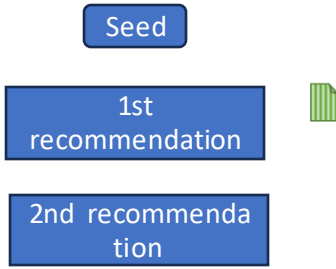
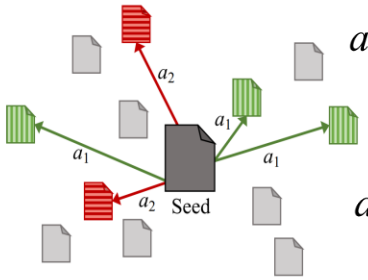
RS03 Building a Scientific Document Recommender System

Background

Recommender System (RS) suggests relevant scientific articles from vast amount of scientific literature. RS helps students, researchers and professionals to keep up with new developments in their area of interest. RS typically do not consider in what aspect two documents are similar. In this project, you implement a RS that produces recommendations based on specific aspects (math formulae, keywords, etc).





a_1 : Recommendations generated with similar math formulae.

a_2 : Recommendations generated with similar keywords.

Goal

- Building an aspect based scientific document recommender system.

Tasks

- Setting up an Elasticsearch cluster with scientific documents from arXiv, zbMATH Open.
- Build a prototype that visualizes recommendations for a seed document retrieved from Elasticsearch based on aspect such as math formulae, text, Keywords, etc.

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RS04 Linking the dots: visualizing research article networks

Background

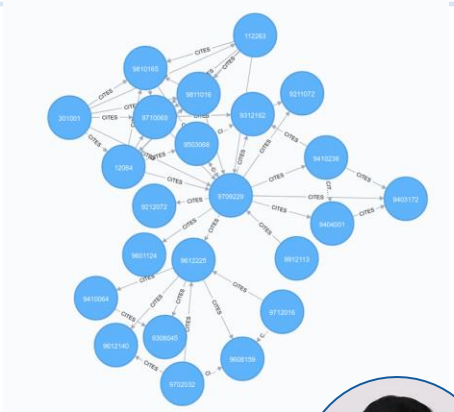
This project focuses on developing an interactive citation graph visualization for research articles. Citation graphs, crucial for literature discovery, enhance understanding of the academic landscape by showing how research papers are interconnected through citations. Such tools are invaluable in recommender systems, helping users find relevant literature based on citation patterns and networks. In this project, you will create a dynamic visualization where users can click on nodes representing papers, explore connections, and discover the broader context of research trends and relationships.

Goal

- Implement a citation graph visualization for scientific research articles.

Tasks

- Review existing open-source citation graph visualization tools and their functionalities.
- Set up a development environment suitable for creating interactive visualizations (e.g., D3.js, Gephi, or preferred environment of your choice).
- Display articles as nodes and citations as edges.
- Implement Interactive features: Allow users to click on nodes to see details.



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