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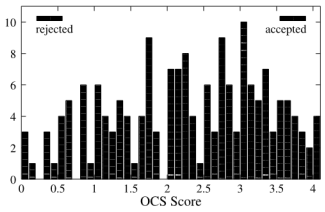
Preface

The International Conference on Artificial Neural Networks (ICANN) is the annual flagship conference of the European Neural Network Society (ENNS). Its wide scope in neural networks ranges from machine learning algorithms to models of real nervous systems. ICANN aims at bringing together researchers from different research fields, such as computer science, neuroscience, cognitive science, and engineering. Further aims are to address new challenges, share solutions, and discuss future research directions toward developing more intelligent artificial systems and increasing our understanding of neural and cognitive processes in the brain.

The ICANN series of conferences was initiated in 1991 and soon became the major European conference in its field, with experts coming from several continents. The 24th ICANN was held during 15–19 September 2014 at the University of Hamburg. The hosts were the University of Hamburg and its Knowledge Technology Institute (`http://www.informatik.uni-hamburg.de/WTM/`).

The conference attracted contributions from among the most internationally established researchers in the neural network community. The six keynote speakers in 2014 covered a wide spectrum: Christopher M. Bishop, expert in machine learning; Jun Tani, expert in recurrent neural networks; Paul F.M.J. Verschure, expert in autonomous systems; Yann LeCun, expert in neural vision; Barbara Hammer, expert in computational intelligence; Kevin N. Gurney, expert in computational neuroscience. We also acknowledge support from the Körber Foundation for a special session on "Human-Machine Interaction".

A total of 173 papers was submitted to the ICANN 2014 conference. A large Program Committee, including accepted authors from recent ICANN conferences, performed altogether 744 reviews, delivering an average of 4.3 reviews per paper. This helped to obtain a reliable evaluation score for each paper, which was computed by the Springer Online Conference Service (OCS) by averaging the reviewers' ratings and taking into account the reviewers' confidences. Papers were sorted with respect to their scores (see figure) and 108 papers with a score of 2.0 or higher were accepted. Furthermore, the multiple professional reviews delivered valuable feedback to all authors.



The conference program featured 24 sessions, which contained 3 talks each, and which were arranged in 2 parallel tracks. There were 2 poster sessions with 33 posters and 2 live demonstrations of research results. Talks and posters were categorized into topical areas, providing the titles for the conference sessions and for the chapters in this proceedings volume. Chapters are ordered roughly in chronological order of the conference sessions.

We would like to thank all the participants for their contribution to the conference program and for their contribution to these proceedings. Many thanks go to the local organizers for their support and hospitality. We also express our sincere thanks to all active reviewers for their assistance in the review procedures and their valuable comments and recommendations.

July 2014

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