

# Paolo Viappiani

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born on 23 October, 1976 in Milan, Italy

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## RESEARCH INTERESTS

Recommender systems, algorithmic decision theory, probabilistic reasoning, machine learning.

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## EDUCATION

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

[Artificial Intelligence Lab](#),  
[Ecole Polytechnique Fédérale de Lausanne \(EPFL\)](#)

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

**Master of Science in Computer Engineering** Fall 1995 - April 2002

[Politecnico di Milano](#), Italy

Italian "[Laurea](#) in Ingegneria Informatica" (equivalent to Bachelor+Master). Majors in: AI, Robotics, Theoretical computer science. Mark **99/100**

Visiting student at **the Technical University of Denmark (DTU)**. Fall 1998 - 1999

E.U. mobility program ERASMUS

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## WORK AND RESEARCH EXPERIENCE

**Postdoctoral Fellow** February 2008-now

[Department of Computer Science \(DCS\)](#),  
[University of Toronto](#), Canada

Postdoctoral stint under the supervision of Craig Boutilier.

Main research themes: minimax regret optimization, regret-based recommender systems, preference elicitation with subjective (user-defined) features, optimal recommendation sets.

Main results: development of a new decision criterion, "*setwise minimax* regret" to select recommendations that are both optimal given the current information *and* maximize (myopically) future regret reduction (equivalent of EVOI in case of strict uncertainty). Minimax regret formulation for user-defined features. Efficient minimax regret computation.

Research partially funded by the Swiss National Science Foundation

**Research Assistant** September 2002 - December 2007

[Artificial Intelligence Laboratory \(LIA\)](#),  
[Ecole Polytechnique Fédérale de Lausanne \(EPFL\)](#).

Main research themes: preference-based search, example-critiquing interfaces, probabilistic reasoning, behavioral decision theory, constraint processing.

*Synopsis of research results:* with user-studies we showed that biases such as *means-objectives* (studied by behavioral decision theorists) can arise when a user is using a web tool to search for specific items in an electronic catalog, leading to poor decision accuracy. To overcome this problem, we proposed *example-critiquing with model-based suggestions*, a conversational framework that enables users to incrementally construct preference models by critiquing shown

examples and suggest items to stimulate preference expression (based on reasoning about preference uncertainty and Bayes learning). The use of suggestions results in a dramatic improvement of *decision accuracy* (evaluated with user study).

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

### Teaching Assistant

2002-2006

[Artificial Intelligence Laboratory \(LIA\)](#),  
[Ecole Polytechnique Fédérale de Lausanne \(EPFL\)](#).

"Artificial Intelligence" course (Spring term 2003, 2004, 2005, 2006).

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.

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### AWARDS

- Awarded a research fellowship for young researchers by the Swiss National Science Foundation for a postdoctoral stint at the University of Toronto (2008)
- Nominee of the best PhD Thesis Award at EPFL (2007)
- ERASMUS undergraduate scholarship from the European Union (1998-1999) for a 1-year period of undergraduate studies at the Technical University of Denmark

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### RESEARCH GRANTS AND FELLOWSHIPS

- **Swiss National Science Foundation, Fellowship for Young Researchers** (Feb08-Jan09) *Open-ended Preference Elicitation* (Principal Investigator); research carried out as postdoctoral fellow at the University of Toronto (with Prof. Craig Boutilier). Total funding 40,000CAD

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### TALKS

#### Invited Talks

- Ecole Centrale Paris, France, March 2010
- LAMSADE, Université Paris-Dauphine, France, March, 2010
- IBM Research, Watson Research Center, NY, USA, Fall 2007
- Ebay Research Labs, USA, August 2007
- SRI International, Menlo Park, CA, USA, August 2007
- Powerset, San Francisco, USA, Summer 2007
- LAMSADE, Université Paris-Dauphine, France, 2006

#### Conference/Workshop presentations

- ACM Recommender Systems conference (RecSys 2009 )
- IJCAI 09 Workshop on Web Personalization and Recommender Systems
- International Conference on Machine Learning (ICML 2009)
- ACM Recommender Systems conference (RecSys 2007)
- AAAI 2007 Workshop on Preference Handling in AI
- AAAI Conference on Artificial Intelligence (AAAI 2006)

- ECAI 2006 Multidisciplinary Workshop on Advances in Preference Handling
- Web Information Systems Engineering (WISE 2006)
- International Conference on Web Engineering (ICWE 2006)
- International Conference on Flexible Query Answering Systems (FQAS 2006)
- AAAI Symposium 2005 on “Mixed-initiative Assistants”
- IJCAI Workshop on Preference Handling 2005
- ACM Intelligent User Interfaces (IUI 2004)
- AAAI Symposium 2002 on “Personal Agents”

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## PROFESSIONAL SERVICES

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### **Program Committee Member**

- European Conference on Artificial Intelligence (ECAI 2010)
- ECAI 5<sup>th</sup> Multidisciplinary workshop on Advances in Preference Handling (M-PREF10)
- ACM Conference on Electronic Commerce (EC 2009)
- ACM Intelligent User Interfaces (IUI 2009)
- Australian Joint Conference on Artificial Intelligence (AI 2008)
- European Conference on Artificial Intelligence (ECAI 2008)
- ECAI Workshop on Configuration Systems (2008)

### **Reviewer**

- International Conference on the Principles of Knowledge Representation and Reasoning (KR 2010)
- Journal of Mass Customization (2009)
- Journal of Artificial Intelligence Research (2009)
- AI Magazine, Special Issue on Preferences (2008)
- European Conference on Artificial Intelligence (ECAI 2008)
- ACM Conference on Intelligent User Interfaces, (IUI 2008)
- International Joint Conference on Artificial Intelligence (IJCAI 2007)
- International Joint Conference on Artificial Intelligence (IJCAI 2005)
- International Conference on Principles and Practice of Constraint Programming (CP 2004)

### **Membership**

- Association for the Advancement of Artificial Intelligence (AAAI)
- Association for Computing Machinery (ACM)
- Italian Association for Artificial Intelligence (AI\*IA)

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## PUBLICATIONS

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### **Book chapters**

Pearl PU, Boi Faltings, Li Chen, Jiyong Zhang, and Paolo Viappiani. Usability Guidelines for

Product Recommenders based on Example Critiquing Research. Handbook on Recommender Systems, Kantor, P.B.; Ricci, F.; Rokach, L.; Shapira, B. (Eds.), Springer. ([TO APPEAR](#))

### **Journal Papers**

Paolo Viappiani, Pearl Pu, Boi Faltings: [Preference-based search with adaptive recommendations](#). *AI Communications* 21(2-3), 2008, pp. 155-175.

B. Peintner, P. Viappiani, and N. Yorke-Smith. [Preferences in Interactive Systems: Technical Challenges and Case Studies](#). *AI Magazine* 29(4), 2008, pp. 13-24.

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 International Conferences**

C. Boutilier, K. Regan and P. Viappiani. Simultaneous Elicitation of Preference Features and Utility . To appear in the proceedings of the Twenty-Fourth AAAI Conference on Artificial Intelligence (AAAI-10), Atlanta, USA, July, 2010. [acceptance rate: 28%; among the very few papers to be accepted for oral and poster presentation, 'to highlight exceptional papers']

P. Viappiani and C. Boutilier. [Regret-based Optimal Recommendation Sets in Conversational Recommender Systems](#). *The 3rd ACM Conference on Recommender Systems (RecSys 2009)*, pp.101-108. [acceptance rate for long papers: 17%]

C. Boutilier, K. Regan and P. Viappiani. [Preference elicitation with Subjective Features](#). *The 3rd ACM Conference on Recommender Systems (RecSys 2009)*, pp. 341-344. [acceptance rate for short papers: 28%]

C. Boutilier, K. Regan and P. Viappiani. [Online Feature Elicitation in Interactive Optimization](#). *Proceedings of the Twenty-Sixth International Conference on Machine Learning (ICML 2009)*, Montreal, June, 2009. [acceptance rate for long papers 24%]

P. Viappiani, P. Pu and B. Faltings. [Conversational Recommenders with Adaptive Suggestions](#). *Recommender Systems 2007*, Minneapolis, Minnesota, USA, October, 2007, pp. 89-96.

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. [acceptance rate 20%]

P. Viappiani, B. Faltings and P. Pu. [Evaluating Preference-based Search Tools: a Tale of Two Approaches](#). *Proceedings of the Twenty-first American Conference on Artificial Intelligence (AAAI-06)*, Boston, MA, USA, July, 2006, pp. 205-211. [acceptance rate 19%]

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. [acceptance rate 23%]

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.

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. [acceptance rate 28%]

### **International Workshops and Symposia (peer-reviewed)**

Paolo Viappiani and C. Boutilier. Optimal Set Recommendations Based on Regret. *IJCAI'09 Workshop on Intelligent Techniques for Web Personalization & Recommender Systems*

(ITWP'09), Pasadena, California, USA, July, 2009

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, 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.

### **Dissertations**

P. Viappiani. [Preference-based search with suggestions](#). PhD Thesis 3876, Ecole Polytechnique Fédérale de Lausanne (EPFL), 2007. [nominee for the EPFL Best Thesis Award]

P. Viappiani. Modellizzazione di Agenti Razionali. Tesi di Laurea. Politecnico di Milano, 2002.

### **Technical Reports**

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.

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.

### **Unpublished**

J. Zhang, P. Pu and P. Viappiani. *Supporting Online Decision Making with Anchoring Examples*. 2006.

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## LANGUAGES

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**Italian** mother tongue

**English** fluent

**French** higher-intermediate

**Spanish** practical

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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. Use of CPLEX. Also familiar with Perl, SQL. Operating systems: Windows, Linux/Unix.

## REFERENCES

1. Craig Boutilier, Professor and Chair  
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M5S 3G4 Toronto, Ontario, Canada  
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