NLP4REC: The WSDM 2020 Workshop on Natural Language Processing for Recommendations

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ABSTRACT
Natural language processing is becoming more and more important in recommender systems. This half day workshop explores challenges and potential research directions in Recommender Systems (RSs) combining Natural Language Processing (NLP). The focus will be on stimulating discussions around how to combine natural language processing technologies with recommendation.

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1 MOTIVATION AND FIT FOR WSDM
Studied for decades, recommender systems (RSs) attempt to identify the most relevant piece of information solely based on an implicitly expressed information need reflected in user-item interaction behaviors. Most studies focus on optimizing the recommendation or ranking criteria, assuming that people are more likely to trust sources ranked higher in recommendation results. However, achieving higher recommendation performance is far from meeting user satisfaction. There are many other fundamental issues, such as explainability, privacy. Recently, there are an increasing number of studies trying to address these issues by combining Natural Language Processing (NLP) technologies with RSs, e.g., addressing recommendation explainability with knowledge graph reasoning and review generation [7].

The motivation of this workshop is to bring together a diverse set of researchers and practitioners interested in exploring fundamental issues in RSs and/or emphasizing the applicability in practical applications (e.g., e-commerce) by leveraging the most recent advances in NLP. We see a large space for discussion and future research in the development of more intelligent RSs.

2 THEME AND PURPOSE OF THE WORKSHOP
RecSys, SIGIR and WSDM all featured the workshops on recommender systems, i.e., KaRS¹, RECOVER², EARS³, CARS-BDA⁴. These workshops focus on either recommender systems only or the interdisciplinary researches with a particular task of natural language processing.

NLP4REC 2020 will be a forum for discussion about the challenges in applying NLP technologies to real recommendation applications as well as the theory behind the them. The purpose of this workshop is to establish a bridge for communication between industrial researchers and academic researchers, and provide an opportunity for people to exchange ideas and discuss the future directions. The themes of focus for the workshop include but not limited to the applications of NLP technologies in the following recommendation scenarios.

Knowledge-aware Recommendation. In most cases, RSs usually suffer from the sparsity of user-item interactions and the cold start problem. Recent studies indicate that an effective way to alleviate these limitations is to incorporate side informations, e.g., user profiles, item profiles. Knowledge graphs are ubiquitous in reality to represent the side informations and their relationships, e.g., social networks, medication networks, e-commerce networks. Deep learning architectures on graph-structured data have achieved remarkable performance in many NLP tasks [10]. This wave of research has also aroused great interest among researches in RSs [1].

Explainable Recommendation. Explainable recommendation aims to improve the transparency, persuasiveness of RSs by providing explanations to users or developers, which helps them to understand why certain items are recommended [9]. Much progress has

¹https://recsys.acm.org/recsys18/kars/
²https://recsys.acm.org/recsys18/recover/
³http://www.sigir.org/sigir2019/program/workshops/ears/
⁴http://wise-conferences.org/CARS-BDA/CARS-BDA.html
been made to promote recommendation explainability by paying at-
tend to certain user/item attributes [8]. More intelligent RSs should 
be able to generate natural language explanations [2]. However, 
there is still a long way to go towards this goal.

**Conversational Recommendation.** One of the key aspects in 
RSs is how to capture user interests precisely. Instead of relying 
merely on mining user interests from previous user-item interac-
tions, conversational recommendation provides an alter-
native strategy through conducting conversations with the users 
directly [6]. It is an interesting setting for the scientific exploration 
of both conversation and recommendation modeling.

**Sequential Recommendation.** Sequential recommendation is an 
effective paradigm to capture the dynamics of RSs by modeling the 
user-item interactions as a sequence. Owing to the shared sequential 
characteristics with natural languages, many NLP technologies 
or mechanisms have been successfully applied to model various 
scenarios in sequential recommendations [3–5].

## 3 LIST OF ORGANIZERS

- Dr. Pengjie Ren is postdoctoral researcher at the Information 
  and Language Processing Systems (ILPS) group, University 
  of Amsterdam. His current research is focused on recom-
  mender systems and conversational agents. He has published 
  more than 30 research papers in conferences and journals 
  including SIGIR, WWW, EMNLP, AAAI, TOIS, TKDE, etc. 
  He serves as a program committee member of several top-
  tier venues (such as SIGIR, WWW, AAAI, WSDM) and the 
  regular reviewer for journals including TOIS, TKDE, TKDD, 
  and etc.

- Prof. Dr. Zhaochun Ren is working as a professor at Shan-
don University. Prior to this, he worked as a senior research 
  manager at JD.com and a research associate in University 
  College London. Zhaochun got his PhD from University 
  of Amsterdam, supervised by Prof. Dr. Maarten de Rijke. 
  Zhaochun is interested in information retrieval, social media 
  mining and content analysis in e-commerce.

- Dr. Fei Sun is a research scientist in Search & Recommenda-
tion Group at Alibaba. Prior to joining Alibaba, he ob-
tained Ph.D. (2013) from Institute of Computing Technology, 
  Chinese Academy of Sciences supervised by Prof. Jiafeng 
  Guo and Prof. Jun Xu. His current research is focused on text 
  representation learning and neural models for recommender 
  systems. He has published about 20 research papers in top 
  conferences including SIGIR, ACL, WWW, KDD, EMNLP, 
  AAAI, IJCAI. He also serves as a program committee mem-
  ber of several top-tier venues (such as SIGIR, ACL, AAAI, 
  CIKM, and EMNLP).

- Prof. Dr. Xiangnan He is a professor with the University of 
  Science and Technology of China (USTC). He received 
  his Ph.D. in Computer Science from National University of 
  Singapore (NUS) in 2016. His research interests span inform-
  ation retrieval, data mining, and multi-media analytics. He 
  has over 60 publications appeared in several top conferences 
  such as SIGIR, WWW, KDD, and MM, and journals includ-
  ing TKDE and TOIS. His work on recommender systems 
  has received the Best Paper Award Honourable Mention in 
  WWW 2018 and ACM SIGIR 2016. Moreover, he has served 
  as the PC chair of CCIS 2019, area chair of MM 2019 and 
  CIKM 2019, and PC member for several top conferences 
  including SIGIR, WWW, KDD etc., and the regular reviewer 
  for journals including TKDE, TOIS, TMM, etc.

- Dr. Dawei Yin is a senior Director of Research at JD.com. He 
is managing the recommendation engineering team, building 
the uni ed recommender system of JD.com, one of the largest 
online retailers in China. He also founded JD.com Data Sci-
ence Lab, leading the science efforts for recommendation, 
search, metrics and knowledge graph, etc.

- Prof. Dr. Maarten de Rijke is a University Professor of Artifi-
cial Intelligence and Information Retrieval at the University 
of Amsterdam. He works on different types of technology 
that connect people to information, both its algorithmic 
underpinnings, its uses in domains ranging from news and 
retail to security and well-being and its broader implications. 
Maarten is a member of the Royal Dutch Academy of Arts 
and Sciences (KNAW) and the founding director of the na-
tional Innovation Center for Artificial Intelligence. He has 
previously helped to organize various conferences (CLEF, 
ECIR, ICTIR, SIGIR, WSDM) and workshops (at CIKM, ECIR, 
SIGIR, WWW).

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## REFERENCES


