Personal Assistants

Intelligent User Interfaces

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Readings

- Segal & Kephart, MailCat: An Intelligent Assistant for Organizing E-Mail, AA'99
- Berry et al, A Personalized Time Management Assistant: Research Directions, AAAI SS 2005
Basic Concepts

- Goals/tasks
- Mixed initiative collaboration
- Utility measures (costs, benefits)
- Also called “user interface agents”

12 Principles for Mixed-Initiative UI

(From: E. Horvitz, CHI’99)

1. Developing significant *value-added* automation
   - genuine value over direct manipulation
2. Considering *uncertainty* about a user’s goals
3. Considering the status of user’s *attention* in the timing of services
   - consider costs and benefits of deferring action
   - minimize distraction
12 Principles for Mixed-Initiative UI

4. Inferring *ideal action* in light of costs, benefits and uncertainties
   • expected value of taking actions

5. Employ *dialog* to resolve key uncertainties
   • take advantage of interaction
   • but consider cost of interaction

6. Allowing efficient *direct* invocation and termination
   • access to “underlying” interface

7. Minimizing the *cost of poor guesses* about action and timing

8. *Scoping precision* of service to match uncertainty, variation in goals
   • gracefully degrade, do less if uncertain

9. Providing mechanisms for efficient agent-user collaboration to *refine* results

10. Employing *socially appropriate* behaviors for agent-user interaction
    • e.g., courteous language
12 Principles for Mixed-Initiative UI

11. Maintaining working memory of recent interactions
   • shared short-term experience

12. Continuing to learn by observing
   • about user’s goals, etc.

Issues in Agent-Application Integration

(From: H. Lieberman, IUI'98)

- Granularity of the event protocol
- Sharing an interface between agent & application
- Parallelism between the agent & application
Readings

- Segal & Kephart, MailCat: An Intelligent Assistant for Organizing E-Mail, AA'99
  - minimizing cost of poor guesses
  - scoping precision of service
  - "low end" example

- Berry et al, A Personalized Time Management Assistant: Research Directions, AAAI SS 2005
  - employing dialog to resolve uncertainties
  - learning by observing
  - "high end" example