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Preface

This volume is part of the three-volume proceedings of the 20th International Conference on Neural Information Processing (ICONIP 2013), which was held in Daegu, Korea, during November 3–7, 2013. ICONIP is the annual conference of the Asia Pacific Neural Network Assembly (APNNA). This series of conferences has been held annually since ICONIP 1994 in Seoul and has become one of the premier international conferences in the areas of neural networks.

Over the past few decades, the neural information processing community has witnessed tremendous efforts and developments from all aspects of neural information processing research. These include theoretical foundations, architectures and network organizations, modeling and simulation, empirical study, as well as a wide range of applications across different domains. Recent developments in science and technology, including neuroscience, computer science, cognitive science, nano-technologies, and engineering design, among others, have provided significant new understandings and technological solutions to move neural information processing research toward the development of complex, large-scale, and networked brain-like intelligent systems. This long-term goal can only be achieved with continuous efforts from the community to seriously investigate different issues of the neural information processing and related fields. To this end, ICONIP 2013 provided a powerful platform for the community to share their latest research results, to discuss critical future research directions, to stimulate innovative research ideas, as well as to facilitate multidisciplinary collaborations worldwide.

ICONIP 2013 received tremendous submissions authored by scholars coming from 30 countries and regions across six continents. Based on a rigorous peer review process, where each submission was evaluated by at least two qualified reviewers, about 270 high-quality papers were selected for publication in the prestigious series of *Lecture Notes in Computer Science*. These papers cover all major topics of theoretical research, empirical study, and applications of neural information processing research.

In addition to the contributed papers, the ICONIP 2013 technical program included a keynote speech by Shun-Ichi Amari (RIKEN Brain Science Institute, Japan), 5 plenary speeches by Yoshua Bengio (University of Montreal, Canada), Kunihiko Fukushima (Fuzzy Logic Systems Institute, Fukuoka, Japan), Soo-Young Lee (Brain Science Research Center, KAIST, Korea), Naftali Tishby (The Hebrew University, Jerusalem, Israel) and Zongben Xu (Xi'an Jiatong University, China). This conference also featured invited presentations, regular sessions with oral and poster presentations, and special sessions and tutorials on topics of current interest.

Our conference would not have been successful without the generous patronage of our sponsors. We are most grateful to our sponsors Korean Brain Research

Institute, Qualcomm Korea. We would also like to express our sincere thanks to the International Neural Network Society, European Neural Network Society, Japanese Neural Network Society, Brain Engineering Society of Korea, and The Korean Society for Cognitive Science for technical sponsorship.

We would also like to sincerely thank honorary chair Shun-ichi Amari, Soo-Young Lee, the members of the Advisory Committee, the APNNA Governing Board and past presidents for their guidance, the organizing chair Hyeyoung Park, the members of the Organizing Committee, special sessions chairs, Publication Committee and publicity chairs, for all their great efforts and time in organizing such an event. We would also like to take this opportunity to express our deepest gratitude to the members of the Program Committee and all reviewers for their professional review of the papers. Their expertise guaranteed the high quality of the technical program of the ICONIP 2013!

Furthermore, we would also like to thank Springer for publishing the proceedings in the prestigious series of *Lecture Notes in Computer Science*. We would, moreover, like to express our heartfelt appreciation to the keynote, plenary, panel, and invited speakers for their vision and discussions on the latest.

Finally, we would like to thank all the speakers, authors, and participants for their great contribution and support that made ICONIP 2013 a huge success.

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November 2013

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