



Personal Assistants

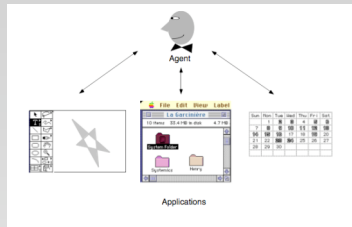
Intelligent User Interfaces

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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



Lieberman, IUI'98

- 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)

<http://www.cs.wpi.edu/~rich/courses/cs525u/lectures/chi99horvitz.pdf>

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
6. Allowing efficient *direct* invocation and termination
 - access to “underlying” interface
7. Minimizing the *cost of poor guesses* about action and timing

12 Principles for Mixed-Initiative UI

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

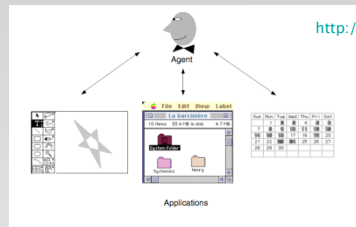
12. Continuing to *learn* by observing

- about user's goals, etc.

Issues in Agent-Application Integration

(From: [H. Lieberman, IUI'98](http://www.cs.wpi.edu/~rich/courses/cs525u/lectures/iui98lieberman.pdf))

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- 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, AAI SS 2005
 - employing dialog to resolve uncertainties
 - learning by observing
 - “high end” example