Interdisciplinary topics extraction and evolution

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Introduction

- **Background:**
  - **Interdisciplinary research often leads to innovations that are not available in a single discipline**
  - **Existing studies have focused on macroscopic studies of disciplinary intersections, few have studied interdisciplinary intersections from a microscopic perspective.**
  - **the extraction of interdisciplinary research topics relies mainly on a single unit of measurement, such as keywords.**

Reality requirement	Lack of microscopic research	Single measurement unit

- **Research Target: Taking Library and Information Science and Management as an example,we did interdisciplinary research from microscopic perspective:**
  - **use LDA to extract interdisciplinary topics based on the abstracts;**
  - **construct dynamic LDA models for interdisciplinary topics evolution research.**

- **Significance:**
  - **Extracting potential interdisciplinary topics in different disciplines can promote disciplinary breakthroughs and innovations.**
  - **Topic evolution research reveals the laws and processes of topic evolution through the comparison of knowledge structures or contents of different time windows, and can understand the current development trends of disciplinary fields.**

Methodology

The research methodology of this paper is divided into two main parts: interdisciplinary topics extraction & interdisciplinary topics evolution analysis(Figure 1).

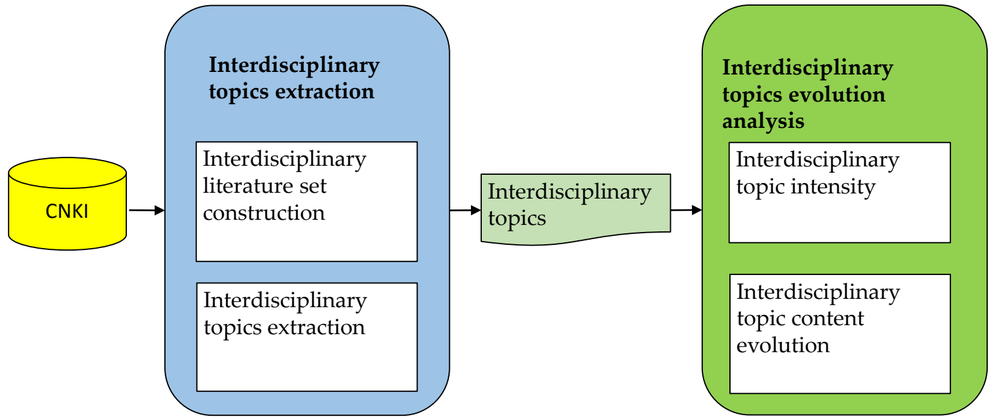

Figure 1: Research framework

Experiment and results

Table 1: Distribution of core journals and number of papers

Discipline	Journal Source	Journals	Papers	Percentage
Library and Information Science	CSSCI	20	23633	58.6%
Management	CSSCI	36	33459	41.4%

The dataset of this paper was obtained from the CNKI database with the years 2016-2021, the specific data are shown in Table 1.

After data pre-processing,we defines a K-Means algorithm with a **K value of 15** to perform K-means clustering on the dataset and finally select class **cluster 8** as the basic dataset for interdisciplinary topic extraction and evolutionary research, which contains **3006 documents.**

Interdisciplinary topic extraction

According to the interdisciplinary topic extraction method, we got the interdisciplinary topics(Table2).

Table 2: Results of interdisciplinary topic extraction (parts)

Topic number	Feature words(partial)
Topic #0	Change Indicator Status Logic Farmers Sector Revenue Banks Strategic emerging industries Change Systemic risk

Interdisciplinary topic evolution analysis

Interdisciplinary topic intensity results(Figure2) and Interdisciplinary topic content evolution results(Figure 3).

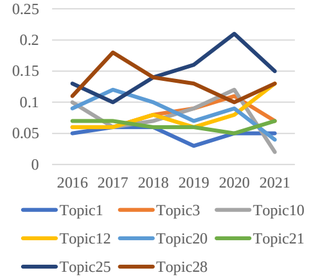

Figure 2: Evolution of the intensity of the interdisciplinary topics of Library and Information Science and Management

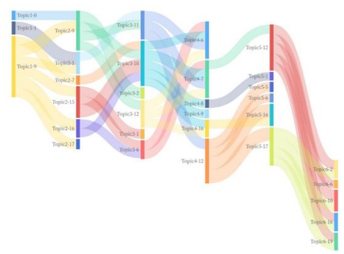

Figure 3: Evolutionary pathway of the content of interdisciplinary topics in the field of Library and Information Science and Management

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