The 4th Workshop on Heterogeneous Information Network Analysis and Applications (HENA 2021)

Chuan Shi
shichuan@bupt.edu.cn
Beijing University of Posts and Telecommunications
China

Yuan Fang
Singapore Management University
Singapore
yfang@smu.edu.sg

Yanfang Ye
Case Western Reserve University
United States
yanfang.ye@case.edu

Jiawei Zhang
Florida State University
United States
jzhang@cs.fsu.edu

ABSTRACT

The 4th Workshop on Heterogeneous Information Network Analysis and Applications (HENA 2021) is co-located with the 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining. The goal of this workshop is to bring together researchers and practitioners in the field and provide a forum for sharing new techniques and applications in heterogeneous information network analysis. This workshop has an exciting program that spans a number of subtopics, such as heterogeneous network embedding and graph neural networks, data mining techniques on heterogeneous information networks, and applications of heterogeneous information network analysis. The workshop program includes several invited speakers, lively discussion on emerging topics, and presentations of accepted research papers.

CCS CONCEPTS

• **Information systems → Data mining**.

KEYWORDS

heterogeneous information networks, learning and mining on heterogeneous graphs, heterogeneous graph embedding, heterogeneous graph neural networks, applications of heterogeneous information network analysis

ACM Reference Format:
Chuan Shi, Yuan Fang, Yanfang Ye, and Jiawei Zhang. 2021. The 4th Workshop on Heterogeneous Information Network Analysis and Applications (HENA 2021). In *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD '21), August 14–18, 2021, Virtual Event, Singapore.* ACM, New York, NY, USA, 2 pages. https://doi.org/10.1145/3447548.3469445

KDD '21, August 14–18, 2021, Virtual Event, Singapore

ACM ISBN 978-1-4503-8332-5/21/08.
https://doi.org/10.1145/3447548.3469445

1 INTRODUCTION

We are living in an increasingly interconnected world—where most of the data, informational objects, agents, or components are interconnected or interact with each other—forming gigantic and sophisticated information networks. Most real-world applications are grounded on heterogeneous information networks that include different types of objects or links, different from the conventional homogeneous networks with just a single type of objects or links. Previous works on heterogeneous information network analysis and its applications have led to a convergence of methodologies for network modeling, graph mining, and data semantics mining. The recent surge of network embedding and graph neural networks also call for renewed and novel methodologies for heterogeneous information network analysis. As a promising network analysis paradigm, heterogeneous information network analysis also faces new challenges, such as how to manage more complex, high-order heterogeneous semantics, how to efficiently handle large-scale heterogeneous networks, and how to learn with limited labels on heterogeneous networks. Thus, the 4th Workshop on Heterogeneous Information Network Analysis and Applications (HENA 2021) is timely, which aims to bring together researchers and practitioners to share new techniques and emerging applications in the field.

Previous editions of this workshop series include HENA 2015 co-located with WAIM 2015, HENA 2016 co-located with ICDSC 2016, and HENA 2019 co-located with CIKM 2019.

2 THEME AND TOPICS OF INTEREST

HENA 2021 shall provide a forum for researchers and practitioners to share new techniques and applications in heterogeneous information network analysis. Topics of interest include but not limited to the following:

- Heterogeneous information network construction from complex data;
- Data mining techniques on heterogeneous information networks, such as semantic mining, information diffusion and behavioral modeling, community detection and network evolution;
- Heterogeneous graph embedding;
- Heterogeneous graph neural networks;
- Data mining based on knowledge graphs;

- Parallel computing for heterogeneous information network analysis;
- Applications of heterogeneous information network analysis in e-commerce, bioinformatics, text mining, security, software engineering, etc.

3 ORGANIZATION AND PROGRAM

We outline the organization of HENA 2021 and give an overview of its program.

3.1 Workshop Organizers

HENA 2021 is organized by the following co-chairs. Dr. Chuan Shi is the contact person of this workshop.

Dr. Chuan Shi is a Professor in the School of Computer Sciences of Beijing University of Posts and Telecommunications, and the Deputy Director of Beijing Key Lab of Intelligent Telecommunication Software and Multimedia. His main research interests include data mining, machine learning, artificial intelligence and big data analysis. In the recent five years, he has published more than 50 refereed papers, including top journals and conferences in data mining, such as IEEE TKDE, ACM TIST, KDD, AAAI, IJCAI, and WWW. He has been awarded the best paper award in ADMA 2011 and ADMA 2018, the excellence award of CCF-Tencent Xi'niu'niao fund, and has guided his students to the world champion in the IJCAI Contest 2015. He is also the recipient of "the Youth Talent Plan" and "the Pioneer of Teacher's Ethics" in Beijing. Prof. Shi has organized many workshops, such as HENA 2015, 2016 and 2019, HINA 2017, MuNFA 2017–2019. He also serves as area chair or PC member in many conferences, such as CCKS, KDD, and IJCAI. More information about his work can be found at http://www.shichuan.org/.

Dr. Yuan Fang is currently an Assistant Professor in the School of Computing and Information Systems at Singapore Management University (SMU). Prior to joining SMU, he spent three years at Singapore's Agency for Science, Research and Technology (A*STAR) as a research scientist. He obtained a PhD Degree in Computer Science from the University of Illinois at Urbana-Champaign in 2014 on a fully funded scholarship from A*STAR. His general research area is data mining, with a focus on graph-based mining and learning, recommendation systems and social network analysis. In recent years, he has focused on network embedding and graph neural networks, as well as their adoption in recommendation systems. His research has been published in leading data mining, machine learning and AI venues, such as KDD, ICML, IJCAI, AAAI, SIGIR, VLDB, TKDE, etc. His research work on efficient PageRank computation on graphs has been featured in the Best Papers Collection of VLDB 2013. More information about his work can be found at http://www.yfang.site/.

Dr. Yanfang (Fanny) Ye is currently the Theodore L. and Dana J. Schroeder Associate Professor in the Department of Computer and Data Sciences at Case Western Reserve University (CWRU). Before joining CWRU, she was an Assistant Professor and then Associate Professor in the Department of Computer Science and Electrical Engineering at West Virginia University (WVU). She received her Ph.D. in computer science from the Department of Computer Science, Xiamen University in 2010. Before joining academia, she was the Principal Scientist in Comodo Security Solutions, Inc. and formerly the Deputy Director, R&D at Kingsoft Internet Security Corporation. Her research areas mainly include data mining, machine learning, cybersecurity, and health intelligence. Dr. Ye has had over eighty publications in her fields (e.g., ACM CSUR, IEEE TNNLS, SIGKDD, WWW, AAAI, IJCAI, ACSAC). Her proposed techniques have significantly reduced the time needed to detect new malicious software—from weeks to seconds, which have been incorporated into popular commercial cybersecurity products including Comodo and Kingsoft Antivirus that protect millions of users worldwide. She recently received the CSE Research Award (2019-2020) at CWRU, the MetroLab Innovation of the Month (2020), the NSF Career Award (2019), and IJCAI Early Career Spotlight (2019). Her work on intelligent malware detection received the SIGKDD 2017 Best Paper Award and SIGKDD 2017 Best Student Paper Award (Applied Data Science Track); and her another work on adversarial machine learning won the AICS 2019 Challenge Problem Winner and the IEEE EISIC 2017 Best Paper Award. She received the New Researcher of the Year Award (2016-2017) from the Statler College at WVU. More information about her work can be found at http://yes-lab.org/.

Dr. Jiawei Zhang is currently an Assistant Professor in the Department of Computer Science at Florida State University (FSU). He has published one textbook "Broad Learning Through Fusions: An Application on Social Networks" with Springer and more than 60 papers at top-tier academic conferences and journals in recent years. Jiawei is the PC member of more than 10 conferences and the Information Director and Specialist of TKDD during 2014-2017. Jiawei founded IFM Lab in 2017 and has been working as the Director of IFM Lab since then. IFM Lab is a research oriented academic laboratory, providing the latest information on fusion learning and data mining research works and application tools to both academia and industry. Prior to joining FSU, Jiawei obtained his PhD degree in Computer Science from University of Illinois at Chicago in 2017. Jiawei has also worked at Yahoo! Research, IBM T. J. Watson Research Center, and Microsoft Research. Jiawei received his B.S. degree from Department of Computer Science, Nanjing University in 2012. More information about his work can be found at http://jiaweizhang.net/.

3.2 Program Overview

The workshop follows a half-day format, and the program consists of the following components.

- Overview: Introduction of the workshop and its history, as well as a summary of recent advances in heterogeneous information network analysis and their applications.
- Keynote talks: There will be four keynote talks, each lasting 30 minutes, inclusive of a talk of 20–25 minutes as well as a QA & discussion session of 5–10 minutes.
- Research presentations: 4–6 research papers will be selected for oral presentation, each with a 10-minute presentation and 5-minute QA.

ACKNOWLEDGMENT

The organizers would like to thank the program committee for their service, as well as the invited speakers for sharing their research and perspective.