

CSA402

Lecture 13

Solutions provided
by
Adaptive Hypertext Systems

Problems addressed

- Lost in HyperSpace
- Cognitive overload
- Complexity of the search space
- Search-browsing
- Static hypertext structure

Generic solutions

- Adaptive Presentation
- Adaptive Navigation

Lost in HyperSpace

- Mark-up nodes to include link to landmark which user knows about
- Show relationship between landmark node and current node
- Reduce cognitive load on user

Cognitive overload

- Move (some) linking functions into AHS system by, e.g., providing "See Also" links
- Automatic/dynamic linking
- Reduce number of outlinks by removing links to non-relevant nodes
- Link recommendation services

Complexity of the search space

- Removing links reduces the size of the search space
- Recommending links assists the user in deciding which links are likely to lead to relevant information
- Automatically modifying content enables readers to understand concepts at their level of understanding
- Learn from user access paths to reorganise hyperspace
- Learn to associate user terminology with document content

Search-browsing

- Dynamic linking as a result of where user is combined with any stated query terms
- Recommend links (paths) to relevant documents

Static hypertext structure

- Users can modify content, and/or system can learn from users
- What change(s) in particular is required to hypertext systems? IR systems?
- Dynamic hypertext systems

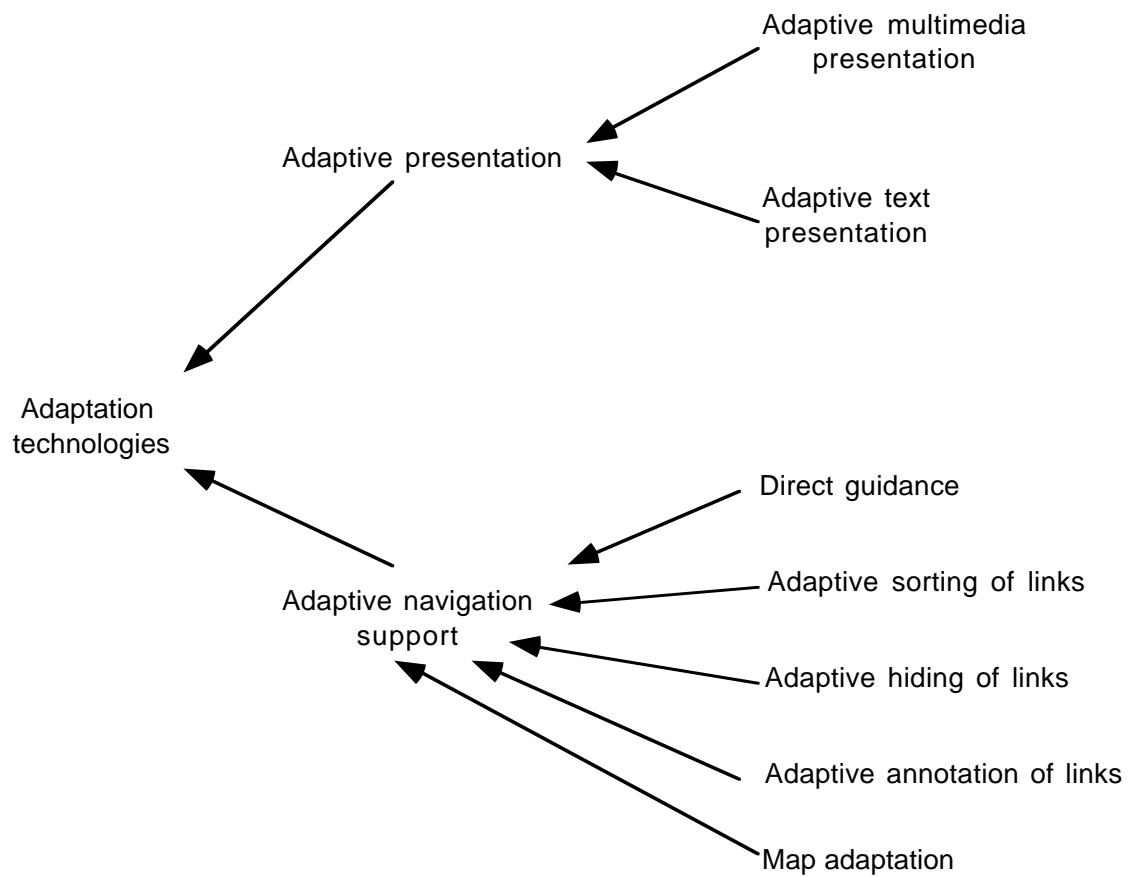
What can be adapted?

- A hypertext is a collection of nodes that are connected by links
- So what can be adapted?

The node content and user interface - *adaptive presentation*

The node organisation and hyperspace representations (e.g., index, map, overview) - *adaptive navigation*

Adaptation Technologies



From Brusilovsky, P. 1998. 'Methods and Techniques of Adaptive Hypermedia', in Brusilovsky, P., Kobsa, A., and Vassileva, J. (eds). 1998, *Adaptive Hypertext and Hypermedia*. Amstedam: Kluwer Academic Publishers, pg. 14.

Adaptive Presentation

- Anything to do with adapting *how* the presented material is displayed to users

Examples

- Adapting the UI (more to do with adaptive user interfaces than adaptive hypertext *per se*)
- Modify data presentation so that it is presented in user's preferred choice (e.g., charts)
- Automatically expand/collapse glossary items according to user's level of expertise
- Provide "trails" through hyperspace according to user's level of expertise
- Can be fairly complex - if user does not know concept A, then unlikely to know concept B, so concept B should also be automatically expanded

Adaptive Presentation (contd.)

- Adaptive presentation can be useful in any adaptive hypertext system, but mostly used in Intelligent Tutoring Systems

Adaptive Navigation

- Focused around implicit link types in hypertext systems

Identify as many implicit link types as possible

- Direct Guidance

Mainly through "Next" buttons!

Can include link/path recommendation

What are the pre-requisites?

- Adaptive Sorting of Links

Ordering links according to some ranking scheme

On what basis?

On which of the implicit link types can this be provided?

Adaptive Navigation (contd.)

- Adaptive hiding of links

Hide links which would lead to non-relevant information

What are the pre-requisites? In ITS systems? In generic AHSs?

Identify implicit link types which support adaptive hiding

- Adaptive annotation of links

Mark-up anchor text/link description to explain the information at the destination of the link

Description must be adaptive!

Components of an AHS system

- Hypertext system
- User Model
- One or more of:

Domain model

IR system

Adaptation Rules

Link base