Information Retrieval

Instructor: Venkatesh Vinayakarao
Term : Aug - Sep 2019

Welcome to Information Retrieval (IR) course! It is difficult to imagine living without search engines. Availability of big data has necessitated a systematic study of retrieval techniques. Principles and practices of information retrieval have been a focus of both researchers and practitioners alike. This course is not about just search engines. It is about dealing with big data and retrieving information which opens up several interesting applications. This course will introduce students to key parts of IR such as indexing techniques, challenges in query processing and well-known retrieval models.

Key Learning Objectives

At the end of this course, you should be able to:

- Understand and apply text retrieval techniques to big data.
- Understand and apply text indexing techniques.
- Analyze and evaluate existing retrieval systems.

Lecture Resources

Lecture #	Topic	Readings	Slides/Material
1,2	Boolean Retrieval	Chapter 1 from CPS	
3	Content Processing	Chapter 2 from CPS	
4	Tolerant Retrieval	Chapter 3 from CPS	
5	Index Construction and Index Compression	Chapter 4,5 from CPS	
6,7	Vector Space Model	Chapter 6,7 from CPS	
8,9	IR Evaluation	Chapter 8 of CPS	
10	Relevance Feedback	Chapter 9 of CPS	
11	Probabilistic Retrieval	Chapter 11 of CPS	
12	Language Models for IR	Chapter 12 of CPS	
13,14	Web Basics, Web Crawling, Link Analysis	Chapter 19,20,21 of CPS	
15,16	Advanced Topics I	Entity Retrieval, Learning to Rank	

...	Advanced Topics II (if time permits)	QA Systems, Knowledge Graphs, Eye Tracking, User Studies	

Evaluation

Instrument	Max Marks
Final Exam	60%
Assignments (3 * 10% each)	30%
In-Class Quiz (5 * 2%)	10%

Pre-requisites

Familiarity with Java will help in coding with Lucene. You may use your favourite programming language (for assignments) as long as the objectives of the assignment are met. Basic understanding of linear algebra, set theory and probability will be useful in understanding the IR models.

Resources

Text

- [CPS] An Introduction to Information Retrieval. Christopher D. Manning, Prabhakar Raghavan, Hinrich Schütze.

Reference

- [BDT] Search Engines: Information Retrieval in Practice. Bruce Croft, Donald Metzler, Trevor Strohman

---

If you are not having fun, you are not the best student you can be!