LIS 678 CRN: 88861 Personalized Information Delivery: Information Filtering

Co-located with:

CIS 702 CRN: 88570 Communication/Information Technologies (CIT)

(Spring 2016)

Final version of this syllabus will be distributed in class

Instructor: Luz M. Quiroga, Professor
Class meetings: Monday 1-3:40 pm
Room: LIS Program (Hamilton library - basement) - 3G
Course workspace: https://laulima.hawaii.edu
Website: http://www2.hawaii.edu/~lquiroga/courses/lis678-cis702/lis678-cis702.htm
Office hours: After class or by appointment
Office location/Phone: HL 02A; phone: 956-5838
POST 305E; phone: 956-9988; cell phone: 808-3892489
E-mail: lquiroga@hawaii.edu

Course Description (from UH catalog)

CIS 702 Communication/Information Technologies (CIT). Technological concepts underlying data communications; information processing and computers; communication channels and networks, information storage and retrieval, and computer hardware and software.

LIS 678 Personalized Information Delivery (PID). Study of the components of personalized information systems: information filtering systems with emphasis on modeling and representation of documents, queries, user information preferences, and user-system interaction. Topics include advanced Information Retrieval (IR) models, metadata and markup languages, query operations, thesaurus based IR, acquisition of user profiles, and user/system performance evaluation.

Note

CIS students: this course will help you to prepare some of the question for the Information Storage and Services (ISR) exam. Those who already took CIS 702 before Fall 2008 and want to take this course, can register under LIS678.

Detailed Course Description
Reducing information overload is the main goal of Information Filtering (IF) and it has been recognized as one of the priorities in the development of current web-based information systems. IF systems are meant to deliver personalized information, acting as personal information agents that recommend relevant (filtered) documents based on their clients' information preferences and needs (profiles).

Recommendation technology is being presented as a new paradigm of search where relevant items find the user instead of the user explicitly searching for them (http://recsys.acm.org/2009). New trends in Information technologies such as social networking and mobile devices are making personalization research and practice a priority.

Libraries have been offering personalized system in services such as: selective dissemination of information, alerting services for a long time. Customer and marketing research has also a long tradition. With the advances in information technology, personalization has evolved, now covering more sophisticated ways. Collaborative filtering, recommender systems, personalized help systems, social filtering, social data-mining systems, and user-adaptive systems can be collectively called information-filtering (IF) systems. Today, personalization is everywhere, in every industry and service, from marketing to health, travel, education, entertainment, etc.

IF researchers contend that a conceptual framework for the design of IF systems comes from two well established lines of research: Information Retrieval (IR) and User modeling (UM). The course covers theories, research and current practices in these two fields, including modeling and representation of documents, queries, user preferences, and user-system interaction.

The first part of the course includes IR models for searching: set theoretic models (e.g. Boolean model) and algebraic models (e.g. vector model). Emphasis will be given to query languages and protocols as well as to relevance feedback and strategies for query expansion and reformulation using, for example, different types of thesauri, metadata and markup languages (SGML, HTML and XML) that provide information on the document structure, format and semantics will also be included as part of the study of Web Based Information Retrieval and Filtering. Students will learn about system and user based retrieval performance evaluation and will experiment with benchmark tasks and reference test collections.

The second part of the course will mainly focus on user modeling. Although IF could be considered an application of IR, there is a major distinction: the existence of a highly individualized profile that is a representation of relatively stable user information preferences and needs. Profiles can be considered as user models and will be the center of this second part of the course which will review core topics in IF research including user modeling in IR and IF systems, acquisition of user profiles, personal ontologies, IF taxonomies, IF performance evaluation and Personal Information Management (PIM).

**Prerequisite**

An introductory class in one of the following fields: information retrieval, online searching, database management, digital libraries, information systems, agents, information architecture, web design / applications / systems, human computer interaction, social computing, social informatics -- or instructor's consent.

**Library and Information Science (LIS) Student Learning Outcomes (SLO)**

This course addresses the following SLO of the LIS Program, as stated in their mission and goals. The course enables students to:

SLO 1: Understand, apply and articulate the history, philosophy, principles and ethics of library and information science and the related professions.
- 1c) Develop and apply critical thinking skills in preparation for professional practice

SLO 3: Organize, create, archive, preserve, retrieve, manage, evaluate, and disseminate information resources in a variety of formats.
- 3b) Organize, create, archive and manage collections of information resources following professional standards
SLO 4: Evaluate and use the latest information technologies, research findings and methods.
- 4a) Evaluate systems and technologies in terms of quality, functionality, cost-effectiveness and adherence to professional standards
- 4c) Apply current research findings to professional practice

SLO 5: Engage in projects and assignments dealing with multicultural communities and representing diverse points of view.
- 5b) Demonstrate understanding of the social, cultural, political, and economic context of information services and systems

Course Learning Objectives

At the end of the course you will be able to:

1. Discuss some of the most important problems and questions in IR and IF.
2. Discuss the characteristics of the main components of IR and IF systems.
3. Evaluate and propose design features to enhance IR and IF system performance.
4. Participate in the implementation of modern information retrieval, filtering systems, digital libraries.

Professional Expectations

All students attending classes in the LIS Program are expected to become familiar with and adhere to the Professional Code and Expectations posted at http://www.hawaii.edu/lis/students.php?page=profexp.

Teaching Philosophy

I believe in collaborative learning, where we all learn from each other. I also believe that students will benefit from exposure to real life situations, as it will foster their critical thinking. Working in a group helps students to improve their communication skills, which is something highly appreciated by most organizations. I also believe that it is everyone's social responsibility to contribute in developing solutions to some of the problems in our community. As a result, this is project-driven course -- rather than lecture-driven. Students are encouraged to work as a group solving real world, community needs.

Course structure and activities

This is a seminar where your participation is essential for your learning; for each class one student will help the instructor to facilitate / co-teach the session; the facilitator can suggest modifications to the reading list, two weeks in advance; class meetings will combine lecture, demos, lab sessions, presentations and discussions. For each class session, students should have completed the readings and assignments, bringing questions and comments to the class. Students will use Laulima to form teams and to complement class discussions.

Research Methods

Methodologies and procedures for this research seminar can take different approaches, quantitative or qualitative. Examples of methods incorporated in course projects are: Needs assessment, Survey - interview, research, document content analysis, and Transaction log analysis. Also, and given the course emphasis in user modeling and the design of Information Retrieval and Filtering systems, research methods appropriate for course projects include Usability studies, Information retrieval experiments, Heuristic evaluation and Cognitive walkthrough.

Required text


Supplemental readings

Additional readings will be assigned by the instructor and the session facilitator. Recommended readings include book chapters from:
Special topics research

Early in the semester students will form a team of 2-3 members and will explore a special topic. The special topic exercise is intended to give an awareness of current issues related to CIT and / or PID. The results of the special topic analysis will be presented orally to the class during the semester. Students will negotiate with the instructor the theme and schedule of presentations in order to find the time that will better complement the class matters.

Term Project

Students will participate in a team project of 2-4 members. Each team will periodically present informal reports of their progress to the class. Final results of the project will be presented to the class, both orally and in written form at the end of the semester.

Examples of course projects that students can undertake:

- Evaluation, comparison of IR / IF systems (e.g. search engines; recommenders, personalization features in digital libraries and portals)
- Designing / running an IR/IF experiment (e.g. building a collaborative profile using a movie recommender; testing usability of a search interface; incorporating personalization in the design of a digital library)
- Analysis / design / prototype of a IR/IF component (e.g. a ranking algorithm; building a prototype of a searching interface; designing personalized web sites)
- Writing a paper: literature review, reaction paper on IR/IF/User modeling
- Conducting research or development on IF - User modeling (e.g. using faceted classification schemes for personalized web-IR); using bookmarks as a source of profiles; visualization for personal information management; observing users' searching behavior: children, young adults, patients, students, members of a community)

Project Progress Reports

To make the task more manageable, the final project report has been broken down into three project reports (PR), written by the team. Each report will help the group to build the final project report, part by part. With every project report due, students must also provide the
project documentation. Project documentation refers to information collected while working on the project, such as field notes, comments, etc. After submission of each progress report, each team should schedule a meeting with the instructor to discuss progress and next steps.

**Project Journals**

With each project progress report, students will turn in an INDIVIDUAL project journal. The project journals are used to evaluate the student's progress and how well each student is doing. A journal is due at the same time the project progress report is due. Since project journals are individual work, other team members should not read them. Therefore, each student MUST turn in his / her own journal.

**Project Poster**

The group should provide a Power Point file that will contain a single slide that summarizes your project. It can be created from the slides of your project presentation file. Creativity will be needed to make it appealing, yet still informative.

**Communication**

- Work space: This course has a work space in LAULIMA at [https://laulima.hawaii.edu](https://laulima.hawaii.edu)
- Instructor e-mail: Feel free to e-mail me at iquiroga@hawaii.edu. Please start the message subject with "cis702-lis678: ".
- In the course work space you can find details and discussions of weekly activities and assignments. You will have a space for your group project and special topic planning and follow up.
- Online conference services such as Skype are useful for group interaction.
- Face to face, online (skype) or phone meetings can be set by appointment.

**Grading Summary**

**Assignment scoring:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation: Class attendance, constructive participation, online discussions, leadership</td>
<td>15%</td>
</tr>
<tr>
<td>In-class exercises, assignments, homework</td>
<td>15%</td>
</tr>
<tr>
<td>Co-teaching / Facilitation work</td>
<td>15%</td>
</tr>
<tr>
<td>Special Topic - presentation, paper and poster</td>
<td>10%</td>
</tr>
<tr>
<td>Revised copy of Special topic (ScholarSpace format)</td>
<td>5%</td>
</tr>
<tr>
<td>Course project:</td>
<td>40%</td>
</tr>
<tr>
<td>In progress project reports and documentation (team) (3 reports)</td>
<td>12%</td>
</tr>
<tr>
<td>Individual journals (3 journals)</td>
<td>3%</td>
</tr>
<tr>
<td>Course project Presentation (team)</td>
<td>5%</td>
</tr>
<tr>
<td>Course project report and poster (team)</td>
<td>10%</td>
</tr>
<tr>
<td>Revised copy of course project report and poster (team; ScholarSpace format)</td>
<td>5%</td>
</tr>
<tr>
<td>Intra-team and mentor evaluations</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Grading Scale:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>100 + outstanding work:</td>
</tr>
<tr>
<td>A</td>
<td>100-94 A</td>
</tr>
<tr>
<td>A-</td>
<td>93-90 A-</td>
</tr>
<tr>
<td>B+</td>
<td>89-97 B+</td>
</tr>
<tr>
<td>B</td>
<td>86-83 B</td>
</tr>
<tr>
<td>B-</td>
<td>82-80 B-</td>
</tr>
<tr>
<td>C+</td>
<td>79-77 C+</td>
</tr>
<tr>
<td>C</td>
<td>76-73 C</td>
</tr>
<tr>
<td>C-</td>
<td>72-70 C-</td>
</tr>
<tr>
<td>D+</td>
<td>69-67 D+</td>
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<tr>
<td>D</td>
<td>66-63 D</td>
</tr>
<tr>
<td>D-</td>
<td>62-60 D-</td>
</tr>
</tbody>
</table>

**Students with special needs**
Students with special needs as defined by the Americans with Disabilities Act, should discuss their needs with the instructor at the beginning of the semester, in order to make the necessary arrangements early in advance.

Policies

Class participation, discussion, leadership:

Full credit will be awarded only to students who have near-perfect attendance, participate meaningfully (and non-obstructively) in class discussions, and create an atmosphere of collegial participation when leading discussions.

Missing class policy:

Missing a session affects overall class participation; it will also affect the grade if there happens to be an exercise or quiz during the class. With a valid excuse (e.g. attending a professional meeting) the student will be asked to post in Laulima a review or a brief summary (no more than 2 pages) of the meeting attended if it pertains to the course concepts.

Late assignments, exercises policy:

With no valid excuse: the grade for the assignment will be reduced by 20% per each late day.

With a valid excuse: a fair deadline will be negotiated.

Course Schedule

See the course schedule at
http://www2.hawaii.edu/~lquiroga/courses/lis678-cis702/lis678-cis702courseSchedule.htm