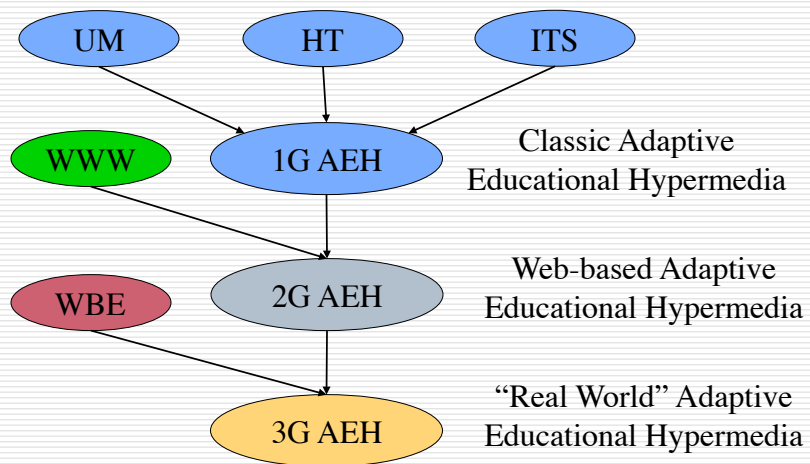


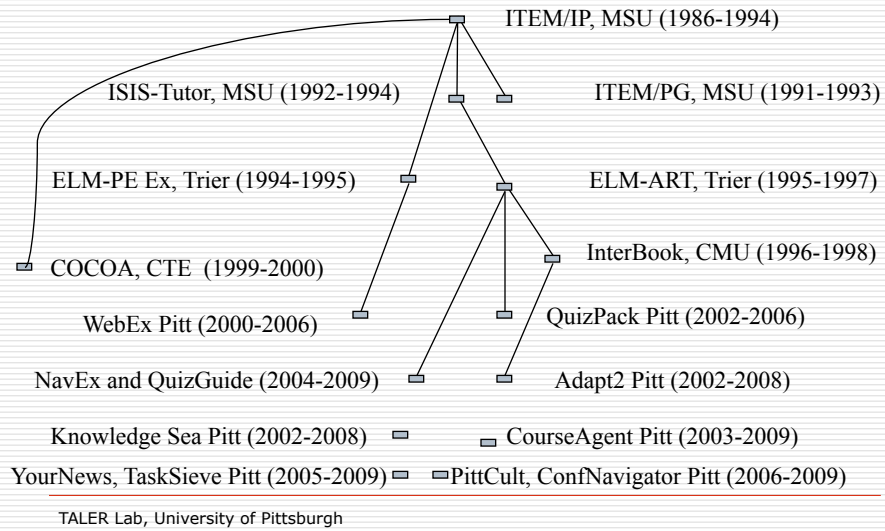
From Adaptive Educational Hypermedia to Adaptive Information Access

Peter Brusilovsky
School of Information Sciences
University of Pittsburgh, USA

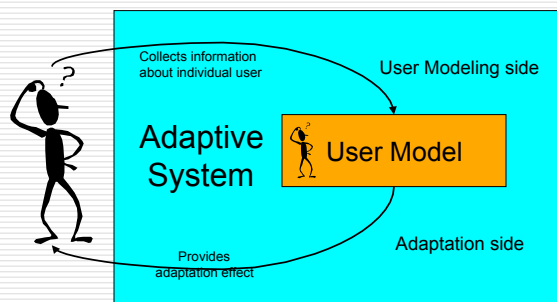
From Generation to Generation



Personal View

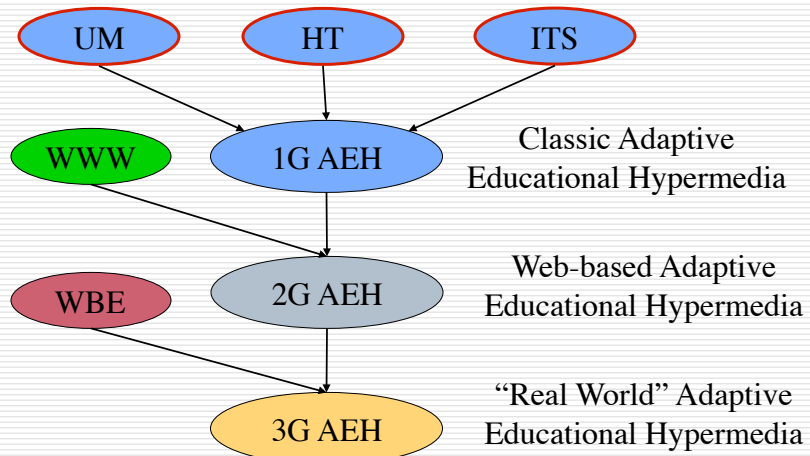


Adaptive systems



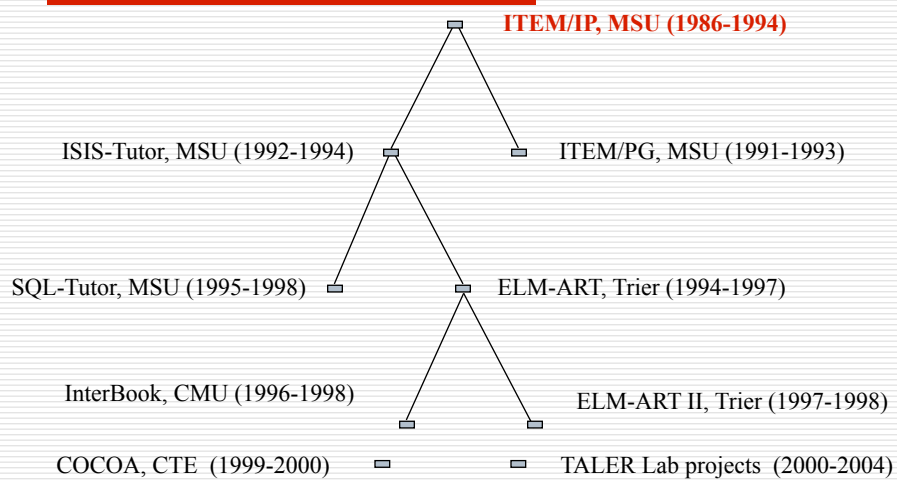
Classic loop "user modeling - adaptation" in adaptive systems

Generation 0



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Personal View: Generation 0

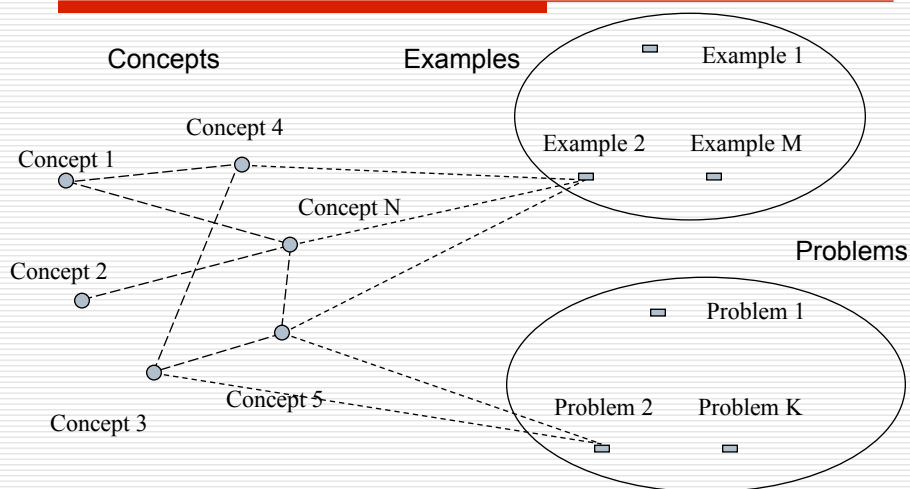


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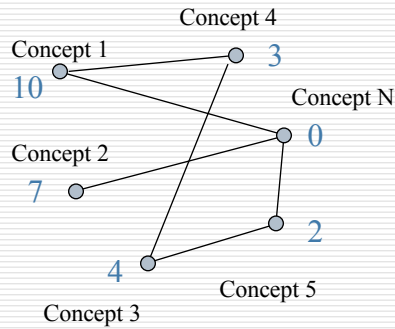
ITEM/IP

- ILE for Introductory Programming
- Integrated system
 - Tutorial (presentation of optimal sequence of explanations, examples and problems)
 - Environment (playing with examples, design and debug problem solutions)
 - Manual (a manual for reference-style access to studied information, examples, solved problems)

Knowledge and learning material



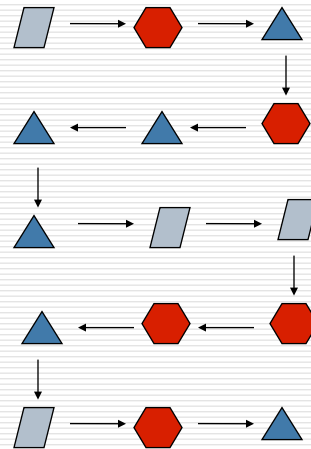
Weighted overlay model



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Course Sequencing

- ❑ Oldest ITS technology
 - SCHOLAR, BIP, GCAI...
- ❑ Goal: individualized "best" sequence of educational activities
- ❑ ITEM/IP: multi-type
 - information to read
 - examples to explore
 - problems to solve ...



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Adaptive presentation

- Goal: make the same “page” suitable for students with different knowledge
 - beginners (in tutorial mode)
 - advanced (in manual mode)
 - smooth transition
- Methods to achieve the goals
 - comparisons of several concepts
 - extra explanations for beginners
 - more complete information for advanced

Conditional text filtering

- Similar to UNIX cpp
- Universal technology
 - Altering fragments
 - Extra explanation
 - Extra details
 - Comparisons
- Low level technology
 - Text programming

If switch is known and
user_motivation is high

Fragment 1

Fragment 2

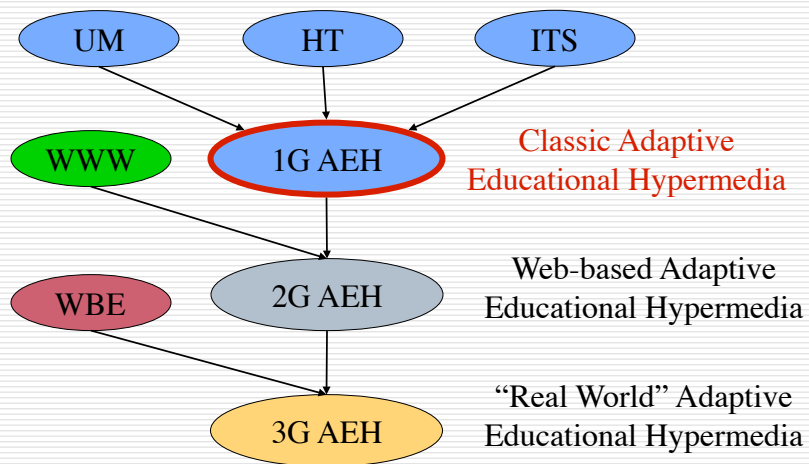
Fragment K

Problems

- ❑ A category of students wanted to make the choice of next thing to do themselves
- ❑ Combining guidance and freedom?
- ❑ Added menu-based access to new material
- ❑ Two information spaces with separate access...
 - Explored material (past)
 - New material (future)
- ❑ And in 1991 we have found hypertext...

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Generation 1



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What can be taken into account?

- Knowledge about the content and the system
- Short-term and long-term goals
- Interests
- Navigation / action history
- User category, background, profession, language, capabilities
- Platform, bandwidth, context...

What Can Be Adapted?

- Hypermedia = Pages + Links
- Adaptive presentation
 - content adaptation
- Adaptive navigation support
 - link adaptation

Adaptive Presentation: Goals

- Provide the different content for users with different knowledge, goals, background
- Provide additional material for some categories of users
 - comparisons
 - extra explanations
 - details
- Remove irrelevant piece of content
- Sort fragments - most relevant first

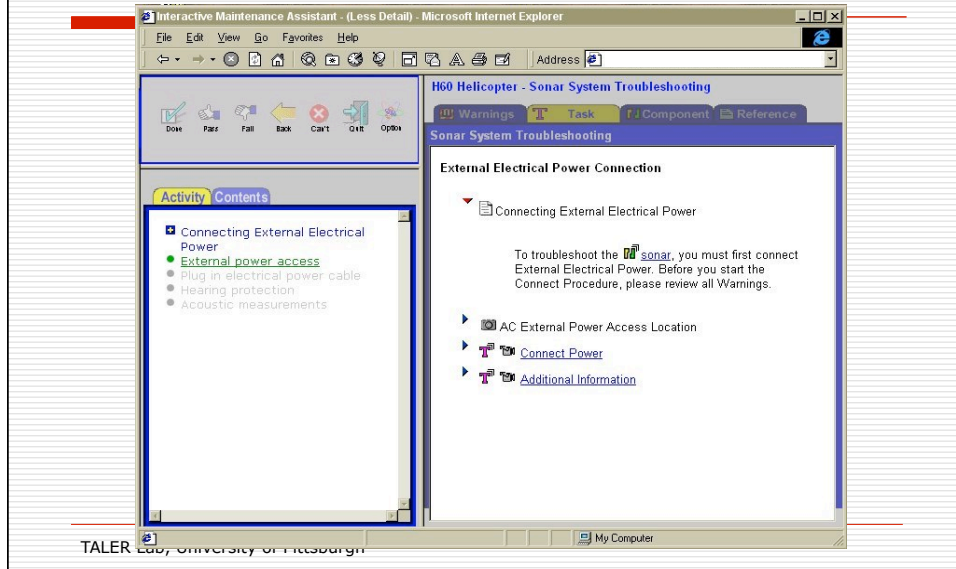
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Adaptive Presentation Techniques

- Conditional text filtering
 - ITEM/IP
- Adaptive *stretchtext*
 - MetaDoc, KN-AHS
- Frame-based adaptation
 - Hypadapter, EPIAIM
- Natural language generation
 - PEBA-II, ILEX

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Example: Stretchtext (ADAPTS)



Adaptive Presentation: Evaluation

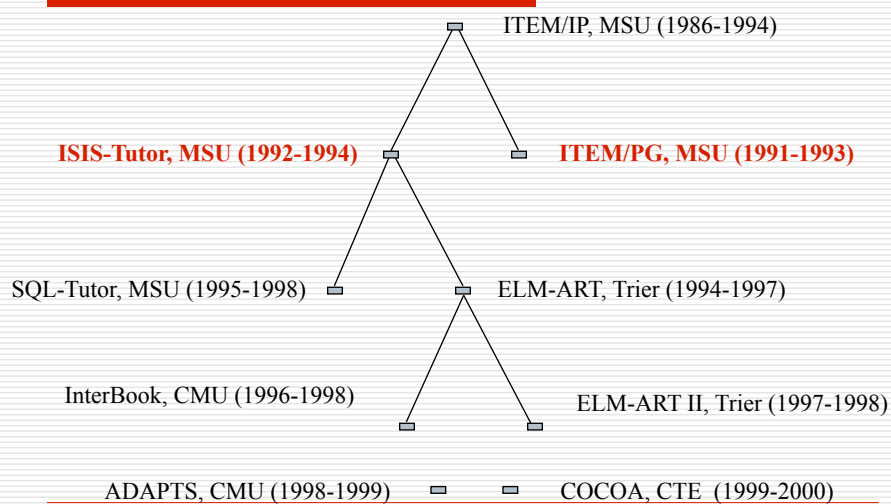
- MetaDoc: On-line documentation system, adapting to user knowledge on the subject
- Reading comprehension time decreased
- Understanding increased for novices
- No effect for navigation time, number of nodes visited, number of operations

Adaptive Navigation Support: Techniques

- Direct guidance
- Restricting access
 - Removing, disabling, hiding
- Sorting
- Annotation
- Generation
 - Similarity-based, interest-based
- Map adaptation techniques

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Personal View: Generation 1



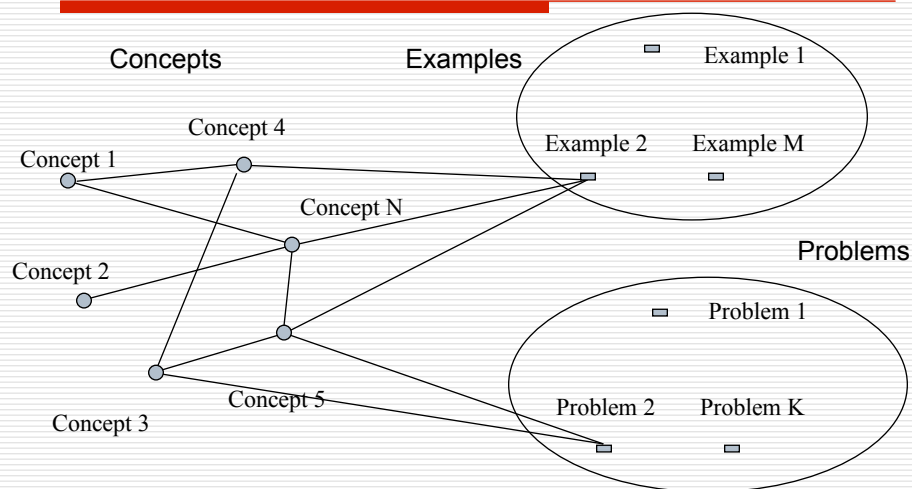
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ISIS-Tutor: ILE + hypertext

- ❑ An adaptive tutorial for CDS/ISIS/M users
- ❑ Domain knowledge: concepts and constructs
- ❑ Hypertext - a way to access learning material:
 - Description of concepts and constructs
 - Examples and problems indexed with concepts (could be used in an *exploratory environment*)
- ❑ Educational status of explanations, examples and problems is shown with link annotation

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Knowledge and learning material



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Student modeling and adaptation

- States for concepts:
 - not ready (may be hidden)
 - ready (red)
 - known (green)
 - learned (green and '+')
- State for problems/examples:
 - not ready (may be hidden)
 - ready (red)
 - solved (green and '+')

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Sample index page (annotation)

Доступные темы	
+ 1 Общий вид формата	2 Арифметические выражения
3 Удаление пустых строк	4 Безусловный переход на новую строку
+ 5 Переход на новую строку	6 Выбор позиции в строке
7 Печать пробелов	+ 8 Вывод поля
9 Понятие MFN	10 Безусловный литерал
11 Арифметическая функция L	12 Арифметическая функция Mfn
13 Арифметическая функция Val	14 Арифметическая функция Rsum
15 Арифметическая функция Rmin	16 Арифметическая функция Rmax
17 Арифметическая функция Ravr	18 Совещение X и #
19 Совещение / и #	20 Условный литерал
21 Повторяющийся литерал	22 Вывод MFN
23 Строковые выражения	24 Префиксный условный литерал
25 Суффиксные литералы	26 Нуль-литералы
27 Повторяющийся литерал с +	28 Префиксный повторяющийся литерал
29 Установка режима вывода	30 Совещение условных литералов и X
31 Совещение условных литералов с #	32 Совещение условных литералов с /
33 Совещение условных литералов с C	34 Совещение условных литералов с X
35 Совещение условных литералов с M	36 Режимы L,U в команде M.
37 Режим N в команде M	38 Режим D в команде M
39 Режим P в команде M	40 Строковая функция F
41 Строковая функция Ref	42 Строковая функция S
43 Программы пользователя format	44 Выражения отношения
Enter - изучить F4-практ F6-учи F8-инд.задач F9-назад PgDn-след.стр.	
+ Хорошо изучен	Изучен
Можно изучать	Не готов

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Sample index page (annotation and hiding)

Доступные темы	
+ 1 Общий вид формата	2 Арифметические выражения
3 Удаление пустых строк	4 Безусловный переход на новую строку
+ 5 Переход на новую строку	6 Выбор позиции в строке
7 Печать пробелов	+ 8 Вывод поля
9 Понятие MFN	10 Безусловный литерал
13 Арифметическая функция Val	20 Условный литерал
21 Повторяющийся литерал	22 Вывод MFN
27 Повторяющийся литерал с +	28 Префиксный повторяющийся литерал
29 Установка режима вывода	52 Размещение первой строки поля
53 Выбор длины фрагмента поля	54 Выбор смещения фрагмента поля
55 Вывод подполя	56 Повторяющиеся группы
Enter - изучить F4-практ F6-учи F8-инд.задач F9-назад	
+ Хорошо изучен Изучен Можно изучать	

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ISIS-Tutor: Evaluation

- 26 first year CS students of MSU
- 3 groups:
 - control (no adaptation)
 - adaptive annotation
 - adaptive annotation + hiding
- Goal: 10 concepts (of 64), 10 problems, all examples

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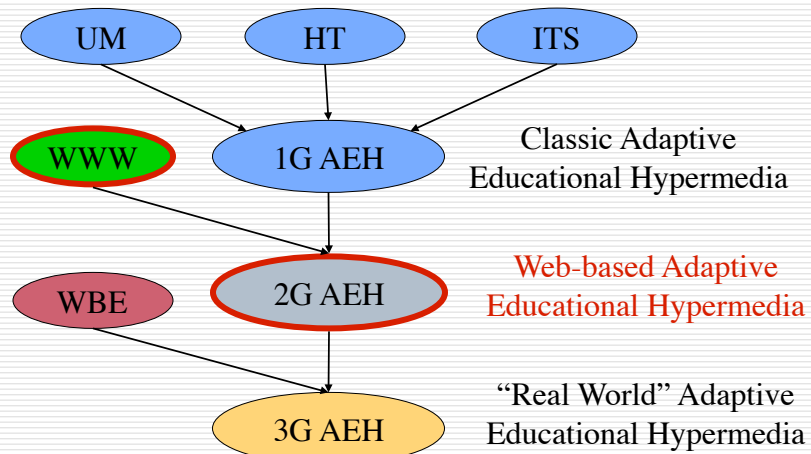
ISIS-Tutor: Evaluation Results

- The students are able to achieve the same educational goal almost twice as faster
- The number of node visits (navigation overhead) decreased twice
- The number of attempts per problem to be solved decreased almost 4 times (from 7.7 to 1.4-1.8)

Similar works 1991-1994

- $\gamma\pi$ Adaptερ (Hohl, Böker, Gunzenhauser, 1991)
 - Sorting page fragments and links by relevance
- Manuel Excel (de La Passardiere, Dufresne, 1992)
 - Adaptive link annotation with icons
- ANATOM-Tutor (Beaumont, 1994)
 - Adaptive presentation, hypertext + ITS
- MetaDoc (Boyle, Encarnacion, 1994)
 - Adaptive stretchtext

Generation 2



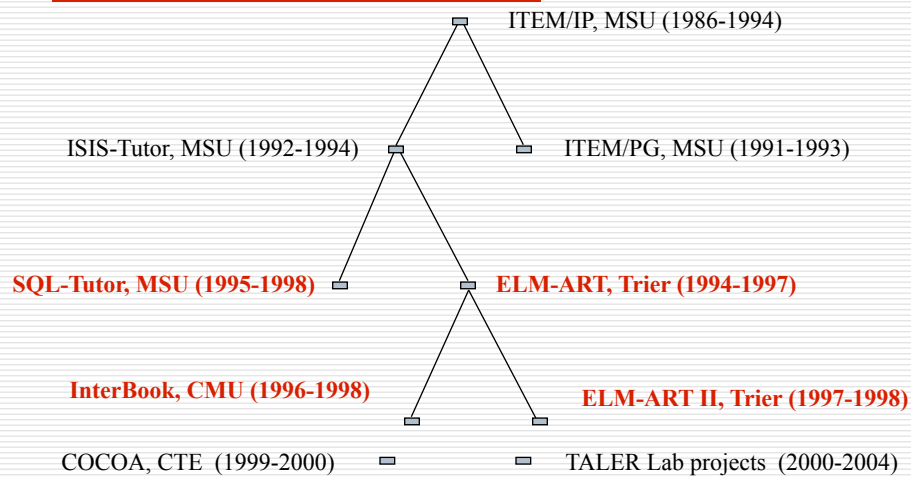
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Generation 2 vs Generation 1

- Generation 1 systems:
 - Research oriented
 - Traditional hypertext/hypermedia
 - Developed independently
- Generation 2 systems
 - Practically oriented
 - Web-based hypermedia
 - Influenced by earlier research
 - Less value on evaluation

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Personal View: Generation 2



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ELM-ART: Lisp ITS on WWW

- ELM-ART:
 - ELM-PE (ILE with problem solving support)
 - Adaptive Hypermedia (all educational material)
- Model: adaptive electronic textbook
 - tests
 - examples
 - problems

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Knowledge representation

- Domain knowledge
 - conceptual network for Lisp
 - problem solving plans
 - debugging knowledge
- Student model
 - Overlay model for Lisp concepts
 - Episodic model for problem-solving knowledge

ELM-ART: Adaptive Textbook

- Electronic Textbook
 - Intelligent, adaptive, interactive
- Adaptive navigation support
- Adaptive sequencing (pages and questions)
- Adaptive similarity-based navigation
- Adaptive selection of relevant examples
- Intelligent program diagnosis
- Open student modeling

Adaptive navigation support

The screenshot shows a Netscape browser window titled "Netscape: ELM-BRT: Lisp-Course". The main content area displays a navigation menu on the left with a tree structure:

- LISP Course
 - Lesson 1
 - Datatypes
 - atoms (exercises solved)
 - S-atom (exercises solved)
 - Numbers (with exercises)
 - Lists (exercises solved)
 - quoted Lists (exercises solved)
 - Empty List, Nil, and 1 (with exercises)
 - Tests on Data Types

Below the menu, a green box contains the message: "All tasks in the last exercises were solved correctly. However, you should work at some more tasks." Below this is a section titled "Exercises" with a "correct" icon. Two quiz questions are shown:

Is the character string a *number*?
-0.4e+4
 Yes
 No

Is the character string a *number*?
1
 Yes
 No

A "submit" button is located at the bottom of the exercise section. On the right side of the browser window, there is a sidebar with a "Chat Room" icon, "LISP Constructs" text, and a "Private Notes on this Page" section with a "store" button.

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Adaptive Diagnostics

The screenshot shows a Netscape browser window titled "Netscape: ELM-BRT: Lisp-Course". The main content area displays a navigation menu on the left:

- LISP Course
 - Lesson 1
 - Self-defined Functions
 - Further Tasks
 - RECTANGLE-AREA (programming task solved)
 - RECTANGLE-AREA (programming task)
 - CUBOID-VOLUME-NEW (programming task)
 - WEIGHT-OF-PURCHASE (programming task)

The main content area displays the "RECTANGLE-AREA" task description:

RECTANGLE-AREA
Define a function RECTANGLE-AREA, that takes as input the side lengths of a rectangle and calculates its area.
Examples:
(RECTANGLE-AREA 3 5)
15
(RECTANGLE-AREA 4 5)
20
(RECTANGLE-AREA 0 10)
0

Below the examples is a text input field with the prompt "Type in your solution here:". The field contains the following code:

```
(defun r-a (s1 s2) (cond ((and s1 s2) (* s1 s2))
```

Below the input field are "define" and "diagnosis" buttons, a checkbox for "Return formatted code", and a "show example" link.

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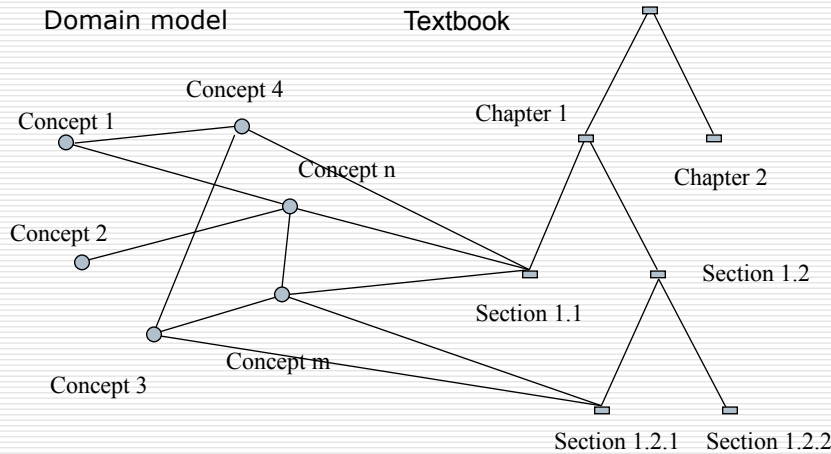
ELM-ART: Evaluation Results

- ❑ Users with no previous programming and Web experience worked twice as longer if adaptive guidance was provided. No effect of adaptive annotation
- ❑ Users with starting programming and Web experience worked twice as longer if adaptive annotation was provided. No effect of adaptive guidance.

InterBook: a Shell for AET

- ❑ "Knowledge behind pages"
- ❑ Structured electronic textbook (a tree of "sections")
- ❑ Sections indexed by domain concepts
 - Outcome concepts
 - Background concepts
- ❑ Concepts are externalized as glossary entries
- ❑ Shows educational status of concepts and pages

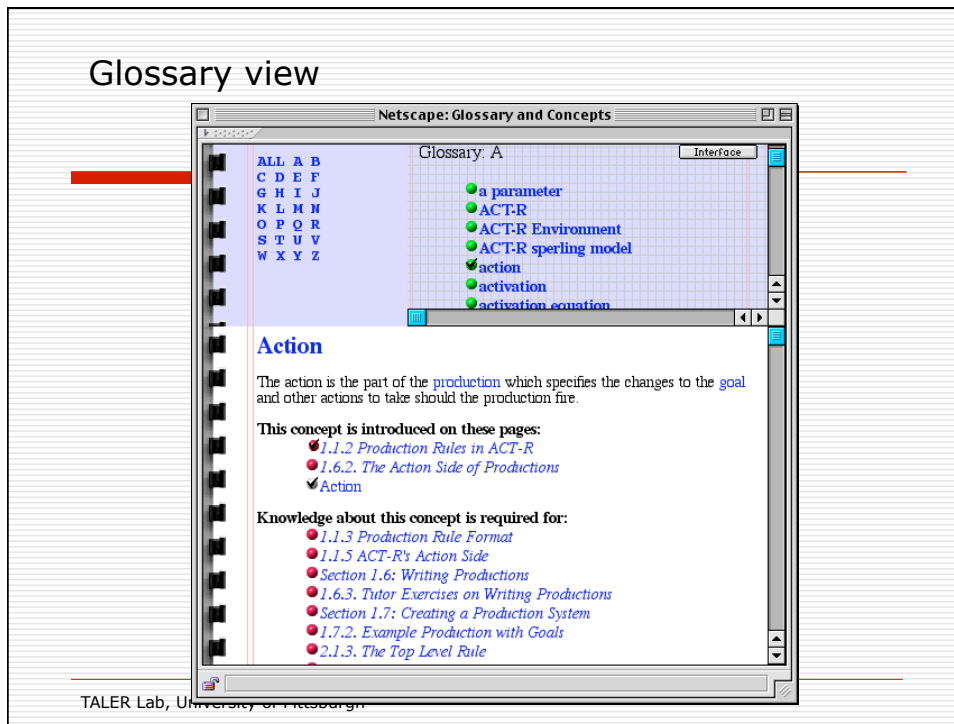
Knowledge and hyperspace



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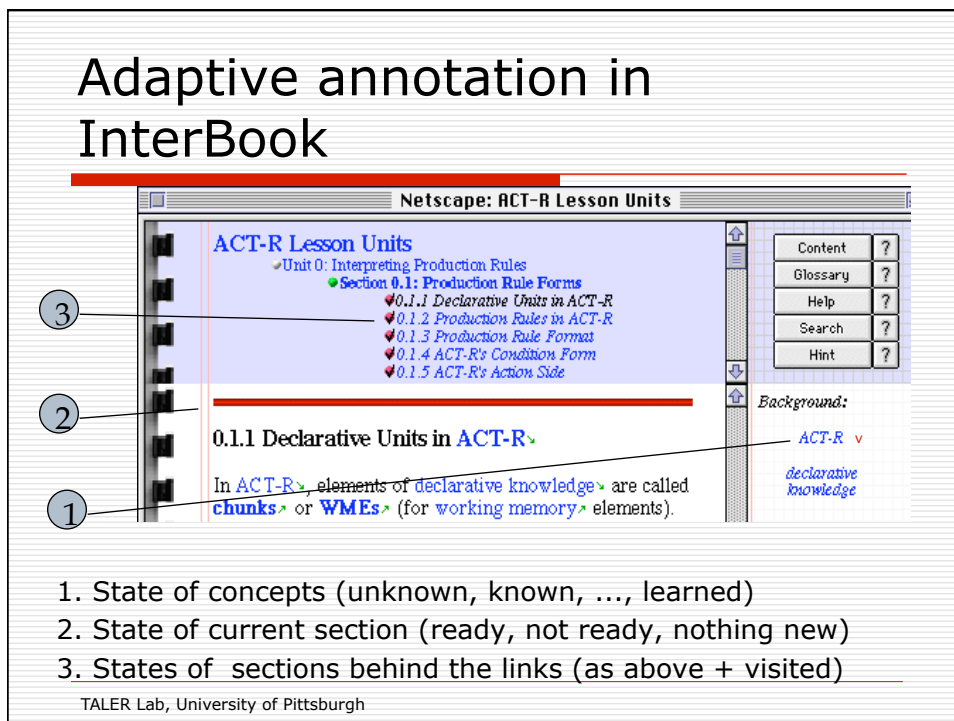
The screenshot shows a Netscape browser window titled "Netscape: InterBook User and Author Manual". The browser's address bar shows the URL "http://www.taler.org/interbook/interbook.html". The main content area displays the title "InterBook User and Author Manual" and a list of links: "3. Interbook: interBook - some of electronic textbooks", "3.1 Content organization", and "3.1.3 The annotated textbook". The "3.1.3 The annotated textbook" link is selected, and the main content area displays the text of this section. The text discusses the process of indexing textbook sections by domain concepts and the role of the spectrum of the unit. On the right side of the browser window, there is a sidebar with a "Background:" section containing links for "concept", "domain", "model", "glossary", and "section". Below this is an "Outcomes:" section with links for "background", "concept", "outcome", "domain", and "spectrum". At the bottom of the browser window, there are "Continue" and "Teach me" buttons.

Glossary view



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Adaptive annotation in InterBook



1. State of concepts (unknown, known, ..., learned)
2. State of current section (ready, not ready, nothing new)
3. States of sections behind the links (as above + visited)

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Book view

ACT-R Lesson Units

- Unit 1: Understanding Production Systems
 - Section 1.1: The ACT-R Production System
 - 1.1.1 Declarative Units in ACT-R
 - 1.1.2 Production Rules in ACT-R
 - 1.1.3 Production Rule Format
 - 1.1.4 ACT-R's Condition Form
 - 1.1.5 ACT-R's Action Side

Back

Teach this Page

1.1.2 Production Rules in ACT-R

A **production rule** is a statement of a particular contingency that controls behavior. Examples might be

IF the **goal** is to classify a person
and he is unmarried
THEN classify him as a bachelor

IF the goal is to add two digits d1 and d2 in a column
and d1+ d2 = d3
THEN set as a **subgoal** to write d3 in the column

The **condition** of a production rule (the IF part) consists of a specification of a goal and a number of **chunks** while the **action** of a production rule (the THEN part) basically involves the creation or modifications of some chunks. The above is an informal English specification of production rules. You will learn the syntax for their precise specification within the ACT-R system.

A production rule specifies an [] to be taken when a [] is met.

Continue Teach me

Content
Glossary
Help
Search
Interface

Background:
procedural knowledge

Outcome:
action
condition
procedural memory
production
production rule

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InterBook Evaluation Results

- ❑ No performance difference between groups
- ❑ About 90% of clicks were made with sequential navigation buttons
- ❑ Adaptive annotation encourages non-sequential navigation
- ❑ Adaptive annotation benefits those who use it as expected

Adaptive annotation can:

- Reduce navigation efforts
- Reduce repetitive visits to learning items
- Encourage non-sequential navigation
- Make system more attractive for students
- But we still need to understand better
 - When it is helpful
 - How to match functionality to students

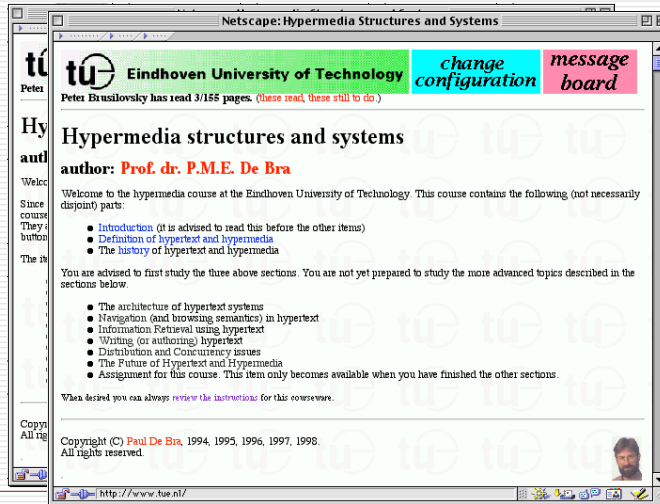
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Other Generation 2 AEHS

- ELM-ART stream: Exploring new approaches and techniques
 - AHA!, INSPIRE, MetaLinks, MANIC
- InterBook stream: Creating authoring frameworks and tools
 - Frameworks:
 - KBS-HyperBook, Multibook
 - Authoring Tools:
 - AHA!, NetCoach, MetaLinks

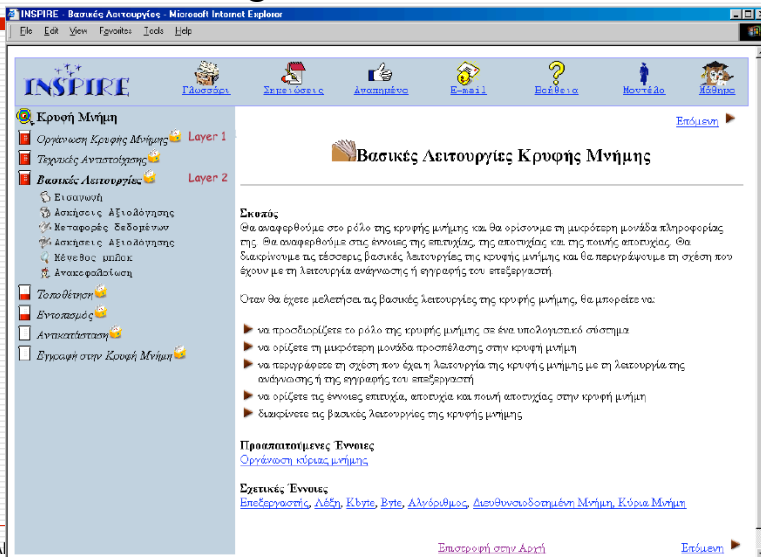
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AHA! (De Bra)



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INSPIRE (Grigoriadou, Papanikolaou, Kornilakis, Magoulas)

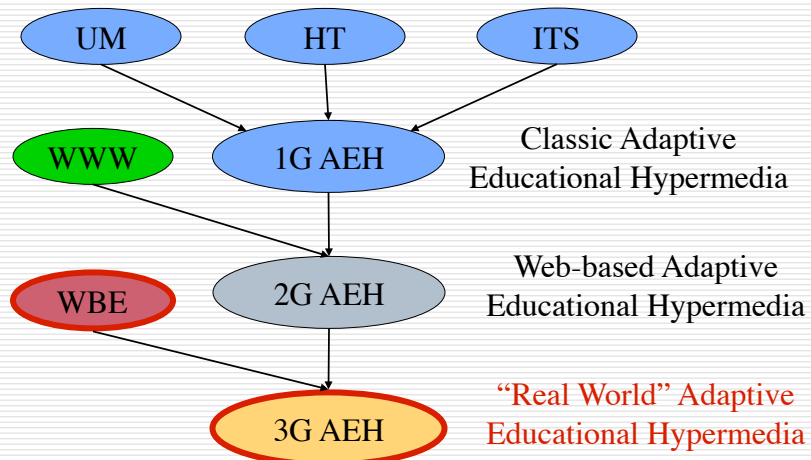


TAI

Επιστροφή στην Αρχή

Επίσκεψη

Generation 3



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Practical E-Learning

- Integrated Course Management Systems
 - Blackboard, WebCT, ...
- Support almost all aspects of E-Learning
 - Course material presentation
 - Assessment with quizzes
 - Threaded discussions
 - Student management and grading
- “MS Word”-style all-in-one tool for WBE

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Adaptive E-Learning?

- Adaptive E-Learning systems can provide a more advanced support for most functions
 - Course material presentation - InterBook, AHA
 - Assessment with quizzes - SIETTE
 - Threaded discussions - help agents
 - Student management - intelligent monitoring
- Why they are rarely used in practical E-Learning?

Practical Adaptive E-Learning

- Model 1: Adapting to current E-Learning Paradigm - CMS
- More versatile adaptive systems
- An ability to integrate open corpus content
- Improving CMS content
- Giving more power to the teacher
 - Customize the system to specific course and material

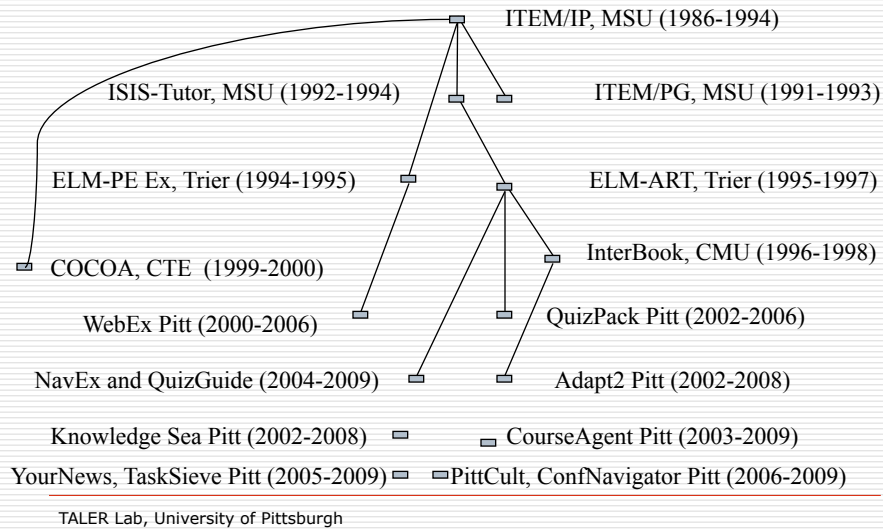
Emerging E-Learning

- Interoperability and standards
 - IEEE CMI, SCORM
- Semantics and metadata
 - LOM
- Component-based architectures
 - OKI, uPortal
- Resource reusability
- Distributed learning content
- Semantic Web

Practical Adaptive E-Learning

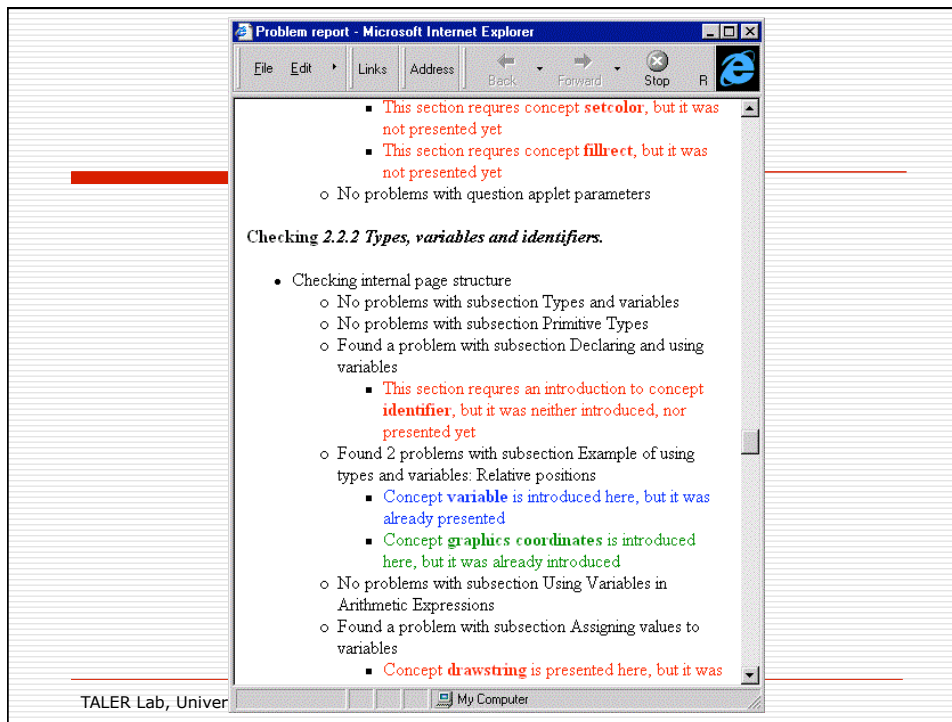
- Model 2: Embedding adaptivity into emerging E-Learning
- Use of current interoperability standards (SCORM, LOM)
- Developing new interoperability architectures
- Resource discovery
- The use of Semantic Web

Personal View: Generation 3



CoCoA - Static Sequencing

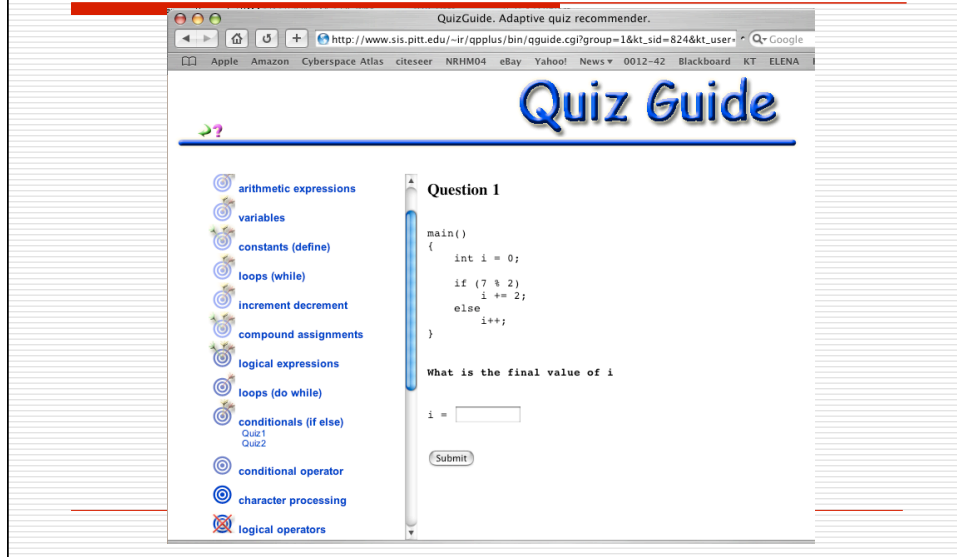
- Many contributors for a single course
- Almost impossible to keep the course consistent without special tool
- Courseware engineering: From course authoring in small to course authoring in large
- CoCoA - Static sequencing
 - Prerequisite checking
 - Goal focusing
 - Learning activity balance



Open Corpus Adaptive Hypermedia

- Classic AH - Closed Corpus of pre-processed content
- Integrate Open Corpus content
- Bringing open corpus content in by indexing
 - KBS-HyperBook, SIGUE
- Processing open corpus content without manual indexing
 - Knowledge Sea

QuizGuide: Topic-Based AH



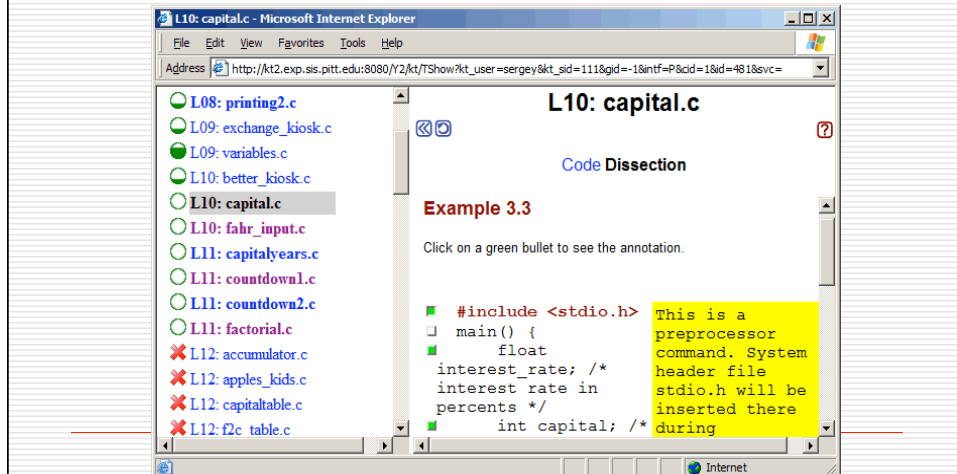
The screenshot shows the QuizGuide website interface. On the left, there is a vertical list of topics, each with a target icon: arithmetic expressions, variables, constants (define), loops (while), increment decrement, compound assignments, logical expressions, loops (do while), conditionals (if else), conditional operator, character processing, and logical operators. The right side displays 'Question 1' with a C code snippet:

```
main()
{
    int i = 0;
    if (7 % 2)
        i += 2;
    else
        i++;
}
```

Below the code, it asks 'What is the final value of i' and provides an input field with 'i = ' and a 'Submit' button.

NavEx: Automatic Indexing

Classic "traffic light" prerequisite-based mechanism based on automatic indexing



The screenshot shows a web browser window titled 'L10: capital.c - Microsoft Internet Explorer'. The address bar shows a URL from 'http://kt2.exp.sis.pitt.edu:8080/'. On the left, there is a navigation menu with a list of files: L08: printing2.c, L09: exchange_kiosk.c, L09: variables.c, L10: better_kiosk.c, L10: capital.c (highlighted), L10: fahr_input.c, L11: capitalyears.c, L11: countdown1.c, L11: countdown2.c, L11: factorial.c, L12: accumulator.c, L12: apples_kids.c, L12: capitaltable.c, and L12: f2c table.c. The main content area is titled 'L10: capital.c' and 'Code Dissection'. It shows 'Example 3.3' with a note: 'Click on a green bullet to see the annotation.' Below this is a C code snippet:

```
#include <stdio.h>
main() {
    float
    interest_rate; /*
    interest rate in
    percents */
    int capital; /*
```

A yellow annotation box on the right explains: 'This is a preprocessor command. System header file stdio.h will be inserted there during'.

Concept-Based QuizGuide

Little progress is made for this material. You have answered this question correctly.

Question:
Based on the tables below, write the required SQL expression.

Task:
Show all the information contained in table "store".

Enter your answer here.

Submit Answer
Go to SQL-Lab

actor_id	first_name	last_name	last_update
1	PENELOPE	GUINNESS	2006-02-15 04:34:33.0
2	NICK	WAHLBERG	2006-02-15 04:34:33.0

Proactive: Metadata for ANS

Recommendation and navigation support based on available metadata indexing

Proactive

[Preference] [Feedback] [Help] [Logout]

Welcome to Proactive, danielle

Job recommendation based on your saved jobs ::

Total: 50(1/3)

Job Category	Title	Company	City	State	Position Type	Salary	Experience	Education	Post Date	Relevance
Help Desk Analyst	Help Desk Support Analyst	Cost Plus World Market	Oakland	CA	Full-Time, Employee	Unspecified	1-2 Years Experience	Associates	12-15-07	*****
E-Commerce Director	Director/VP of Applications-Wireless	Terran Systems	San Jose	CA	Full-Time, Employee	Unspecified	10-15 Years Experience	Master of Science	12-15-07	*****
Java Server Engineer	Java Server Engineer	Cross Creek Systems	San Jose	CA	Full-Time, Employee	unspecified	5-10 Years Experience	Bachelor of Science	12-15-07	****
Information Services Consultant	Financial Services Consultant	IBM	Boston	MA	Full-Time, Employee	unspecified	0-1 Years Experience	unspecified	12-15-07	****
Information Services Consultant	Oracle Service Consultant	IBM	Boston	MA	Full-Time, Employee	unspecified	Unspecified	unspecified	12-15-07	****
Java Server Engineer	QA Engineer - Web UI Automation (Selenium/Java)	Yahoo! Inc	Santa Clara	CA	Full-Time, Employee	unspecified	2-5 Years Experience	unspecified	12-15-07	****
Help Desk Analyst	HELP DESK ANALYST - BOSTON	SuccessFactors.com	Boston	MA	Full-Time, Employee	Unspecified	2-5 Years Experience	Bachelor of Science	12-15-07	****
Java Server Engineer	Principal SW Engineer - Ad Server	Yahoo! Inc	Santa Clara	CA	Full-Time, Employee	unspecified	5-10 Years Experience	unspecified	12-15-07	****
Java Server Engineer	Java Developer Server Side	Informative People INC	San Francisco	CA	Full-Time, Employee	Unspecified	1-2 Years Experience	unspecified	12-15-07	****
E-Commerce Director	Director of Software	Terran Systems	San Francisco	CA	Full-Time, Employee	\$140K - \$190K	10-15 Years Experience	unspecified	12-15-07	***
E-Commerce Director	Director of Categorization	Yahoo! Inc	Sunnyvale	CA	Full-Time, Employee	unspecified	Unspecified	unspecified	12-15-07	***
Information Services Consultant	Financial Services Consultant	IBM	San Francisco	CA	Full-Time, Employee	unspecified	0-1 Years Experience	unspecified	12-15-07	***
Java Server Engineer	Senior Java Server Engineer	ArCSight	Cupertino	CA	Full-Time, Employee	Unspecified	5-10 Years Experience	Bachelor of Science	12-15-07	***
Information Services	Oracle Service Consultant	IBM	San Francisco	CA	Full-Time, Employee	unspecified	Unspecified	unspecified	12-15-07	***

Community-based OCAH

- ❑ Footprint-based social navigation
 - Footprints, CoWeb, Knowledge Sea II, ASSIST
- ❑ Action-based social navigation (annotation, scheduling...)
 - Knowledge Sea II, Conference Navigator
- ❑ Direct feedback for navigation support
 - CourseAgent, PittCult
- ❑ Tag-based social navigation
 - Any example???

Knowledge Sea II

The screenshot displays the Knowledge Sea II web application interface. The main window is titled "Knowledge Sea v2.0 - Girish Chavan". The interface is divided into several sections:

- Know:** A grid of knowledge nodes, each representing a concept or topic. Nodes include terms like "operator, loop, expression", "loop, operator, statement", "statement, loop, operator", "language, compiler, run", "file, compiler, include", "file, source, include", "file, output, function", "file, output, source", "operator, expression, value", "operator, expression, loop", "language, operator, type", "language, statement, problem", "language, problem, run", "language, compiler, file, language", "file, compiler, run", "language, printf, scanf, printf", "file, output, run", "file, string, output", "data, t, vari", "data, t, vari", "language, problem", "language, problem", "scanf, printf", "scanf, printf", "string, character, print, space, array", "string, character, print, element, memory", "string, character, print, space, array", "array, pointer, string, element, memory".
- Location on map:** A small map icon indicating the current location in the knowledge space.
- Keywords:** A list of keywords related to the current node, such as "string, character, print, space, array" and "array, pointer, string, element, memory".
- Search Results:** A list of search results for the current query, including links to various resources like "B. Milos : Strings", "P. Burden : Addresses, Pointers", "D. Marshall : String Conversion", "C.Faq : Question 10.12", etc.

Conference Navigator

E-Learn 2006
World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education

E-Learn 2006 Presentation Schedule/Search

Search: Author matching

Searches for United States or United Kingdom, use "USA" or "UK".

Date: All Days Saturday, Oct. 14, 2006 Monday, Oct. 16, 2006
 Sunday, Oct. 15, 2006 Tuesday, Oct. 17, 2006

Topic: Tools & Systems

Next Page
Presentations Matching Search: 77
Sat, Oct. 14

Time	Room	Title	Type	Topic	Proceedings Starting Page #
10:00 AM	3	AnnotEd: A Social Navigation and Annotation Service for Web-based Educational Resources Rozita Farzan, University of Pittsburgh, USA; Peter Brusilovsky, University of Pittsburgh, USA View Details View Paper View Abstract	Full Paper	Tools & Systems	2794
10:30 AM	9	Using iPads to Support Content Area Learning in a Japanese College Lecture Course Douglas Scott, Waseda University, Japan; Shoji Yoshimura, Waseda University, Japan; Shogo Kato, Waseda University, Japan View Details	Full Paper	Tools & Systems	3014
11:15 AM	3	Enabling the collective to assist the individual: COEAD, a self-organizing reading environment Andreea Chisnita, McGill University, Canada; Suzanne Laporte, McGill University, Canada View Details View Paper View Abstract	Brief Paper	Tools & Systems	2753
11:35 AM	3	Drag and Drop Streaming: an Inexpensive Method for Recording and Delivering Lectures in Becoming the Next Revolution in E-Learning Sabador Siles-Francoesi, University of Houston, USA; Abhadh Dintabas, University of Houston, USA; Ian Evans, University of Houston, USA; Donald Neuenhulste, University of Houston, USA View Details	Brief Paper	Tools & Systems	2715
11:55 AM	3	Supporting Diagnostic Problem Solving in Medical Education Using an Integrated Classroom - E-Learning Models Bona Favre, McGill University, Canada; Suzanne Laporte, McGill University, Canada; Genevieve Gauthier, McGill University, Canada; Jeffrey Williams, McGill University, Canada View Details	Brief Paper	Tools & Systems	2788
1:30 PM	8	Reading Out Clues of Understanding with Learner's Contexts in C-Language Programming	Full Paper	Tools & Systems	3040

Conference Navigator 2.0 Beta

Welcome Guest

Adaptive Hypermedia 2008

Summary Program

Top Ten Annotated Papers

Title	Date	#
1 Adaptive Navigation Support Peter Brusilovsky	Jul 30 2008	9
2 Towards Computerized Academic Learning Jozef Tvarozek, Milos Kravcik, Maria Bielkova	Aug 1 2008	5
3 Adaptive Link Annotation Michael Yudelson, Peter Brusilovsky	Aug 1 2008	3
4 Altruism, Selfishness, and Social Navigation John Riedl	Jul 31 2008	3
5 (Web Search)shared - a Social Navigation Framework Maurice Coyle, Barry Smyth	Jul 30 2008	3
6 An Evidence-Based Approach to Adaptive Hypermedia Francesca Carmagnola, Vania Dimitrova	Jul 31 2008	1
7 SemWeb: A Semantic Web Framework Melike Sah, Wendy Hall, David C. De Roure	Jul 31 2008	1
8 A Rule-Based Recommender for Adaptive Hypermedia Fabian Abel, Ibert Bittencourt, Nicola Henze, Daniel Krause, Julita Vassileva	Jul 31 2008	1
9 A Scrutable User Modelling Framework Demetris Kyriacou	Jul 31 2008	1
10 Modelling Semantic Relationships in Adaptive Hypermedia Styliani Kleanthous, Vania Dimitrova	Jul 30 2008	1

Top Ten Visited Papers

Title	Date	#
1 Adaptive Navigation Support Peter Brusilovsky	Jul 30 2008	12
2 Towards Computerized Academic Learning Jozef Tvarozek, Milos Kravcik, Maria Bielkova	Aug 1 2008	8
3 Adaptive Link Annotation Michael Yudelson, Peter Brusilovsky	Aug 1 2008	7
4 Altruism, Selfishness, and Social Navigation John Riedl	Jul 31 2008	5
5 An Evidence-Based Approach to Adaptive Hypermedia Francesca Carmagnola, Vania Dimitrova	Jul 31 2008	4
6 LS-Plan: An Effective Comprehension Framework Carla Limongelli, Filippo Sciarrone, Giulia Vaste	Aug 1 2008	2
7 SemWeb: A Semantic Web Framework Melike Sah, Wendy Hall, David C. De Roure	Jul 31 2008	2
8 A Scrutable User Modelling Framework Demetris Kyriacou	Jul 31 2008	2
9 A Rule-Based Recommender for Adaptive Hypermedia Fabian Abel, Ibert Bittencourt, Nicola Henze, Daniel Krause, Julita Vassileva	Jul 31 2008	1
10 Adaptation of Elaborated Feedback in Adaptive Hypermedia Ekaterina Vasilyeva, Mykola Pechenizky, Paul De Rudder	Jul 31 2008	1

Tag Cloud

adaptability adaptive adaptive-hypermedia adaptive-navigation-support adaptive-web assessment e-learning framework hypermedia information-retrieval interoperability jon-dron judith keynote masthoff open-corpus peter-brusilovsky portals recommender social-navigation social-search social-web structured systems tagging task web

Contributors

Top Ten Active Communities

Community	#
1 Social Web	19
2 Adaptive Web	17
3 User Modelling	13
4 Personalized Web	8

Conference Navigator 2.0 Beta © 2008
School of Information Sciences, University of Pittsburgh
35 North Bellefield Avenue, Pittsburgh, PA 15260

CourseAgent

CourseAgent
An Adaptive Online Course Recommendation System

Spring 2006 List

Click to see the schedule

Schedule of spring 2006

CRN	Course No	Title	Day	Time	Location	Instructor	Workload	Relevance	Action
2692	DECOM 2940	PRACTICUM	sat			Richard Thompson	11		Plan It
16084	DESCI 2230	INFORMATION AND COOKING THEORY	tue	6:00-8:50 P	302 CL	Paul Muroto	11	0 0 0	Plan It
16077	DESCI 2230	DECISION ANALYSIS AND PROBLEM SUPPORT	wed	6:00-8:50	411 IS	Marci Drouotat	11	0 0 0	Plan It
16086	ISL 2238	ETHICS IN THE INFORMATION SOCIETY	mon	7:00-9:50 P	403 IS	Jose Carlos	11	0 0 0	Plan It
16094	DESCI 2250	FACTOR FACTORS IN SYSTEMS	thu	6:00-8:50 P	411 IS	Michael Lewis	11	0 0 0	Register It
16056	DESCI 2430	INTERACTIVE SYSTEM PERSON	wed	6:00-8:50 P	405 IS	Peter Kousilovsk	11	0 0 0	Evaluate It
16076	DESCI 2531	INFORMATION SYSTEMS ANALYSIS, DESIGN, AND EVALUATION	tue	6:00-8:50 P	411 IS	Simon Bar	11	0 0 0	Plan It
16011	DESCI 2540	DATA STRUCTURES	thu	7:00-9:50 P	501 IS	Roger Flann	11	0 0 0	Plan It
16118	DESCI 2541	ALGORITHMIC DESIGN	sat	7:00-9:50 P	406 IS	Stavros Karim	11	0 0 0	Plan It
16065	DESCI 2720	GEOGRAPHIC INFORMATION SYSTEMS	thu	6:00-8:50 P	405 IS	Harvey Kim	11	0 0 0	Plan It

Difficulty level of the course
Low, Medium, High

Degree of relevance to students' career goal
Marginally relevant
Relevant
Very Relevant

Planned to take (can be registered)

Already taken (can be evaluated)

PittCult

UNIVERSITY OF PITTSBURGH SCHOOL OF INFORMATION SCIENCES

PITTCULT

home | recommendation | my events | profile & friends | logout | help |

Welcome to PITTCULT, peterb

July / 2008

Most Recent Events

[CINEMA IN THE PARKS] The Spiderwick Chronicles
Date: 2008-07-30 20:00 | Venue: Schenley Park [map] | Kind: Film/Video Arts
Grab a blanket and head out for an unforgettable evening of cinema under the stars. The 2008 "CitiParks Cinema in the Park" schedule will include Spider-Man 3, Ocean's T ...

Last Days Cafe Monthly Creative Resource Meet and Chat for Pittsburgh's Creatives
Date: 2008-07-31 17:30 | Venue: New Hazlett Theater [map] | Kind: Others
Join us for a monthly gathering of artists and creative professionals, known as "Last Days Cafe This FREE happy hour, casual "salon" is held the last day of every month (...

Annie Get Your Gun
Date: 2008-07-30 20:00 | Venue: Benedum Center [map] | Kind: Opera/Musical
Music and Lyrics by Irving Berlin
Book by Herbert & Dorothy Fields
As revised by Peter Stone

Random Users
Nimisha radamanthis celery st3313rsfan chirayukong

Most Trusted Users
ipb peterb danielle

Most Popular Event
In Harmony with... Great British A... Marvin & Chris ... Fiddler on the ... Sideburns (Bake...

Social networks for contextual recommendation

Keyword-based OCAH

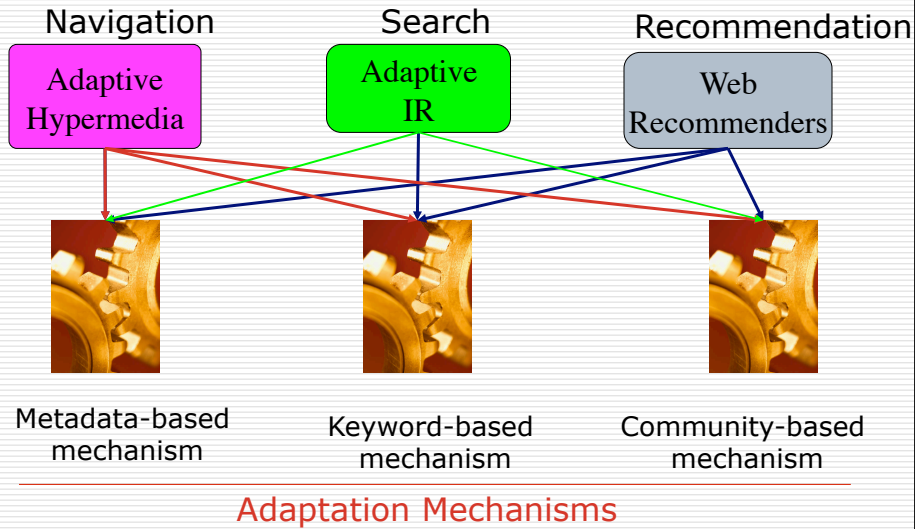
- Siskill and Webert
 - Link ordering and annotation
- ML-Tutor
 - Link ordering and generation
- ScentTrails
 - Link annotation
- YourNews/TaskSieve
 - Link ordering and generation

YourNews: Open Keyword-Level User Models

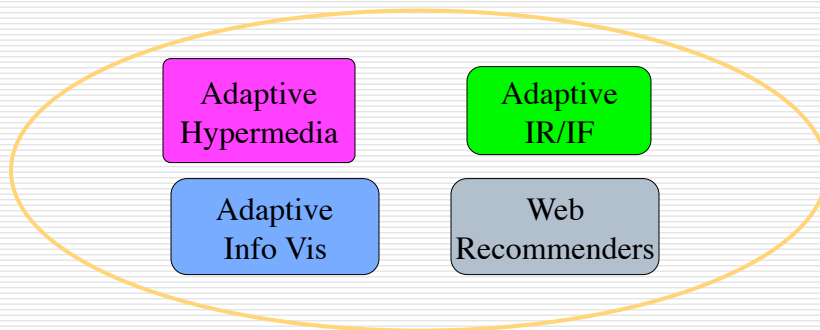
Keyword-level user model is visible and editable

The screenshot displays the 'YourNews' web application in a Mozilla Firefox browser window. The page title is 'YourNews' and the URL is 'http://tr.exp.sis.pitt.edu/gale/news-study/personalize'. The interface includes a navigation menu with categories like 'All', 'Headlines', 'National', 'World', 'Business', 'Technology', 'Sports', 'Entertainment', and 'Health'. Below the menu, there are links for 'Show all duplicate articles', 'Short term', 'Long term', 'Recent News', and 'Recommended News'. The main content area shows a list of news items, including 'Spinach Plants Probed: E. Coli Kills Boy' and 'Idaho blames toddler's death on E. coli (AP)'. On the right side, there is a panel titled 'jahn's Keywords for Health News [Hide]' which lists various keywords such as 'COLI SPINACH', 'BOY IDAHO PLANT BOISE', 'PROBE KIDNEY INFECT DEATH BACTERIA TODDLER', 'NATIONWIDE STRAIN OFFICIAL FAILURE OUTBREAK', 'CRIMINAL FRESH PROMPT BLAME WARNING CONSUMER', 'LINK HEALTH LAUNCH DIE OLD MONTH THURSDAY', and 'KILL'. Below this list, there is a section for 'CONTAMINATION' with an input field containing the word 'contamination' and an 'OK' button.

Personalized Information Access 2008

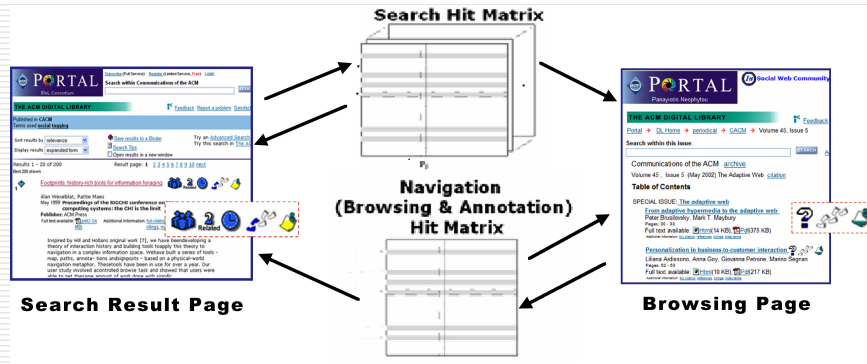


Personalized Information Access 200X



- With and without domain models
- Keyword- and concept-based UM
- Use of any AI techniques that fit
- Use many forms of information access
- Use a range of adaptation techniques
- Adapt to more than just interests

ASSIST-ACM



Re-ranking result-list based on search and browsing history information

Augmenting the links based on search and browsing history information

More Information

□ Read

- Brusilovsky, P. (1996) Methods and techniques of adaptive hypermedia. *User Modeling and User-Adapted Interaction* 6 (2-3), 87-129
- Brusilovsky, P. and Henze, N. (2007) Open corpus adaptive educational hypermedia. *The Adaptive Web: Methods and Strategies of Web Personalization*. Lecture Notes in Computer Science, Vol. 4321, Springer-Verlag, pp. 671-696.

□ Explore

- Try our systems at PAWS Community portal: <http://www.sis.pitt.edu/~paws>
- Use PittCult, YourNews, CourseAgent