



UNIVERSITI TEKNOLOGI MARA

CSC790: SEARCH ENGINE AND WEB NAVIGATION

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| Course Name (English) | SEARCH ENGINE AND WEB NAVIGATION APPROVED |
| Course Code | CSC790 |
| MQF Credit | 3 |
| Course Description | This course will introduce students to the principles of search and navigation technologies, ways of modelling different aspects of Web and how the Web is evolving. Student will learn how to deal with web search engines and explore the tools and techniques for effective web navigation. Student also will understand the concept of current technologies in the search and navigation context such as the mobile web and social networks. |
| Transferable Skills | Problem solving skills developed through tests, assignments and projects. |
| Teaching Methodologies | Lectures, Discussion |
| CLO | CLO1 Describe basic concepts of search engine and web navigation CLO2 Examine major concepts of search engine and web navigation including its architectural. CLO3 Demonstrate professionalism skills in constructing major components of search engine and web navigation. CLO4 Display teamwork and responsibility skills in completing tasks of demonstrating components of search engine and web navigation |
| Pre-Requisite Courses | No course recommendations |
| Topics | |
| 1. Introduction to Search Engine and Web Navigation 1.1) Search and Navigation technologies are medium of operation on the Web to seek out and interact with information. 1.2) 1.3) A brief history of hypertext and the Web and search engines, including the problems of search and navigation and discusses the potential approaches to improve | |
| 2. Evaluation of Web Search to Traditional Information Retrieval 2.1) Traditional information retrieval is search within small, controlled, non-linked collections such as a collection of medical or legal documents whereas Web Search is search within the world's largest and linked document collection. 2.2) 2.3) This difference arises from the high degree of dynamism of the Web, its hyper-linked character, the absence of a controlled indexing vocabulary, the heterogeneity of document types and the easy access that different types of users may have to it | |
| 3. Web Crawlers and Crawling Strategies 3.1) Web crawling is the process by which user gather pages from the Web, in order to index them and support a search engine. 3.2) 3.3) The objective of crawling is to quickly and efficiently gather as many useful web pages as possible, together with the link structure that interconnects them. | |
| 4. Link Analysis on the Web 4.1) The analysis of hyperlinks and the graph structure of the Web have been instrumental in the development of web search. 4.2) 4.3) This topic focuses on the use of hyperlinks for ranking web search results by reviewing some basics of the Web as a graph and the technical development of the elements of link analysis for ranking. | |

5. Web Search basics

5.1) There are different types of searches and search engines that serve different purposes. Web search cover web directories, search engine advertising, meta search engines, personalization of search, question answering engines, image search and special purpose search engines.

6. Navigating the Web

6.1) Navigation tools such as the browser built in or plug-in assist users to locate information local to the sites. Various techniques are available to analyze the navigability and usability of web sites including web data mining, web metrics and visualization.

7. Web Usage Mining

7.1) Web Mining is the extraction of interesting and potentially useful patterns and implicit information from artifacts or activity related to the World Wide Web. The process includes the Web servers' record and accumulates data about user interactions whenever requests for resources are received. The main component in the web mining framework is to analyze the web access logs of different web sites that will help to understand the user behavior and the web structure.

8. Collaborative Filtering

8.1) Collaborative filtering is a process of filtering information for patterns using techniques involving collaboration among multiple agents, viewpoints, data sources. This topic will discuss the framework and challenges of collaborative filtering in the context of search engine and web navigation.

9. Web 2.0 and Collective Intelligence

9.1) Several technologies involve in the Web 2.0 are Ajax, RSS, Open Apls, Widgets, Mashups and SAAS. Social networks is an example of Web 2.0 which users can create, edit, modify, share, link to and tag content into the web links between people and emerging communities, in addition to the links between web pages.

| Assessment Breakdown | % |
|-----------------------|---------|
| Continuous Assessment | 100.00% |

| Details of Continuous Assessment | Assessment Type | Assessment Description | % of Total Mark | CLO |
|----------------------------------|-----------------|--|-----------------|------|
| | Assignment | Assignment (10%) to assess the teamwork and responsibility skills in completing tasks of demonstrating components of search engine and web navigation | 10% | CLO4 |
| | Assignment | Individual assignment (20%) to assess scientific skills in applying the major concepts of search engine and web navigation. | 20% | CLO2 |
| | Final Test | Final test (Test 2) (20%) to assess scientific skills in applying the major concepts of search engine and web navigation. | 20% | CLO2 |
| | Group Project | Mini project (10%) to assess the professionalism skills in constructing major components of search engine and web navigation | 10% | CLO3 |
| | Group Project | Group Project (30%) to assess the teamwork and responsibility skills in completing tasks of demonstrating components of search engine and web navigation | 30% | CLO4 |
| | Test | Test 1 (10%) assessment to assess the level of knowledge and understanding on concepts of search engine and web navigation. | 10% | CLO1 |

| Reading List | Reference Book Resources |
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| | <ul style="list-style-type: none"> • Federico Pozzi, Elisabetta Fersini, Bing Liu, Enza Messina 2016, <i>Sentiment Analysis in Social Networks</i>, 1 Ed., Morgan Kaufmann Publishers [ISBN: 0128044128] • Safiya Umoja Noble 2018, <i>Algorithms of Oppression</i>, NYU Press New York, United State [ISBN: 1479837245] • Jason McDonald 2018, <i>SEO Fitness Workbook</i>, 2020 Ed., Independently published [ISBN: 1726634973] • Stefan Büttcher, Charles L. A. Clarke, Gordon V. Cormack 2016, <i>Information Retrieval: Implementing and Evaluating Search Engines</i>, The MIT Press Ed., MIT Press [ISBN: 0262528878] • Gohar F. Khan 2015, <i>Seven Layers of Social Media Analytics : Mining Business Insights from Social Media Text, Actions, Networks, Hyperlinks, Apps, Search Engine, and Location Data</i> Createspace Independent Publishing Platform Scotts Valley, California, US [ISBN: 1507823207] |
| Article/Paper List | This Course does not have any article/paper resources |
| Other References | This Course does not have any other resources |