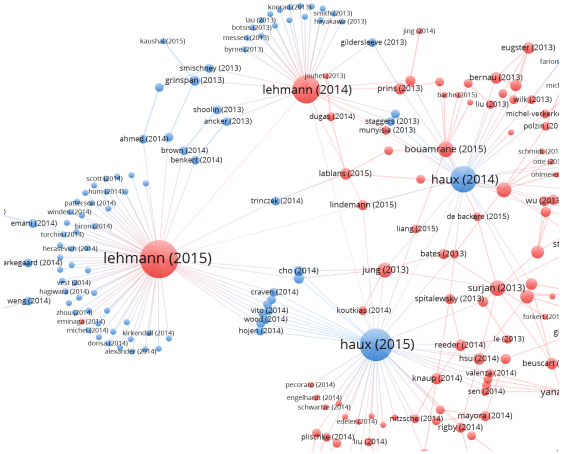
Literature Recommendation Topics

LR1: Citation Extraction and Analysis for Paper Recommendation

Background

Recommender systems for academic papers consider a range of document features to compute similarity and subsequently recommend the most relevant papers to researchers. In our prototype, *RecVis,* we make use of text-independent features found in scientific literature to generate recommendations. One key feature are *citations* since they are present throughout scientific literature. This project aims at expanding on an already existing framework to extract citations from papers and using the extracted information for literature recommendation.



Img. source: Vosviewer.com

Goal

Recommend scientific literature based on the extracted and analysed citations from the full-text of scientific papers

Tasks

- Research approaches for recommendation based on citations
- Build a prototype that extracts citations from scientific papers and uses the extracted information for scientific paper recommendation

Corinna Breitinger
breitinger@gipplab.org

Kay Herklotz
herklotz@gipplab.org

LR2: Implementing a Hybrid Recommendation Approach

Background

Scientists and academics use search engines and recommender systems to quickly find the literature that is most relevant to their information needs. However, the question remains: how can we make recommender systems even more useful for scientists?

We have one suggestion: by combining several different *content-based approaches* that individually have already performed well on very specific types of *semantic similarity* (such as: citations, formulas, or figures), it may be possible to further improve the overall recommendation performance for scientific literature.

Goal

Combine existing measures of semantic similarity in a prototype for literature recommendation to examine how recommendations might be improved.

Tasks

- Implement existing semantic similarity measures and appropriately adapt them to the recommendation use case in a literature recommendation prototype.
- Evaluate the performance of the combined measures, and different weightings for the measures, and make suggestions for improvement.

Corinna Breitinger
breitinger@gipplab.org

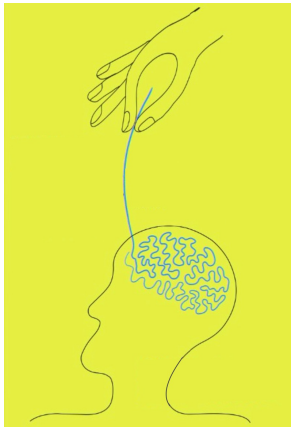
Norman Meuschke
meuschke@uni-goettingen.de

LR3: Trust & Transparency in Recommender Systems

Background

Recommender systems influence the ideas that we are exposed to and can thus influence our views and opinions. Today, the YouTube videos we watch, the news article we read, and the social media posts we are shown are all being decided by highly customized recommendation algorithms – the workings of which remain opaque to the user!

The topic of designing recommendations for greater user *transparency* and *trustworthiness* has become an increasingly important consideration in recent years and much literature has been published on the topic.



Img. source: shorturl.at/jnoCH

Goal

Review the literature discussing trust and transparency in recommender systems research. Structure your findings in an in-depth literature review.

Tasks

- Identify and classify the literature on transparency, explainability, and trust in recommender systems. Discuss the challenges and trends in this research area.
- Structure/ categorize your findings in a framework that is helpful to the developers of future recommender systems.

Corinna Breitinger
breitinger@gipplab.org

Norman Meuschke
meuschke@uni-goettingen.de

LR4: Reviewing Content-based Recommendation Approaches Considering Semantic Features in Academic Literature

Background

While many content-based recommendation approaches exist, not all are capable of addressing the full scope of expressive and meaningful *semantic features* present in academic text.

Especially literature in the STEM fields (Science, Technology, Engineering and Math) is often saturated with non-textual semantic features, such as mathematical formulae, figures and charts, imagery from lab instruments, and citations to other scientific work.

Goal

Review the state-of-the-art of semantic content-based recommendation approaches. Classify approaches and identify challenges.

Give a recommendation for how recommendation quality for academic literature could be further improved.

Tasks

- Review & classify the state-of-the-art on link-based and semantic-enhanced recommendation approaches.
- Summarize strengths and weaknesses of the identified approaches.

Corinna Breitinger
breitinger@gipplab.org

Norman Meuschke
meuschke@uni-goettingen.de