FOREWORD

Special Section on Information-Based Induction Sciences and Machine Learning

Recently, a huge mount of data is readily available through the Internet and various sensors, and machine learning technology for discovering underlying rules and acquiring useful knowledge gathers considerable attention. From the theoretical side, machine learning has close connection to basic information science paradigms such as information theory, statistics, computer science, and statistical physics. Thus, fundamental theory of machine learning is expected to be further developed through interdisciplinary collaboration. On the other hand, from the application side, machine learning technology plays an important role in various fields including signal processing, natural language processing, speech processing, image processing, biology, robot control, financial engineering, and data mining. These application areas possess high potential for real-world industry, and will be further expanded by sharing common methodological challenges.

Following the growing interests in the area of machine learning, the new technical group named Information-Based Induction Sciences and Machine Learning (IBISML) launched in April 2010 as a successor of IEICE SIG-IBIS and JSAI SIG-DMSM. The objective of this special issue is to publish and overview recent advances in the interdisciplinary area of IBISML.

We received 17 submissions for this special issue, and decided to accept 10 papers through rigorous reviewing process, in addition to 3 invited papers. All the editorial committee members would like to thank authors of the submitted papers for their valuable contributions and reviewers for their cooperation under the tight schedule.

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Masashi Sugiyama, Guest Editor-in-Chief

Masashi Sugiyama *(Member)* was born in Osaka, Japan, in 1974. He received the degrees of Bachelor, Master, and Doctor of Engineering in Computer Science from Tokyo Institute of Technology, Japan in 1997, 1999, and 2001, respectively. In 2001, he was appointed Assistant Professor in the same institute, and from 2003, he is Associate Professor. He received Alexander von Humboldt Foundation Research Fellowship and stayed at Fraunhofer Institute, Berlin, Germany, from 2003 to 2004. In 2006, he received European Commission Program Erasmus Mundus Scholarship and stayed at University of Edinburgh, Edinburgh, UK. He was awarded Faculty Award from IBM in 2007 for his contribution to machine learning under non-stationarity, and Nagao Special Researcher Award from IPSJ in 2011 for his contribution to the density-ratio paradigm of machine learning. His research interest includes theories and algorithms of machine learning and data mining, and a wide range of applications such as signal processing, image processing, and robot control.