



## UvA-DARE (Digital Academic Repository)

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

Ren, P.; Ren, Z.; Sun, F.; He, X.; Yin, D.; de Rijke, M.

**DOI**

[10.1145/3336191.3371884](https://doi.org/10.1145/3336191.3371884)

**Publication date**

2020

**Document Version**

Final published version

**Published in**

WSDM '20

[Link to publication](#)

**Citation for published version (APA):**

Ren, P., Ren, Z., Sun, F., He, X., Yin, D., & de Rijke, M. (2020). NLP4REC: The WSDM 2020 Workshop on Natural Language Processing for Recommendations. In *WSDM '20: proceedings of the 13th International Conference on Web Search and Data Mining : February 3-7, 2020, Houston, TX, USA* (pp. 907-908). Association for Computing Machinery. <https://doi.org/10.1145/3336191.3371884>

**General rights**

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

**Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

*UvA-DARE is a service provided by the library of the University of Amsterdam (<https://dare.uva.nl>)*

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

Pengjie Ren  
University of Amsterdam  
p.ren@uva.nl

Zhaochun Ren  
Shandong University  
zhaochun.ren@sdu.edu.cn

Fei Sun  
Alibaba Group  
ofey.sunfei@gmail.com

Xiangnan He  
University of Science and Technology  
of China  
xiangnanhe@gmail.com

Dawei Yin  
JD.com  
yindawei@acm.org

Maarten de Rijke  
University of Amsterdam  
derijke@uva.nl

## 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. We welcome theoretical, experimental, and methodological studies that leverage NLP technologies to advance recommender systems, as well as emphasize the applicability in practical applications. The workshop aims to bring together a diverse set of researchers and practitioners interested in investigating the interaction between NLP and RSs to develop more intelligent RSs.

**website:** <https://wsdm2020-nlp4rec.github.io>

## 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 who are 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.

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

WSDM '20, February 3–7, 2020, Houston, Texas, USA

© 2020 Copyright held by the owner/author(s).

ACM ISBN 978-1-4503-5940-5/19/02.

<https://doi.org/10.1145/3289600.3291375>

Given the current ubiquitous use of a variety of RSs, they have been and still are hot research topics in information retrieval or data mining related communities. As one of the premier conferences on web-inspired research involving search and data mining, the WSDM community has the responsibility to care about the broader impact and implications of RSs that we research and the systems that we build in academia and industry.

## 2 THEME AND PURPOSE OF THE WORKSHOP

RecSys, SIGIR and WSDM all featured the workshops on recommender systems, i.e., KaRS<sup>1</sup>, RECOVER<sup>2</sup>, EARS<sup>3</sup>, CARS-BDA<sup>4</sup>. 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

<sup>1</sup><https://recsys.acm.org/recsys18/kars/>

<sup>2</sup><https://recsys.acm.org/recsys18/recover/>

<sup>3</sup><http://www.sigir.org/sigir2019/program/workshops/ears/>

<sup>4</sup><http://wise-conferences.org/CARS-BDA/CARS-BDA.html>

been made to promote recommendation explainability by paying attention 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 interaction behaviors, conversational recommendation provides an alternative 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 recommender 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, etc.
- Prof. Dr. Zhaochun Ren is working as a professor at Shandong 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 & Recommendation Group at Alibaba. Prior to joining Alibaba, he obtained 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 member 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 information 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 including 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 unified recommender system of JD.com, one of the largest online retailers in China. He also founded JD.com Data Science Lab, leading the science efforts for recommendation, search, metrics and knowledge graph, etc.
- Prof. Dr. Maarten de Rijke is a University Professor of Artificial 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 national 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).

### ACKNOWLEDGMENTS

This work is supported by Ahold Delhaize, the Association of Universities in the Netherlands (VSNU), the Innovation Center for Artificial Intelligence (ICAI), the Natural Science Foundation of China (61672324, 61672322, 61972234, 61902219, 6197237), the Natural Science Foundation of Shandong province (2016ZRE27468), the Tencent AI Lab Rhino-Bird Focused Research Program (JR201932), and the Fundamental Research Funds of Shandong University. All content represents the opinion of the authors, which is not necessarily shared or endorsed by their respective employers and/or sponsors.

### REFERENCES

- [1] Weijian Chen, Yulong Gu, Zhaochun Ren, Xiangnan He, Hongtao Xie, Tong Guo, Dawei Yin, and Yongdong Zhang. 2019. Semi-supervised User Profiling with Heterogeneous Graph Attention Networks. In *IJCAI '19*.
- [2] Yujie Lin, Pengjie Ren, Zhumin Chen, Zhaochun Ren, Jun Ma, and Maarten de Rijke. 2019. Explainable Outfit Recommendation with Joint Outfit Matching and Comment Generation. *TKDE* (2019).
- [3] Muyang Ma, Pengjie Ren, Yujie Lin, Zhumin Chen, Jun Ma, and Maarten de Rijke. 2019. PI-Net: A Parallel Information-sharing Network for Shared-account Cross-domain Sequential Recommendations. In *SIGIR '19*.
- [4] Pengjie Ren, Zhumin Chen, Jing Li, Zhaochun Ren, Jun Ma, and Maarten de Rijke. 2019. RepeatNet: A Repeat Aware Neural Recommendation Machine for Session-based Recommendation. In *AAAI '19*.
- [5] Fei Sun, Jun Liu, Jian Wu, Changhua Pei, Xiao Lin, Wenwu Ou, and Peng Jiang. 2019. BERT4Rec: Sequential Recommendation with Bidirectional Encoder Representations from Transformer. In *CIKM '19*.
- [6] Yueming Sun and Yi Zhang. 2018. Conversational Recommender System. In *SIGIR '18*.
- [7] Xiang Wang, Xiangnan He, Yixin Cao, Meng Liu, and Tat-Seng Chua. 2019. KGAT: Knowledge Graph Attention Network for Recommendation. In *KDD '19*.
- [8] Xun Yang, Xiangnan He, Xiang Wang, Yunshan Ma, Fuli Feng, Meng Wang, and Tat-Seng Chua. 2019. Interpretable Fashion Matching with Rich Attributes. In *SIGIR '19*.
- [9] Yongfeng Zhang and Xu Chen. 2018. Explainable Recommendation: A Survey and New Perspectives. *CoRR* (2018).
- [10] Hao Zhu, Yankai Lin, Zhiyuan Liu, Jie Fu, Tat-Seng Chua, and Maosong Sun. 2019. Graph Neural Networks with Generated Parameters for Relation Extraction. In *ACL '19*.