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About:

UResearcher is a search engine devoted to organizing and analyzing research articles for new insights into desired fields. Given the current large influx of research papers, reading through all possible papers in a subject would take hours and cause frustration; furthermore, more research articles are published regularly, contributing to the already sizable workload. UResearcher addresses these concerns by refining the search process and adding useful features, such as clustering, grant trends, keyword graphing, and phrase analysis. With, these tools potential and seasoned researches will quickly analyze papers and discover new research potentials.

Searching:

The URresearcher application features a simple and intuitive search bar that allows users to efficiently conduct searches within articles found in the Department of Academic Journals (DOAJ) database. A search finds relevant articles and post them in order from most relevant to least relevant. In addition, the page offers links to the provided articles.

Clustering:

The clustering feature of UResearcher gathers the article results and groups them under labels through mini batch k-means. These clusters provide potential subtopics within the original search and provide increased outlets for exploration. Furthermore, clicking the clusters initializes a new search into the subtopic within the original search.

Grant Analysis:

In addition to analyzing articles, UResearcher gathers and graphs relevant grant information. Using resources from website grants.gov, the application graphs the sum of grant rewards with respect to time. These sums are divided into ceilings and floors such that the ceilings represent the maximum values while the floors represent the minimum values.

Keyword Analysis:

The UResearcher web application also tracks keyword trends in articles. From the research papers in the results page, the website analyzes the frequency of words and constructs specified line graphs, and these graphs may be modified for specific keywords.

Latent Knowledge Analysis:

The primary feature of UResearcher, latent knowledge analysis approximates relations among words within the search space to provide tangible relations between words. Through Word2Vec, this feature calculates the connections of words in a group sentences and reveals new insights. In particular, the application displays 2D graphs, a ranking list, and phrase graphs for a given search.

Summarization:

Through machine learning methods, the application constructs an artificial summary to complement the search. Even though the technology may not be perfect, it still yields a legible summary that provides useful information.

Resources:

Center for High Performance Computing (CHPC) at the University of Utah

Professor Pai Wang at the Department of Mechanical Engineering at the University of Utah

Scikit Learn

Word2Vec

Grants.gov

Department of Academic Journals (DOAJ)