Preface: The 2018 ACM SIGKDD Workshop on Causal Discovery

Thuc Duy Le Thuc.Le@unisa.edu.au
School of Information Technology and Mathematical Sciences
University of South Australia
Mawson Lakes, SA 5095, Australia

Kun Zhang kunz1@cmu.edu
Department of Philosophy
Carnegie Mellon University
Pittsburgh, PA 15213, USA

Emre Kıcıman emrek@microsoft.com
Microsoft Research
Redmond, WA, USA

Aapo Hyvärinen a.hyvarinen@ucl.ac.uk
Gatsby Computational Neuroscience Unit
University College London
London, UK

Lin Liu Lin.Liu@unisa.edu.au
School of Information Technology and Mathematical Sciences
University of South Australia
Mawson Lakes, SA 5095, Australia

Editor: Thuc Duy Le, Kun Zhang, Emre Kıcıman, Aapo Hyvärinen, and Lin Liu

In many real-world applications, the research questions of interest are about causality rather than association, whether the goal is for better explanation, prediction or decision making. Causal discovery aims to answer the causality related questions by inferring the cause-effect relationships between variables. Traditionally, causal relationships are identified by making use of interventions or randomised controlled experiments. However, conducting such experiments is often expensive or even impossible due to cost or ethical concerns. Therefore, there has been an increasing interest in discovering causal relationships based on observational data, and in the past few decades, significant contributions have been made to this field by computer scientists.

Inspired by such achievements and following the success of CD 2016 & CD 2017, the 2018 ACM SIGKDD Workshop on Causal Discovery (CD 2018) is aimed at bringing together researchers and practitioners interested in causal discovery from various disciplines, to communicate their new ideas, algorithms, and novel applications of causal discovery methods. This workshop is held in conjunction with the 2018 International Conference on Knowledge Discovery and Data Mining (KDD2018), London, 19-23 August, 2018, which provides it the opportunity to attract contributions from the data mining community especially.

The workshop has received eight high-quality submissions. After a careful review process, four papers were selected for publishing in the Proceedings of Machine Learning Research, Volume 92, 2018, (and five papers were accepted for presentation at CD 2018). These papers have a good coverage on different types of causal models for observational data, including time series data and datasets with mixed data types. The workshop features two keynote speeches by Dr Ricardo Silva from University College London and Dr Emre Kıcıman from Microsoft Research. Both speakers are pioneer researchers for designing computational methods for causal discovery.

We would like to thank all the people who have contributed to the workshop. In particular, we thank all authors who have submitted their papers to CD 2018 and the PC members for their timely and high-quality reviews it would not be possible for the workshop to succeed without your involvement. We are grateful to KDD 2018 for their support, especially to the workshop chairs Dr Nitesh Chawla and Dr Faisal Farooq for their help. We also thank the Series Editors at Proceedings of Machine Learning Research, Professor Neil Lawrence and Dr Mark Reid for their help in publishing the workshop proceedings.

Finally, we would like to thank you, the participants of the workshop and the readers of the proceedings. We hope you enjoy the workshop and the papers.

Workshop Organisation

Co-Chairs

Thuc Duy Le, University of South Australia
Kun Zhang, Carnegie Mellon University
Emre Kıcıman, Microsoft Research
Aapo Hyvärinen, University College London
Lin Liu, University of South Australia

Program Committee

Ruichu Cai, *Guangdong University of Technology, China*
Laiwan Chan, *The Chinese University of Hong Kong, Hong Kong, China*
Mingming Gong, *University of Technology Sydney, Australia*
Emre Kıcıman, *Microsoft Research, USA*
Thuc Duy Le, *University of South Australia, Australia*
Jiuyong Li, *University of South Australia, Australia*
Lin Liu, *University of South Australia, Australia*
Tsai-Ching Lu, *HRL Laboratories, USA*
Wolfgang Mayer, *University of South Australia, Australia*
Amit Sharma, *Microsoft Research, India*
Shohei Shimizu, *The Institute of Scientific and Industrial Research (ISIR), Osaka University, Japan*
Petar Stojanov, *Carnegie Mellon University, USA*

Sofia Triantafillou, *University of Crete, Greece*
Takashi Washio, *The Institute of Scientific and Industrial Research, Osaka University, Japan*
Kui Yu, *University of South Australia, Australia*
Kun Zhang, *Carnegie Mellon University, USA*
Aapo Hyvärinen, *University College London*
Ricardo Pio Monti, *University College London*
Johan Ugander, *Stanford University*
Antti Hyttinen, *University of Helsinki*
Daniel Malinsky, *Carnegie Mellon University*
Tom Claassen, *Radboud University*
Jiji Zhang, *Lingnan University*
Bryant Chen, *IBM*
Eric Strobl, *University of Pittsburgh*