Improving browsing by Web page navigation

hyperspace clicks information similarity adaptive edge approach relevance preferences application social current user method bookmarking tags graph support semantics links context visualization

Problem

Lost in hyperspace
- Undefined link semantics
- Users lose context immediately after following a link
- Information overload

Blogs
Photo sharing sites (Flickr)
E-mail (Gmail)
Music sites (last.fm)

Social bookmarking

Public bookmark sharing
Bookmarks have associated metadata - tags

tag - arbitrary word describing a resource
- generated by human
- informal
- unstructured
- no hierarchy

Current web browsing paradigm
- no immediate history
- linear browsing

Navigation support in today browsers
- Back/Forward button
  - stack based
- global browsing history
  - no good search/visualization support
- bookmarks
- multiple tabs
  - good/bad?

Information space as a graph

Web
vertices - web pages
edges - hyperlinks (in/out), similar pages

Domain of publications
vertices - publications
edges - citations, similar publications other publications from the same author

Tags

User model

Preferences represented by tags the user is using to describe his bookmarks

Based on assumption that users bookmark resources that are important and interesting to them

Cache

Navigation web service

Generic service - incremental navigation in any graph
Stateful web service - multiple user sesssions
Stores user model
Provides caching mechanisms

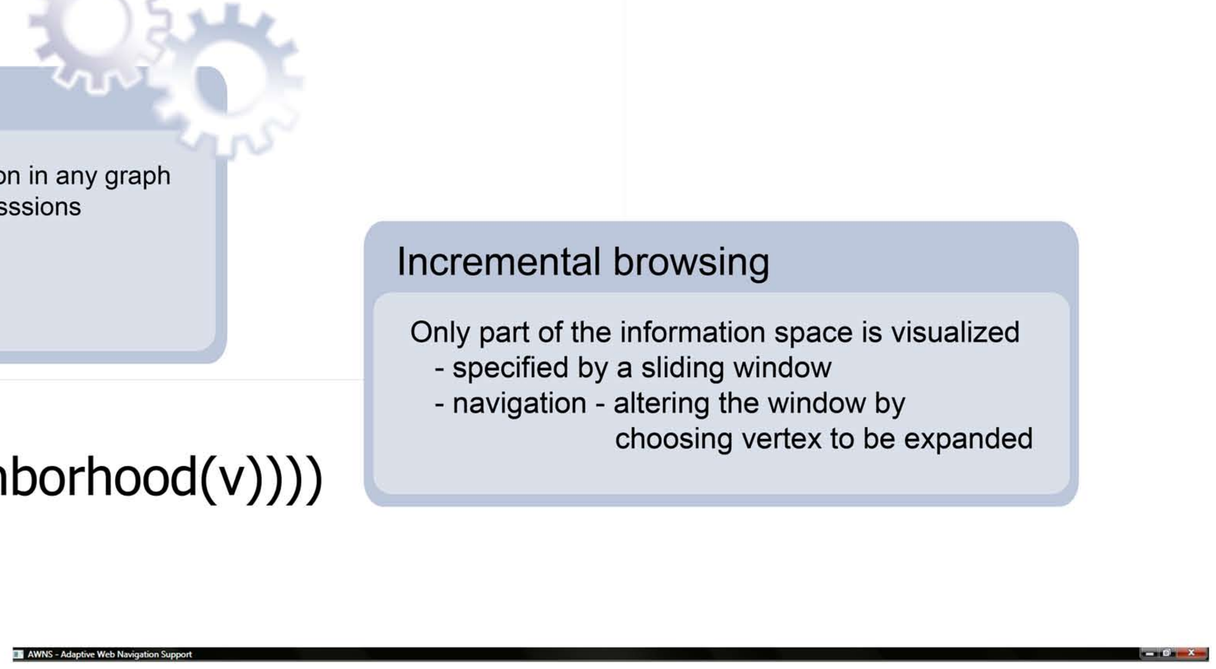
Incremental browsing

Only part of the information space is visualized
- specified by a sliding window
- navigation - altering the window by choosing vertex to be expanded

Sort(Filter(Evaluate(Neighborhood(v))))

Main Features

Actual web page context visualization
Recency ordered history
User model extracted from his tag usage
Recommendation based on social network data



Evaluation metrics

Similarity
Prevents from losing topic
Computed as ratio of common tags to all tags

Interestingness
User preference model inferred from his tag usage
Links leading to pages tagged with tags user is using are preferred

Social trail
More visited pages are considered more valuable
Navigation trails are taken into account

Implementation:
- C# 3.0, Microsoft Visual Studio .net
- Client side: WPF browser application
- Navigation Web Service: WCF service

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