Data Analytics Seminar-1

ISMLL

Prof. Dr. Dr. Lars Schmidt Thieme, Mofassir Arif

Outline

Seminar Details

Text mining Analysis

Finding additional material

Seminar -Text Analysis and Application

Introduction

- The Process of deriving high-quality information from text.
- To turn text into data for analysis through the application of Natural Language Processing techniques.
- Aim of the course is to give an entry level exposure to the machine learning techniques and their uses.
- When? Tuesday 14:00-16:00
- Location: H-2 (Main Campus)

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Seminar tasks and activities:

- One paper per person about a topic and a presentation day are assigned
- Prepare a presentation in a small group (3 students):
  - The group has to prepare a presentation:
  - The presentation must be submitted in pre-final version to Mofassir Arif (arifmo@uni-hildesheim.de) one week in advance
  - If the presentation is not well done, part of it, or the complete presentation, will be canceled (Students will be informed a few days in advanced)
  - Peer Review: 3 of your peers will receive the presentation anonymously and their feedback will be referred back to you

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Grading

- Presenting the work to the class (50% of the mark)
- Submission of the Summary Paper due 4 weeks after term break (50% of the mark)

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Each group member has to prepare a presentation which consists of four parts:

- Introduce the topic
- Summarize the papers (This is the main part)
- Underline differences and similarities of the algorithms

It is important to:

- Involve the audience, will be counted as part of the mark
- Not omit crucial parts of the paper such as the evaluation, the algorithms, the baselines, etc.
- Try to provide your own interpretation of the models

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The group presents the topic

- The students will present 60 minutes (20 minutes each)
- After that 30 minutes for questions and answers
- If you don't present you will get a 5.0 as a presentation mark and that automatically results in a failed exam.

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Summary Paper:

- Will be a paper like document, one for each participant, of exactly 15 pages (not one more not one less)
  - Introduce the topic
  - Summarize the paper (This is the main part)
  - Underline differences and similarities of the algorithms of your group
  - Argument why your method is or is not the best of the similar ones seen.
- Submit three hard copies and one digital copy to our secretary (hinzemelching@ismll.uni-hildesheim.de)
- A template will be provided
- More details in the next lecture

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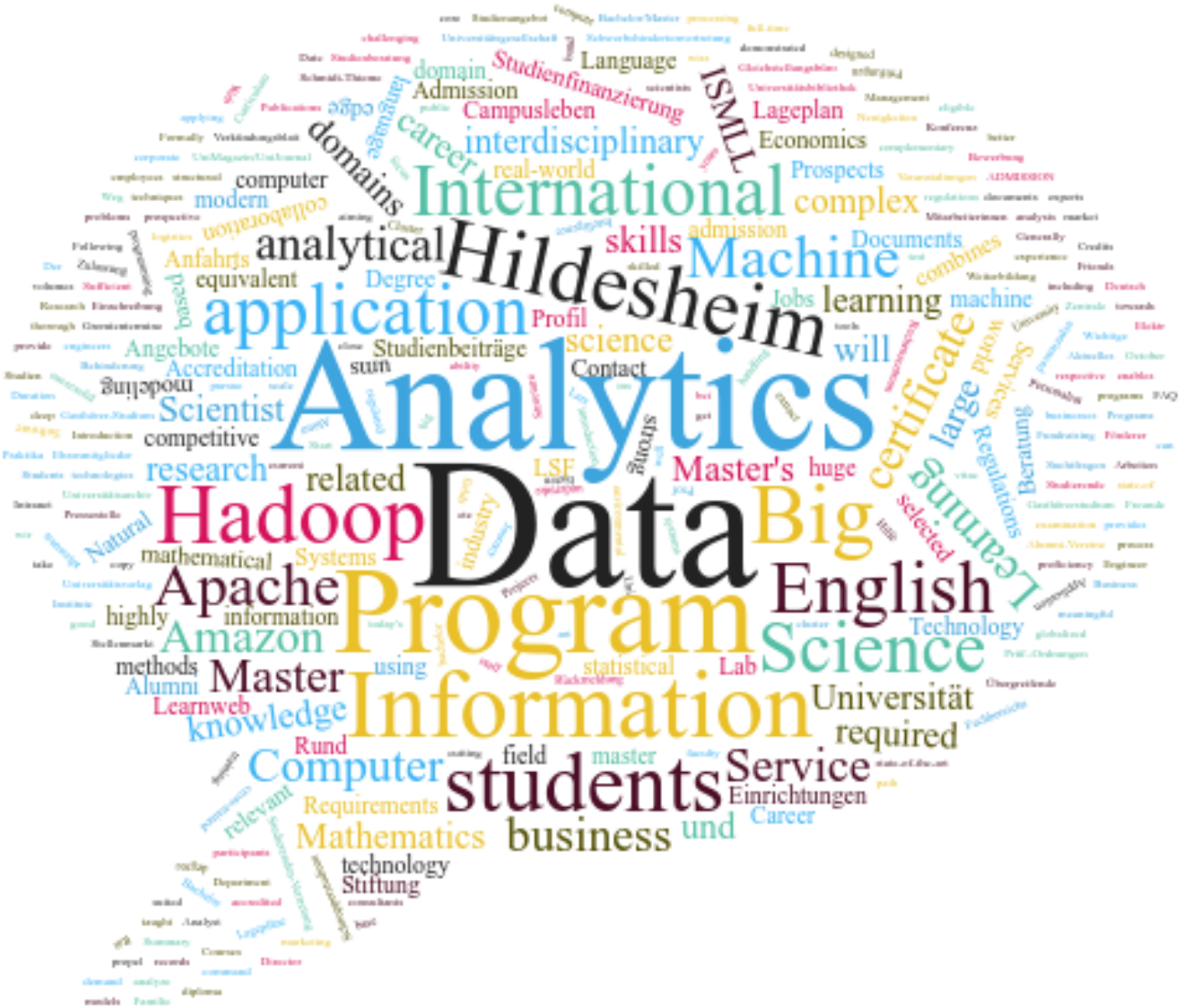
Semester Plan

- Two meetings about:
  - Paper reading how to
  - Summary Paper writing how to
- Weekly presentations
- Submission of the Summary Paper
- **Attendance**: You can only miss 2 presentations.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A: Machine learning in automated text categorization

Survey Paper and a must read for everyone

Themes

- **Fundamentals**
  - B-1: Stochastic gradient descent training for L1-regularized log-linear models with cumulative penalty
  - B-2: Curriculum Learning
  - B-3: Combined Regression and Ranking

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Themes

- **Text Categorization**
  - C-1: Text Categorization with Support Vector Machines. How to Represent Texts in Input Space?
  - C-2: Effective Use of Word Order for Text Categorization with Convolutional Neural Networks
  - C-3: Learning Sentiment-Specific Word Embedding for Twitter Sentiment Classification

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Themes

- **Text Categorization**
  - D-1: An Effective Approach to Enhance Centroid Classifier for Text Categorization
  - D-2: Inductive learning algorithms and representations for text categorization
  - D-3: Character-level Convolutional Networks for Text Classification

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Themes

- **Sentiment Analysis**
  - E-1: Thumbs up?: sentiment classification using machine learning techniques
  - E-2: Twitter as a Corpus for Sentiment Analysis and Opinion Mining
  - E-3: Deep Convolutional Neural Networks for Sentiment Analysis of Short Texts

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Themes

- **Sentiment Analysis**
  - F-1: Recognizing contextual polarity in phrase-level sentiment analysis
  - F-2: OpinionMiner: a novel machine learning system for web opinion mining and extraction
  - F-3: Coooolll: A Deep Learning System for Twitter Sentiment Classification

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Themes

- **Sentiment Analysis**
  - G-1: Twitter Sentiment Classification using Distant Supervision
  - G-2: Active learning for imbalanced sentiment classification
  - G-3: Context-Sensitive Twitter Sentiment Classification Using Neural Network

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Themes

- **Applications**
  - H-1: PTE: Predictive Text Embedding through Large-scale Heterogeneous Text Networks
  - H-2: FastXML: a fast, accurate and stable tree-classifier for extreme multi-label learning
  - H-3: Large-scale Multi-label Learning with Missing Labels

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Themes

- **Applications**
  - I-1: A Machine Learning Approach to Twitter User Classification
  - I-2: Broadly Improving User Classification via Communication-Based Name and Location Clustering on Twitter
  - I-3: Twitter-Based User Modeling for News Recommendations

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Themes

- **Applications**
  - J-1 Web-Search Ranking with Initialized Gradient Boosted Regression Trees
  - J-2: Mining text snippets for images on the web
  - J-3: Smart Reply: Automated Response Suggestion for Email

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Themes

- **Applications**
  - K-1: A system to grade computer programming skills using machine learning
  - K-2: Top-k Multiclass SVM
  - K-3: Robust Top-k Multi-class SVM for Visual Category Recognition

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Finding additional material

- If you don't understand something..
- This is not a book, it happens...
  - Try to pose yourself a specific questions
  - Look online

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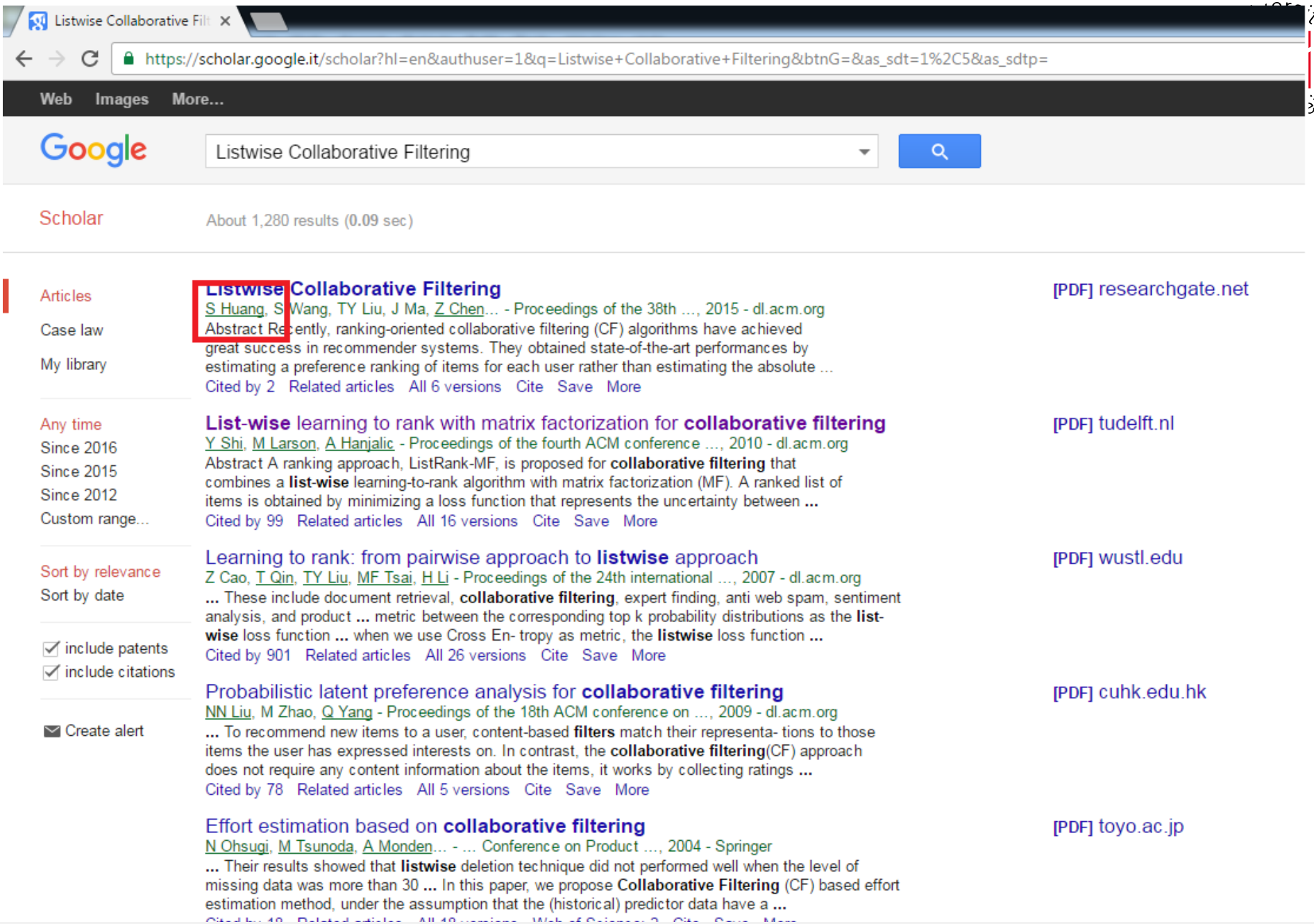
Finding additional material

- A book explaining the algorithms
- A PhD thesis
- Tutorials
- Highly related state of the art papers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Contrasting patterns of retinoblastoma protein expression in mouse embryonic stem cells and embryonic fibroblasts. P Savatier, S Huang, L Szekely, KG Wiman, J Samarut Oncogene 9 (3), 809-818	248	1994
Flooding-induced membrane damage, lipid oxidation and activated oxygen generation in corn leaves B Yan, Q Dai, X Liu, S Huang, Z Wang Plant and soil 179 (2), 261-268	227	1996

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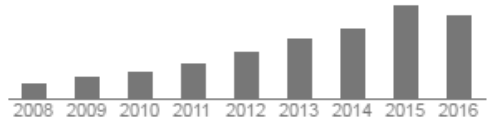

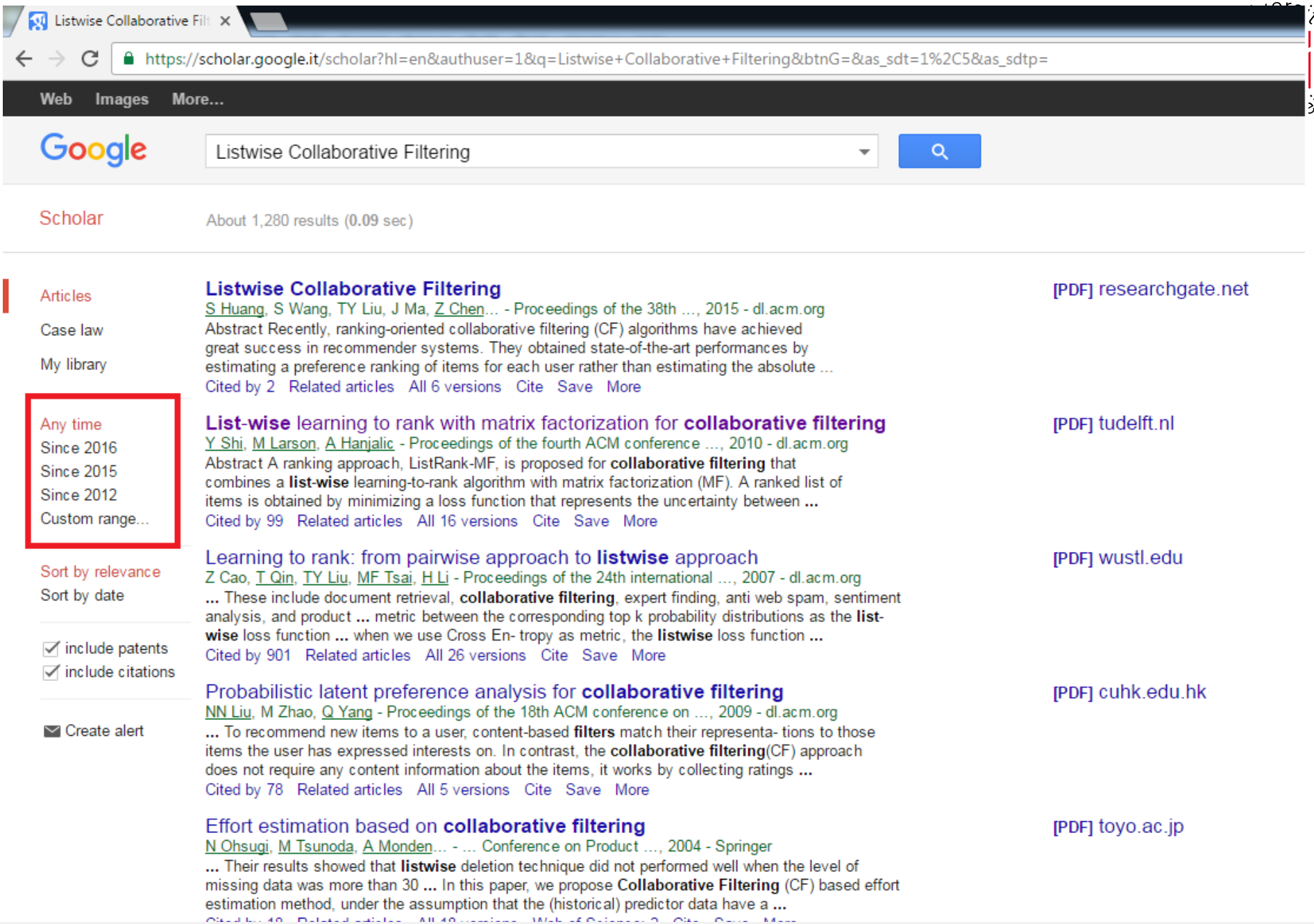
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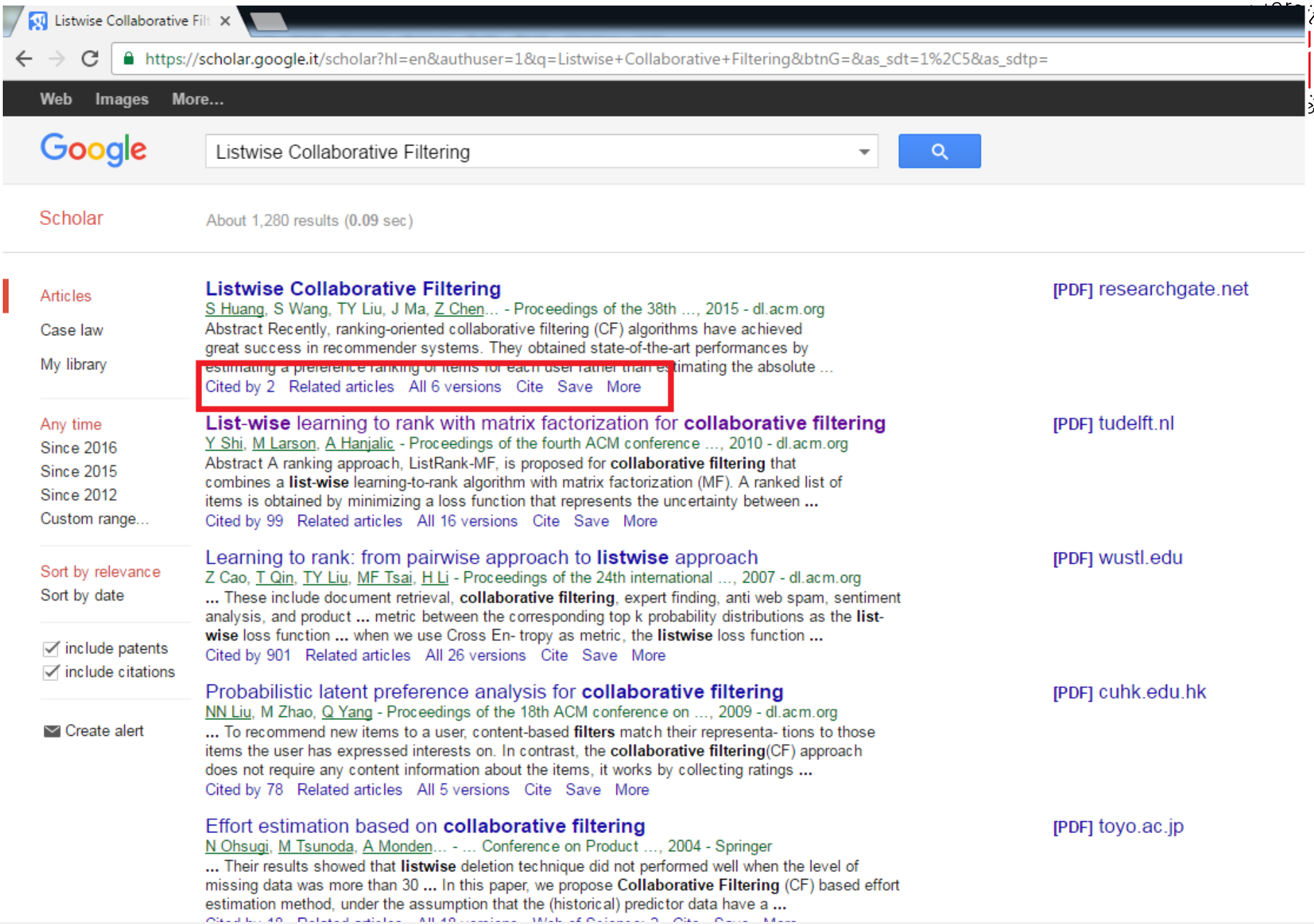
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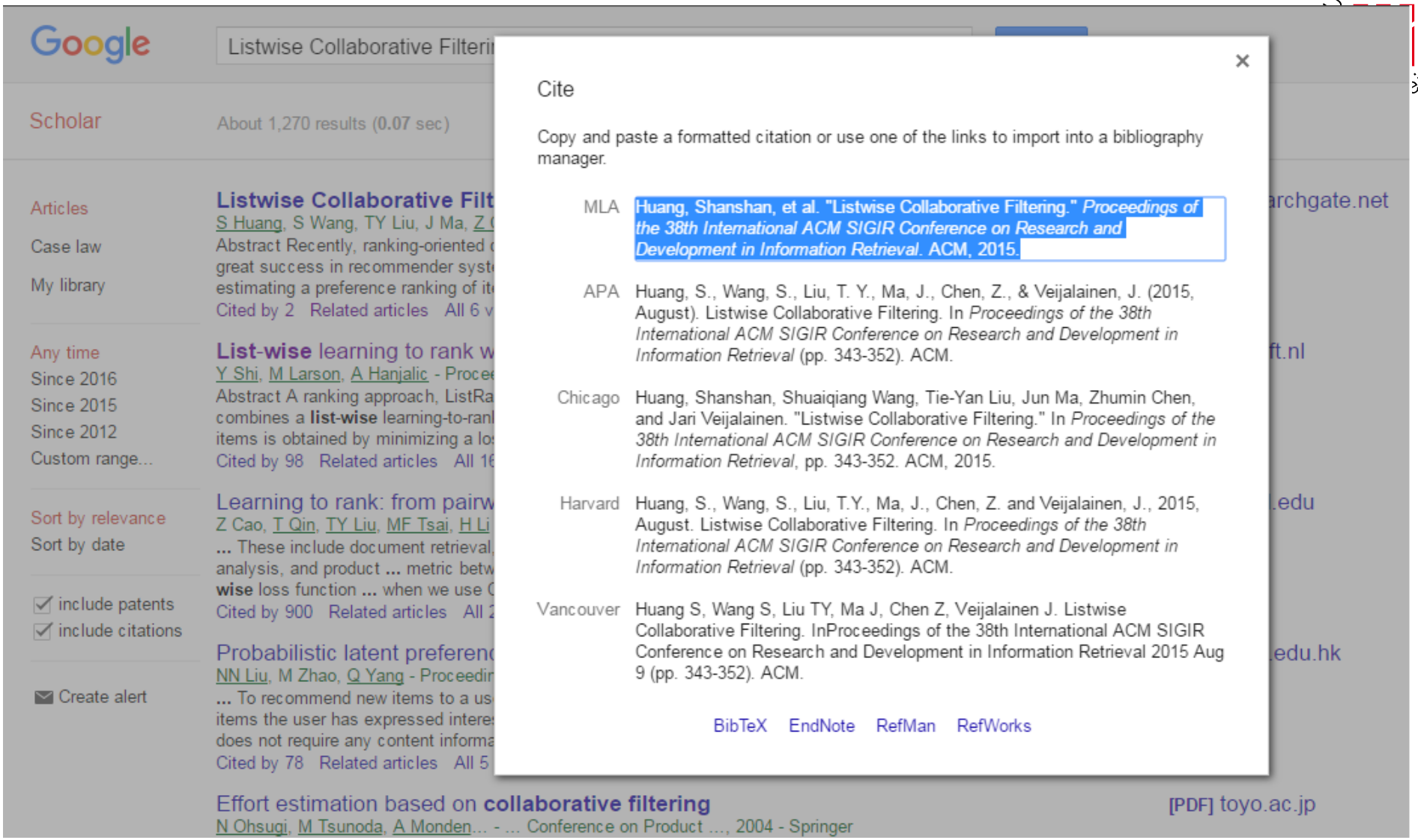
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Tutor Information

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Open Hours: Thursdays 14:00-16:00