(Embodied) Interface Agents

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Agenda

- UI Agents
  - Issues
  - Examples
Yet To Come...?

Interaction Paradigms

- Direct Manipulation
  - User initiates actions and carries them out directly

- Indirect Management
  - Cooperative process where human and computer both initiate actions
Agency & Norman’s Gulfs

- Direct Manipulation
  - Narrow the gulf
  - User initiates actions and carries them out directly

- Indirect Management
  - Bridge the gulf with intermediary
  - Cooperative process where human and computer both initiate actions

Autonomous Agent

- Personal assistant who collaborates with user to accomplish tasks
  - Level of autonomy can vary
  - Takes directions
  - Takes initiative
  - May learn user’s preferences
  - Human appearance?
Terminology

- IVA – Intelligent Virtual Agent (Assistant)
- ECA – Embodied Conversational Agent
- Chatterbot, Chatbot

Examples
Ack! It’s the Paper Clip

Challenges

• Two challenges exist
  – Competence - Does the agent have the requisite knowledge to truly assist the user?
  – Trust - Does the user feel comfortable delegating task to agent?
Possibilities

• What could agents do for us?
Agency Approaches

• 1. Application is semi-autonomous agent
  – User programs rules a priori for how agent should perform

• 2. Knowledge-based
  – Give the agent interface domain knowledge and user knowledge

• 3. Learning approach
  – Give agent minimal domain knowledge, then have it watch user and learn behaviors

Learning Approach

• Like a personal assistant who gets better and better

• Learns by
  – 1. Looking over shoulder, watching actions
  – 2. Direct and indirect feedback
  – 3. Hypothetical examples
  – 4. Asking other agents for advice
Examples

• Email agent
  – Prioritize, delete, sort, ...
  – Looks at fields to make decisions (How weighted?)
  – Has “tell-me” and “do-it” thresholds for individual actions
  – Has facial expressions to communicate state

• Meeting scheduler
  – Very personalized behaviors

Examples

• News filtering
  – Watches what you read, then does filtering
  – Uses keywords
  – Needs deeper natural language help
Examples

- Entertainment agent
  - Agent memorizes user’s preferences
  - Goes out and talks to other agents and looks for correlations
  - Makes recommendations

Videos

- Vision: Apple’s *Knowledge Navigator*
  - Early ’90’s
- Reality: MIT’s REA
  - CHI ’99
Issues

- Should agents be made human-like?
- If so, should they have personalities?
- How can we guarantee privacy if agent collaboration occurs?
- Should someone be held responsible for what their agent does?

Project

- P3 feedback
- Will have reports for you to look at
- Demo sign up
Would you like to participate in an Augmented Reality Research Study?

- An investigation of ways of giving instructions using 3D graphics
- Experience a see-through head-worn display that blends 3D graphics with the real world

Will involve approximately 90 minutes of your time at $5/half-hour.

If you are interested in participating in this study, please contact Cindy Robertson at leistner@cc.gatech.edu.

InfoVis HW

- Pile on desk
Upcoming

- CSCW
- Ubiquitous Computing
- Project presentations