

**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

**New Scheme Based On AICTE Flexible Curricula**

**CSE-Artificial Intelligence and Machine Learning/ Artificial Intelligence and Machine Learning, V-Semester**

**Departmental Elective AL503 (A) Information Retrieval**

**UNIT-I:**Introduction - History of IR- Components of IR - Issues -Open source Search engine Frameworks - The Impact of the web on IR - The role of artificial intelligence (AI) in IR – IR Versus Web Search - Components of a search engine, Characterizing the web.

**UNIT –II:**Boolean and Vector space retrieval models- Term weighting - TF-IDF weighting-cosinesimilarity - Preprocessing - Inverted indices - efficient processing with sparse vectors LanguageModel based IR - Probabilistic IR -Latent Semantic indexing - Relevance feedback and queryexpansion.

**UNIT- III:**Web search overview, web structure the user paid placement search engine optimization, WebSearch Architectures - crawling - meta-crawlers, Focused Crawling - web indexes - Nearduplicate detection - Index Compression - XML retrieval.

**UNIT –IV:**Link Analysis -hubs and authorities - Page Rank and HITS algorithms -Searching and Ranking -Relevance Scoring and ranking for Web - Similarity - Hadoop & Map Reduce - Evaluation -Personalized search - Collaborative filtering and content-based recommendation of documentsAnd products - handling invisible Web - Snippet generation, Summarization. Question Answering, Cross-Lingual Retrieval.

**UNIT –V:**Information filtering: organization and relevance feedback - Text Mining- Text classification andclustering - Categorization algorithms, naive Bayes, decision trees and nearest neighbor -Clustering algorithms: agglomerative clustering, k-means, expectation maximization (EM).

**References:**

1. C. Manning, P. Raghvan and H Schutze: Introduction to Information Retrieval, Cambridge University Press.
2. Ricardo Baeza Yates and Berthier Ribeiro Neto, Modern Information Retrieval :The Concepts and Technology behind Search, ACM Press Books.
3. Bruce Croft, Donald Metzler and Trevor Strohman,Search Engines Information Retrieval in Practice, Addison Wesley.
- 4.Mark Levene, An Introduction to Search Engines and Web Navigation, Wiley.