

# **Ensuring the Usability of Systems That Adapt to Their Users**

CHI 2008 Course Notes

Anthony Jameson  
jameson@dfki.de  
<http://dfki.de/~jameson>

FBK/irst  
Trento, Italy

DFKI  
Saarbrücken, Germany

## Table of Contents

---

The numbers in the table of contents are slide numbers; there are usually two slides per page

<b>Basic Concepts</b>	<b>1</b>
Concepts	1
Goals and Typical Threats	6
<b>Case Study 1: Amazon's Recommendations</b>	<b>13</b>
Breadth of Experience	13
Privacy	19
Comprehensibility and Controllability	28
<b>Case Study 2: Microsoft's Smart Menus and Ribbons</b>	<b>33</b>
Adaptivity: Smart Menus	33
Adaptability: Word Personal	39
Mixed Initiative: MICA	46
General Threats and Tradeoffs	53
Ribbons in Office 2007	56
<b>Case Study 3: The Conference Hotlist</b>	<b>61</b>
Original Interface	61
Improved Interface	69
<b>General Discussion</b>	<b>73</b>
Suggestions for Questions	73
Notes on the General Discussion	74
<b>Worksheets</b>	<b>77</b>
Introduction	77
Predictability and Comprehensibility	78
Controllability	84
Unobtrusiveness	88
Privacy	90
Breadth of Experience	94
<b>Further Reading</b>	<b>99</b>
Information About the Chapter	99
Adaptive Interfaces and Agents	101

## Instructor Biography

---



Anthony Jameson is a project director at two leading European centers of research into systems that adapt to their users – FBK/irst (Trento, Italy) and DFKI (Saarbrücken, Germany) – and adjunct professor of human–computer interaction at the International University in Germany. He has been involved in research– and application–oriented projects concerning systems that adapt to their users for more than 15 years, including a recent project involving personalization in a leading European web portal. In research, he was one of the first to address topics like conversational product recommender systems, Bayesian user modeling, and adaptation to a user’s situational resource limitations. The author of the chapter *Adaptive Interfaces and Agents* in the *Human–Computer Interaction Handbook* (Erlbaum, 2003, and CRC Press, 2007), he has given numerous tutorials and invited talks on topics related to this course. Other current research activities concern language technology systems, systems for knowledge formalization by subject matter experts, and usability evaluation through user simulation. Further information, including links to many electronically available publications and presentations, is available at the web homepage <http://dfki.de/~jameson/>.

## Agenda

---

Time	Topic
5 minutes	Introduction; preview of the course
10 minutes	Presentation of basic concepts with reference to the system of Case Study 1
25 minutes	Case Study 1: amazon.com recommendations
20 minutes	Case Study 2: Microsoft's Smart Menus and recent alternatives
15 minutes	Case Study 3: An adaptive bookmarking tool for conference attendees
15 minutes	Discussion of questions and examples supplied by participants from their own experience

---

## Objectives of the Course

---

### *Topic and Background*

- The course concerns ways of dealing with the usability issues that typically arise in the design of systems that adapt to their users, which may range from adaptive user interfaces to recommender systems in e-commerce
- Although some of these usability issues have been discussed in the literature since the 1980s, the most widespread approach to dealing with them is the application of general principles like "put the user in control".
- Such principles are of limited use to designers who need to make specific design decisions; their uncritical application can have side effects that outweigh the benefits of adaptation.

### *Objectives*

- After completing the course, participants will be better equipped to make informed design decisions concerning the usability issues associated with adaptivity. They will:
  1. be familiar with a variety of concrete examples of the forms that the usability issues can take and ways in which they have been dealt with successfully;
  2. be aware of general design strategies that have been applied in dealing with these issues;
  3. have some experience in thinking about the tradeoffs that typically arise when these strategies are applied, using a generally applicable theoretical framework.
- In addition, participants who go on to make use of the supplementary materials in the course notes will:
  1. acquire an up-to-date overview of the state of the art in user-adaptive systems, with a focus on those that are deployed or close to deployment;
  2. learn in the context of their own work how to apply the knowledge conveyed in the course to realistic problems of interest to them.

## Abstract

---

A familiar and commercially successful example – the recommendation facilities of amazon.com – will be used to introduce and motivate the central questions addressed by this course. With reference to this example, the class of systems that adapt to their users will be defined, and a preview of the usability issues that often arise with user-adaptive systems will be given.

In the main part of the course, a sequence of three case studies will be presented, whose overall goal is to build up a sophisticated understanding of ways of dealing with these usability issues. Each case study will include:

- a demonstration or other concrete presentation of a deployed system that shows participants what specific forms the usability issues take and what system properties give rise to them;
- a discussion of the *preventive* or *remedial* measures that were – or could have been – applied in the design of the system under discussion;
- a discussion of tradeoffs involved in the application of these measures and the role of differences among users' preferences;
- references to some results of usability studies involving the example system or comparable systems.

The case studies concern systems whose design is at least partly successful in addressing the usability issues. Together, they illustrate many of the most important general issues and design strategies.

The concluding general discussion will offer the participants a chance to propose for discussion examples from their own work and/or raise any additional issues that they consider important.

The supplementary printed materials – worksheets and a survey chapter – are intended for independent use by the participants after the course.