Shared visualisation and virtual environments for co-operative learning

The problem
- supporting the sharing of information between users
- supporting the learning process across distributed groups within a given organisation
- providing distribute access to knowledge from different types of machine

Areas of interest

**Information Visualisation**
- the process of transforming data, information, and knowledge into visual form making use of human’s natural visual capability

  Card, Eick, and Gershon (1998)

**Information Space**
- an information design in which representations of information objects are situated in principled space, where location and direction makes sense in a way that permits mapping and space navigation

Information Visualisation / information space examples

Narcissus hyperstructure
Birmingham University

Example of a hyperstructure
Dave Snowdon, Nottingham Univ.

Internet Foyer (collaborative visualisations)
Brown, Benford, and Snowdon, Univ. of Nottingham

Overview of the Internet Foyer

LyberWorld (navigation cones visualisation)
Matthias Hemmje, GMD, Germany

A group of users around a web page
Approach to the work

- **Approach**
  - representation of information using 3D facilities to develop an information visualisation design with two main characteristics:
    1) uses a top-down principle where different users share a common collection of agreed concepts;
    2) an integrated two part information visualisation, one, shareable, dealing with context, and other, customised by each user, dealing with focus.
  - support production/integration for search and browse tactics

Two part information visualisation design

- **Part I: Context**
  - Shared among users
  - The global picture of the available information space

- **Part II: focus**
  - Different for each user
  - The part of the information space that is under attention

- user A
- user B
- user C
Research question and application

**Concern**
- can computer mediated 3D visual representations be useful in helping the understanding and communication between individuals

**Research application**
- a 3D information visualisation design that allows sharing workable knowledge representations as collective cognitive maps constructs, and offers each individual, customised visualisation filters (for use in education settings)

**Main research tasks**
- model a workable set of parameters to represent useful knowledge representations, for an information visualisation design that use 3D facilities;
- develop an usable set of 3D symbols to serve as demonstrators for supporting the 3D information space as an information visualisation design;
- select an application where the system can be tested. A learning environment to support and generate workable knowledge as a two part information visualisation;
- use an enabling set of technologies to implement the 3D space for (i) individual control and (ii) for sharing by several users.
The prototype application name

Collaborative
Provide a workplace to develop a sharable context view of an information space

Electronic
Design to take advantage of the potential integration with available (digital) information resources

Language

Translation for
Offer means to translate into visual form the otherwise written material to support the context description of the information space

Information

Control
Provides a two step tool for dealing with information retrieval in form of search and browse proposals

Project proposal: the creation and visualisation of interactive information spaces
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Current status

- an information visualisation model, its parameters and algorithms have been developed;
- a Java 3D prototype with proposed 3D symbols has been made to test the information visualisation design;
- the use of an undergraduate class in under preparation, along with the study to be done in the evaluation phase;
- a Java client / server application to test the proposed application is under (final) development (the prototype uses technologies like: Java 1.2 Swing, Java 3D API, networking, RMI, serialisation, and file I/O)
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