Configuration and Introspection of Situated User Support
Stephan Baldes, Alexander Kröner, Mathias Bauer

Workshop der GI-Fachgruppe „Adaptivität und Benutzermodellierung in Interaktiven Softwaresystemen“ (ABIS 2005)

German Research Center for Artificial Intelligence

Outline

• About SPECTER
  – Creation and exploitation of an episodic memory

• Introspection
  – Perception and user support

• User study
  – Goals, structure, and first impressions
What Is SPECTER?

- SPECTER is about...
  - ... context- and affect-aware personal assistance
  - ... in instrumented environments
  - ... using an episodic memory ("personal journal")

Building and Using a Personal Journal
Sample Interaction With SPECTER

- S-enabled Web browser, PDA with access to S
- Instrumented shop with tagged items and RFID sensors integrated into shelf and basket
- Scenario: U interested in acquiring information about a certain kind of product

U visits a Web store; S logs the visit and acquires additional information

In a shop: U inspects a product

S uses the PJ to create a comparison with previously seen products

Home again: Accompanied by S, U reviews the course of the day and S’s performance

Introspection in SPECTER

Exploring the personal journal
Introspection – Why?

• SPECTER may perceive other information than the user
  – The available sensors are usually different
  – SPECTER performs actions on its own, which are not necessarily perceived by the user

⇒ Understanding SPECTER’s perception

• SPECTER may interpret events differently than the user
  – SPECTER's situated user support depends on a classification of situations, which may be different from the one of the user

⇒ Configuring of situated user support

Introspection Components (1)
The Journal Browser

• Purpose
  – Querying of events & resources
  – Accessing the environment
  – Mobile and desktop use

• Ex. 1: Events
  – Context of an event, observed action, feedback

• Ex. 2: Details
  – Data, services related to resource and context

• Ex. 3: Resource lists
  – Resources selected from the personal journal
  – Services related to listed resources
  – Services related to list management
...
Introspection Components (2)

Introspection Environment

- A desktop application, which provides services explicitly tailored for introspecting the personal journal
  - Querying and reviewing events
  - Guiding the user through the introspection process

Ex. 1: Memory Building
SPECTER accompanies the user during web surfing
Ex. 2: Summarizing
SPECTER summarizes information extracted from events

Ex. 3: Evaluation
SPECTER assigns evaluations to CDs the user may want to review
Situated User Support in SPECTER

- Binding situations to services

- Examples
  - If the user has entered a shop
    ⇒ Look for interesting items on sale
  - If shop==SmartShop and value of basket >100€
    ⇒ Check bank account

- Approach: interactive definition of classifiers for situations
• Determining a situation’s features
  – Candidate feature set created by the system based on statistical relevance
  – User may criticize this set and add semantically related features from SPECTER’s ontology

Ex. 5.4: User Support
U can accept or dismiss the proposal; alternatively, the situational trigger can be manually edited (cf. Trigger Editor)
Evaluation of SPECTER

Goals, structure, and first impressions

Evaluation Study

Goals

• Which are the tasks people use the personal journal for?
  – Recall, introspection,...

• How do users interact with the personal journal?
  – Usage patterns, user interface issues

• Are there specific advantages of this approach?
  – Comparison with a system without journal
Evaluation Study
Structure

- Scenario
  - CD shopping; focus on the genre "soundtracks"
  - SPECTER group and control group: the latter one equipped with a simple recommendation system
  - Task: "purchase" of 6 CDs; of these the subject obtained a selection in the value of 30€

- Installation
  - Simulation of 2 shops, each one equipped with one RFID antenna and about 250 tagged CDs

- 3 Phases
  - Browsing Amazon.com
  - Introspection of the result (SPECTER group only, optional)
  - Browsing the shops

Evaluation Study
First Impressions

- People make use the personal journal
  - Recall and introspection of events

- No evidence that the personal journal approach is superior to the control approach
  - Confidence: did control subjects knew what they've missed?

- Widely differing usage patterns
  - Interaction focused on the shop, followed by a "closing" introspection of SPECTER's records
  - Interaction focused on the shopping assistant, no introspection
  - ...
Outlook

• Ongoing Work
  – Extraction of information from logs and journals created during the study

• Future Work
  – Revision of SPECTER according to the results of the study
  – Under discussion: a second study for analyzing the impact of the expected changes