Voice-Controlled Search User Interfaces for Young Users

The 7th Symposium on HCIR

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Agenda

- Motivation
- User Study
- Conclusion & Outlook
Motivation

- Children are the fastest growing user group in the Internet

![Bar chart showing Internet usage by age group in Germany 2006/2008/2010.]

- Children use the Internet
  - for entertainment,
  - increasing role in education: 54% search information for school at least once per week (KIM)
  - 42% use a search engine

- Special search engines for children
Motivation

During a (web) search, children need to be more **supported** and **motivated** than common users like adults. Children can get **easily frustrated**, if they do not find relevant results or if a failure emerges.

Approach:
- voice-controlled search interface
  - voice interaction in both directions

Benefits:
- support for users with undeveloped writing skills
- interaction more intuitive and motivating
- information about the emotional state of the user
Knowledge Journey

... a search user interface for kids
Knowledge Journey

... a search user interface for kids
User Study

- goal:
  - investigate children’s speech patterns and interaction tactics

- method:
  - “Wizard-of-Oz-Experiment”
  - simulate a fully autonomous application (actually controlled by hidden operator)
  - study users’ behavior without any limitations
  - react appropriately to unexpected user actions
User Study

Pre-interview → Introduction → Search Experiment → Post-interview
User Study

patterns and tactics:
- elliptical constructions
- usage of descriptive terms for the UI element
- combination of touch and voice control desired

problems:
- ambiguous commands
  - context is important to carry out the commands without errors
- difficulties to name “clickable” elements that only contained pictures within web pages or on the SUI surface
  - alternative visualization techniques, e.g. with numbers
User Study: Examples for voice commands

Command “Search for”:
- “I’m searching for Lord of the Rings movies”
- “I would like to ahem ... search for ... YouTube”
- “I would like to ahem ... I’m searching for a ... for ahem information about”
- “hmm horses”

Command “Menu navigation”:
- “I’d like er to go to the bag”
- “at culture er at history I’d like ahem to the steering wheel at the volcano”
- “I would like ... (click) on st at in steering wheel to ahem the calculation task”
- “steering wheel tree”
- “once again to the tree”

Command “Next page”:
- “I would like to see the second page please”
- “I would like to see the second page”
- “page five”
- “the next”
Conclusion & Outlook

pros:
- all children enjoyed to interact per voice control
- voice control supports user interaction
- if descriptive terms are used continuously, corresponding voice commands can be detected automatically

cons:
- voice control perceived as unusual by 90% of the children
- especially at the beginning, young users were overstrained because they did not know what they can actually say to the system

- In order to develop completely voice-controlled search dialogues, further conceptual adaptations are necessary, in particular to provide young users with suggestions of possible voice interactions
- Our long term goal is to take the emotional states of young users into account in order to support search processes and make a search engine more user-friendly
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