

Workshop

AI Support Systems for Academic Research

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Description

With the surging of AI technologies, academicians have been adapting the ways research works are produced, transmitted and evaluated. AI support systems are widely used to retrieve information, such as journal recommenders [1] [2], SemOpenAlex [3], (LLM and KG powered) academic chatbot [4], SciSpace [5], Consensus [6], Research GPT [7]. In this hands-on workshop, we will go through three presentations on topics to understand (1) academic networks through the lens of OpenAlex, (2) journal recommendation techniques, (3) LLM and KG powered academic chatbot. Then the participants will have the chance to interact with a Telegram academic chatbot we design in-house at ETH Zurich. The academic chatbot supports retrieving papers, authors and affiliations that are relevant for user queries (e.g., Recommend the top-5 papers related to the paper “Attention is All You Need” by Ashish Vaswani.).

Schedule

10:50 -11:10 Organizer and workshop introduction, background probe of participants

11:00 – 12:20 Part 1: Talks

11:10 – 11:30 Deep diving academic networks through the lens of OpenAlex (by Noah Mamié)
Abstract: The talk includes introducing OpenAlex as a resource for academic research in various projects. (1) We compare two academic databases (OpenAlex and Microsoft Academic Graph) by benchmarking graph-based algorithms in tasks like node classification. (2) We introduce a graph reasoning framework that is capable of reasoning around the complex topic of deciding on the most worthy individuals to receive the annual Nobel Prize by leveraging graph neural networks.

11:30 – 11:50 Recommendation System for Journals based on ELMo and Deep Learning (by Mahmoud Hemila)

Abstract: The work evaluates how adequate recommender systems are for the selection of journals that fit to scientific publications. Specifically, several word embedding (word2vec, tf-idf, ELMo) and classification (LR, CNN, RNN, MLP) methods were tested and evaluated against each other in terms of their recommendation accuracy.

11:50 – 12:10 Large language models and knowledge graph powered academic chatbot (by Susie Xi Rao)

Abstract: We introduce an academic chatbot designed to help identify relevant publications, authors, and affiliations in academia and applied innovation. Leveraging similarity thresholds and query transformations, the chatbot delivers answers that are informed by an academic knowledge base. We address the challenges of efficiency, reproducibility, and interpretability through a combination of rule-based solutions and large language models backed by knowledge-graph embeddings. We have also critically analyzed the output of our chatbot and discussed various future directions of improvement.

12:10 – 12:20 Preparation for the hands-on session

14:35 –15:35 Part 2: Hands-on

14:30 -15:20 Hands-on session on the academic bot

15:20 – 15:30 Feedback and exchange