




# Paolo Viappiani

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## RESEARCH INTERESTS

I am seeking post-doctoral opportunities in a corporate research or academic environment in Artificial Intelligence. My interests are within the following areas: probabilistic reasoning, constraint and planning systems, personal agents, preferences and user modeling, intelligent interfaces, machine learning, adaptive systems.

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## WORK AND RESEARCH EXPERIENCE

**Research Assistant** September 2002-present  
*Artificial Intelligence Laboratory (LIA), Ecole Polytechnique Fédérale de Lausanne (EPFL).*

My research is about Preference-based search; I have explored the use of interactive search tools for helping the user to make accurate decisions. To stimulate preference expression I have researched the use of automatic suggestion techniques based on probabilistic reasoning.

Main achievements:

- I studied how biases typical of human decision making (studied by behavioral decision theory) can arise when a user is using a web tool to search for specific items in an electronic catalog. With user studies, I showed that common interfaces induce the users in stating incorrect preferences due to *means-objective*, leading to poor decision accuracy (25%)
- My model-based suggestions make the user aware of its true preferences, supporting the psychological process of *preference construction*. Such suggestions can be adapted, learning from the user's past actions.
- User studies showed that interactive tools with suggestions provided by my model achieve higher decision accuracy (up to 70%)
- Efficient implementation of interactive tools for Preference-based search in practice, both in databases and in configurable catalogs

Developed and maintained a JAVA API for Constraint processing (2002-2005).  
Supervised students' projects (2 master projects and several semester projects).

**Teaching Assistant** 2002-2005  
*Artificial Intelligence Laboratory (LIA), Ecole Polytechnique Fédérale de Lausanne (EPFL).*

"Artificial Intelligence" course taught by Prof. Faltings (Spring term 2003, 2004, 2005).

Assisted and instructed undergraduate students in classes and laboratory settings. Prepared material for classes and assignments in LISP. Wrote and graded exam problems.

Held office hours, answered students' questions about class.

**Freelance consultant** 1999-2001

- Development of a Warehouse Management Software (Microsoft Access and Visual Basic). The system helped the customer, a small/medium sized company (Ronconi Tubes, Opera), to improve efficiency in the business processes, simplifying the management of supplies and provisions.

- Implementation of a database for an advertising agency (Graf, Milan). The company needed to find a solution to keep track of the current location of outdoor ads across the city of Milan, plan campaigns that had to satisfy specific constraints and optimize the work of billposters. By moving from the use of physical blackboards to our computer-based tool, the customer could plan a new campaign in very little time, identify any possible conflicts and provide a detailed task plan to the persons in charge of affixing the billboards.

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## EDUCATION

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**PhD in Artificial Intelligence** Fall 2003- July 2007

*Artificial Intelligence Lab, Ecole Polytechnique Fédérale de Lausanne (EPFL)*

Thesis title "Preference-based search using Example-critiquing with Suggestions". Boi Faltings, advisor.

**Master of Science in Computer Engineering**

Fall 1995 - April 2002

*Department of Computer Science, Politecnico di Milano, Italy*

Italian [Laurea](#) degree (300+ ECTS credits, pre-'Bologna reform'), equivalent to M.Sc.

Thesis: "Systems of Rational Agents: Design and Prototyping". Mark **99/100**

Major in: AI, Robotics, Theoretical computer science.

Comprising a year of studies at **the Technical University of Denmark (DTU)** within the E.U. mobility program ERASMUS (Fall 1998 - Spring 1999).

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## SCIENTIFIC ACTIVITIES

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### Publications

During my PhD, I have published 12 scientific contributions in the form of papers in such peer reviewed international conferences as AAAI, ACM's CHI, ACM's IUI, ICWE, and so on, a journal article (JAIR) and workshops papers at AAAI and IJCAI workshops and symposia.

The publications list is attached at the end of this document.

### Presentations

Presentations at the following international conferences: AAAI Symposium 2002, IUI 2004, IJCAI 2005, AAAI Symposium 2005, FQAS 2006, AAAI 2006, ICWE 2006 (poster), ECAI 2006, WISE 2006.

Invited talk at the Université Paris-Dauphine (March 2007).

### Reviewer

Reviewer for international conferences. (CP 2004, IJCAI 2005, IJCAI 2007)

Member of AAAI, AI\*IA.

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## TECHNICAL QUALIFICATIONS

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Computer languages: very good knowledge of Java: J2SE, J2EE and open source libraries part of the Jakarta project. Good knowledge of Lisp, Python, C++ and MatLab. Also familiar with Perl, SQL.  
Operating systems: Windows, Linux/Unix.

Advanced computer topics studied: theoretical computer science, machine learning, user interface design, OOP, Design Patterns, database design, computer organization and architecture.

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## LANGUAGES

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**Italian** mother tongue

**English** fluent

**French** higher-intermediate

**Spanish** practical

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## HOBBIES & PERSONAL ACTIVITIES

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I participated in the [FRIBOT'06](#) Lego Mindstorm robot programming contest (4<sup>th</sup> place).

Active member (1998-2002) of the Board of European Students of Technology (B.E.S.T.), a non-profit organization (motto: "run by students, working for students"), aiming to internationalize students via complementary education abroad.

Together with the local group of BEST in Milan, I organized of a special course *Quality of Web Services* at Politecnico in Milan (March 2002). My duties were fund raising, arrange lodging and local transportation for 30 students from all over Europe, and help to organize recreational activities.

I like to keep informed with international news, share and discuss with others my ideas about society, international politics and economics.

While I enjoy vibrant urban environments, I like to find rest in the nature from time to time.

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#### REFERENCES

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**Prof. Boi Faltings**, head of the Artificial Intelligence Lab

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**Dr. Pearl Pu**, director of the Human Computer Interaction Group

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Phone: +41 21 693-6081, Fax: +41 21 693-7530 Email: [pearl.pu@epfl.ch](mailto:pearl.pu@epfl.ch)

**Prof. Marco Colombetti**, Dipartimento di Elettronica e Informazione

Politecnico di Milano

Via Ponzio, 34/5, 20133 Milano, Italy

Phone: +39 022399-3686, Fax: +39 022399-3411 Email: [colombet@elet.polimi.it](mailto:colombet@elet.polimi.it)

### **Journal Papers**

P. Viappiani, B. Faltings and P. Pu. [Preference-based Search using Example-Critiquing with Suggestions](#). *JAIR* (Journal of Artificial Intelligence Research), 27, 2006, p. 465-503.

### **Refereed Publications in Conferences**

P. Viappiani and B. Faltings. [Design and Implementation of Preference-based Search](#). *The 7th International Conference on Web Information Systems Engineering (WISE), LNCS4255*, Wuhan, China, October, 2006, pp. 72-83.

P. Viappiani, B. Faltings and P. Pu. [Evaluating Preference-based Search Tools: a Tale of Two Approaches](#). *Proceedings of the Twenty-first National Conference on Artificial Intelligence (AAAI-06)*, Boston, MA, USA, July, 2006, pp. 205-211.

P. Viappiani and B. Faltings. [Implementing Example-based Tools for Preference-based Search](#). *The Sixth International Conference on Web Engineering (ICWE 06)*, ACM, Menlo Park, California, USA, July, 2006, pp. 89-90.

P. Viappiani, B. Faltings and P. Pu. [The Lookahead Principle for Preference Elicitation: Experimental Results](#). *Seventh International Conference on Flexible Query Answering Systems (FQAS)*, Milan, Italy, June, 2006, pp. 378-389.

P. Pu, P. Viappiani and B. Faltings. [Increasing User Decision Accuracy using Suggestions](#). *ACM conference on Human factors in computing systems (CHI06)*, Montreal, Canada, April, 2006, pp. 121-130.

B. Faltings, P. Pu, M. Torrens and P. Viappiani. [Designing Example-critiquing Interaction](#). *ACM International Conference on Intelligent User Interfaces (IUI 2004)*, Madeira, Portugal, January, 2004, pp. 22-29.

### **Workshops, Symposia and other Publications**

P. Viappiani and B. Faltings. [Preference-based search for Configurable Products](#). *AAAI'07 Configuration Workshop*. Vancouver, Canada, July, 2007.

P. Viappiani and B. Faltings. [Adaptive Suggestions for Example based Tools](#). *ECAI'06 Multidisciplinary Workshop on Advances in Preference Handling*, Riva del Garda, Italy, August, 2006, pp. 134-140.

P. Viappiani, B. Faltings, V. Schickel-Zuber and P. Pu. [Stimulating Preference Expression Using Suggestions](#). *Mixed-Initiative Problem-Solving Assistants, AAAI Fall Symposium Serie*, November, 2005, pp. 128-133.

P. Viappiani, B. Faltings, V. Schickel-Zuber and P. Pu. [Stimulating Preference Expression Using Suggestions](#). *IJCAI-05 Multidisciplinary Workshop on Advances in Preference*, Edinburgh, Scotland, August, 2005, pp. 186-191.

P. Viappiani, P. Pu and B. Faltings. [Acquiring User Preferences for Personal Agents](#). *Personalized Agents. AAAI Fall Symposium Serie*, Cape Code, MA, USA, October, 2002, pp. 53-59.

### **Technical Reports**

P. Viappiani and B. Faltings. [Design and Implementation of Preference-based Search](#). Technical Report LIA-REPORT-2006-004, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, May, 2006.

J. Zhang, P. Pu and P. Viappiani. [A Study of User's Online Decision Making Behavior](#). Technical Report, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, December, 2006.