 2005

Spring 2005

Università degli Studi di Brescia

Brescia, Italy

Lectured Lisp classes as part of the Artificial Intelligence introductory course

Spring 2003

Assisted an Artificial Intelligence seminar on the topic of Theorem Provers using Otter as practical example

Spring 2003

Assyrus SRL

Brescia, Italy

Network Security Course Instructor

Spring 2003

Publications and Talks

- F. Morbini, L. Schubert, Evaluation of Epilog: a Reasoner for Episodic Logic, Commonsense 09, 2009, Toronto, Canada.
- F. Morbini, L. Schubert, Metareasoning as an Integral Part of Commonsense and Autocognitive Reasoning, Metareasoning 08, pp 155-162, July 13-14, 2008, Chicago, Illinois.
- Junling Hu, Fabrizio Morbini, Fuliang Weng and Xue Liu, Dynamic N-best Selection and Its Application in Dialog Act Detection, Proceedings of the 8th SIGDial workshop on Discourse and Dialogue, pp. 59-62, September 2007
- F. Morbini and L. Schubert, Towards realistic autocognitive inference, Commonsense 07, Tech. Rep. SS-07-05, AAAI Press, Menlo Park, CA, March 26-28, Stanford, pp. 114-118, 2007.
- F. Morbini, L. Schubert, Conscious Agents, TR879, Computer Science Dept., U. Rochester, September 2005.
- A. Gerevini, L. Schubert, and F. Morbini, Computing domain invariants for planning in DISCOPLAN, System Demos, 7th Conf. of the Italian Assoc. for Artificial Intelligence (AI*IA 2001), Sept. 25-8, Bari, Italy, 2001.
- F. Morbini, Algoritmi di Preprocessing per il Supporto alla Pianificazione Automatica (Preprocessing Algorithms to Support Automatic Planning), Graduation Thesis (in Italian), October 9th 2002.
- F. Morbini, Inferenza Automatica di Invarianti per la Pianificazione (Automatic Inference of Invariants for Planning), 2001, AI*IA Notizie, volume IV, pag. 67.