

# Fabrizio Morbini

fmorbini@gmail.com - +1 585-298-2150

## Artificial Intelligence, Software Engineering and Electronic Engineering Qualifications

- Expertise with automated reasoning, knowledge representation (in particular geared towards natural language), planning and robotics.
- Experience with developing dialog systems for various applications (automotive, health related, education) with voice and text interfaces.
- History of programming in LISP, Java, C, Shell scripting, Perl, Python, C++, Assembly, PHP, Matlab.
- 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 Southern California

*Research Programmer II*

**Los Angeles, CA, USA**

*December 2009-present*

- Work on dialog management for Simcoach (<http://ict.usc.edu/projects/simcoach/>), a web based dialogue system to help military personnel and their families with health problems associated with deployment.
- Work on the natural language subsystem of the Fite/Chaos installation ([http://ict.usc.edu/projects/fite\\_chaos/](http://ict.usc.edu/projects/fite_chaos/))
- Developed various software, from systems to support the collection of data to train and test the natural language understanding module, to a open source graphical editor for SCXML networks used (in our case) to manage dialogues (<http://code.google.com/p/scxmlgui/>)

### Robert Bosch LLC Research and Technology Center

*Software Engineering intern*

**Palo Alto, CA, USA**

*October-December 2009*

- Worked on applications of data mining and machine learning on health care data to better assist elderly people.

### University of Rochester

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

**Rochester, NY, USA**

*2005-2009*

- 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.

*Advising Undergraduate Robotics Team*

*2008-December 2009*

- 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*

**Palo Alto, CA, USA**

*January-August 2007*

- 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.

### Department of Computing and Mathematics, University of Teesside

*Research Assistant in the ALTERNE project*

**Middlesbrough, UK**

*May-August 2003*

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

**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***Brescia, Italy**  
*2000-2002*

- 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/>.

*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, K. Sagae, Joint Identification and Segmentation of Domain-Specific Dialogue Acts for Conversational Dialogue Systems, ACL-HLT 2011, Portland, Oregon.
- 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.