Wearable Computing

Holger Kenn

Universität Bremen

WS 05/06
Task Models

ConcurTaskTrees

Temporal Operators

Examples
Context Toolkit

- Context Toolkit
  - Context Abstraction
  - Design Methodology
HCI Lecture Summary

- Theories
  - Levels-of-analysis
  - Stages-of-action
  - GOMS
  - Widget-level
  - Context-of-use
  - Object Action Interface models
Describing user interaction

- Remember GOMS - Goals, Operators, Methods, Selection Rules
- The user wants to reach a Goal, he uses Operators and Methods that he selects via Selection Rules
- With GOMS, we can look at a sequence of Methods and analyze it.
- We can analyze a system using GOMS, but a GOMS model does not tell us how to implement a system
- Question: How can a GOMS-like system support development?
- A Task Model can be used to guide the implementation.
Task models indicate the logical activities that an application should support to reach users’ goals. (Paterno, 1999)

- Goals are either state changes or inquiries
- Tasks can be highly abstract or very concrete
- Task models can be build for existing systems, future systems and for the user’s view of the system
- Task models are formalized, other methods are often informal
What’s the use of a Task Model?

- Understand the application domain
- Record the result of user discussions
- Support effective design
- Support usability evaluation
- Directly support the user in using the system
- Documentation
Task Model Representation

- GOMS can represent a task model
- GOMS is mainly textual
- GOMS cannot represent concurrency, interruption, order independence, optionality and iteration.
- Alternative: ConcurTaskTrees (Paterno, 1999)
ConcurTaskTrees

Image from Paterno, 1999
CTT: Features

- Hierarchical structure
- Graphical Syntax
- Many temporal operators
- Focus on activities
CTT: Temporal Operators

- Hierarchy

Image from Paterno, 1999
CTT: Temporal Operators

Enabling

Image from Paterno, 1999
CTT: Temporal Operators

Choice

Image from Paterno, 1999
CTT: Temporal Operators

- Enabling with information passing

Image from Paterno, 1999
CTT: Temporal Operators

- Concurrent Tasks

Image from Paterno, 1999
CTT: Temporal Operators

- Concurrent Communicating Tasks

Image from Paterno, 1999
CTT: Temporal Operators

- Task Independence

Image from Paterno, 1999
CTT: Temporal Operators

- Disabling

Image from Paterno, 1999
CTT: Temporal Operators

- Suspend-Resume

Image from Paterno, 1999
Task sequence with iteration: only the last transition ends the iteration

Image from Paterno, 1999
CTT: optional tasks

- Optional Tasks are marked with 
  
  \textit{and} 

  brackets

Image from Paterno, 1999
ShowAvailability inherits the temporal constraint (executed after SelectRoomType) from its parent MakeReservation.

Image from Paterno, 1999
Summary

- Task Trees
  - Formal specification of user interaction
  - Can be used to support development

- ConcurTaskTrees
  - Temporal Operators
  - Examples