Preface

Fourth Workshop on Reliability Issues in Knowledge Discovery

Data mining has been a key area providing effective methods including algorithms and systems that are capable of discovering useful information mostly in a form of knowledge from data. In general the discovered information is expected to be applied in a domain to solve real application problems and the users would require that the solution is correct, accurate and trustable.

To achieve this goal, it requires the discovered knowledge is valid and the discovery process itself is reliable. In the last 20 years, many data mining algorithms have been developed for the discovery of knowledge from given databases. However in many cases, the discovery process is not robust or the discovered knowledge is not reliable or even incorrect in certain cases; moreover, in some real problems, the discovered knowledge may not necessarily be the real reflection of the data. Why does this happen? What are major factors which affect the discovery process? How can we make sure that the discovered knowledge is reliable? What are conditions under which a reliable discovery can be assured? These are some interesting questions to be discussed at this workshop.

The 2012 IEEE ICDM Workshop on Reliability Issues in Knowledge Discovery (RIKD 2012) tries to find answers to the above questions in a systematic way. The workshop focuses on theory, methods, and techniques for designing robust knowledge-discovery processes as well as assessing the reliability of the discovered knowledge. Particular attention is paid on the problem how to apply this knowledge reliably when it is partially valid. RIKD considers the knowledge as reliable in the sense that the generalization performance can be set in advance. RIKD is therefore has a critical role to the successful application of data mining. It has a potential for a broad spectrum of applications, especially in critical domains like medicine, finance, military etc.

The RIKD’12 is the follow up of the success of the last three workshops, RIKD’06, RIKD’08 and RIKD’10 and the publication of the book Reliable Knowledge Discovery, dedicated to this area. Aiming at presenting the most recent advances in the emerging field of reliability issues in knowledge discovery from data, the workshop in this year extends its scope from theory and methods towards experimental studies and applications. We observed this tendency during the selection process that was competitive.

As a half-day workshop, we got both the papers submitted directly to the workshop and the papers from the main conference ICDM 2012. In total we received 15 papers and we accepted 9 papers covering broad topics in RIKD. The acceptance rate is 60%. The workshop accommodates both research papers presenting original investigation results and industrial papers reporting reliability issues in real knowledge discovery applications and system development. Using the terminology from the prevision section we note that the main stream of the papers considers inductive approaches to reliable knowledge discovery.
We would like to express our thanks to all the authors who contributed to the success of the workshop program. We are particularly grateful to all our program committee members for their constructive comments and suggestions. We sincerely thank them for their generous support as shown in the dedicated work they have done for the workshop and in finishing all the reviews in a very short time. We think that the final program is interesting and the workshop will help for the further development of the field of RIKD. For the details of the workshop, please visit workshop web site at: http://www.deakin.edu.au/~hdai/RIKD12/.

Looking forward to meeting you in Brussels!

Honghua Dai, *Deakin University, Australia*
James Liu, *Hong Kong Polytechnic University, Hong Kong*
Evgueni Smirnov, *Maastricht University, Netherlands*

**Workshop Co-Chairs**
Program Committee Members

Haitham Bou Ammar, Maastricht University, Netherlands

Honghua Dai, Deakin University, Australia

João Gama, University of Porto, Portuguese

Min Gan, Deakin University, Australia

Igor Kononenko, University of Ljubljana, Slovenia

Matjas Kukar, University of Ljubljana, Slovenia

James Liu, Hong Kong Polytechnic University, Hong Kong

Pedro Pereira Rodrigues, University of Porto, Portuguese

Evgueni Smirnov, Maastricht University, Netherlands

Ida Sprinkhuizen-Kuyper, Radboud University Nijmegen, Netherlands

Hongwei Wang, Tongji University, China

Min Yao, Zhejiang University, China

Defu Zhang, Xiamen University, China