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Preface

Research on artificial neural networks has progressed over decades, in recent years being fueled especially by deep learning that has proven, albeit data-greedy, efficient in solving various, mostly supervised, tasks. Applications of artificial neural networks, especially related to artificial intelligence, affect our lives, providing new horizons. Examples range from autonomous car driving, virtual assistants, and decision support systems to healthcare data analytics, financial forecasting, and smart devices in our homes, just to name a few. These developments, however, also provide challenges, which were not imaginable previously, e.g., verification of raw data, explaining the contents of neural networks, and adversarial machine learning.

The International Conference on Artificial Neural Networks (ICANN) is the annual flagship conference of the European Neural Network Society (ENNS). Last year, due to the COVID-19 pandemic, we decided not to hold the conference but to prepare the ICANN proceedings in written form. This year, due to the still unresolved pandemic, the Organizing Committee, together with the Executive Committee of ENNS decided to organize ICANN 2021 online, since we felt the urge to allow research presentations and live discussions, following the now available alternatives of online conference organization. So for the first time, ENNS and the Organizing Committee prepared ICANN as an online event with all its challenges and sometimes unforeseeable events!

Following a long-standing successful collaboration, the proceedings of ICANN are published as volumes within the Lecture Notes in Computer Science Springer series. The response to this year's call for papers resulted, unexpectedly, in a record number of 557 article submissions (a 46% rise compared to previous year), of which almost all were full papers. The paper selection and review process that followed was decided during the online meeting of the Bratislava organizing team and the ENNS Executive Committee. The 40 Program Committee (PC) members agreed to check the submissions for the formal requirements and 64 papers were excluded from the subsequent reviews. The majority of the PC members have doctoral degrees (80%) and 75% of them are also professors. We also took advantage of filled-in online questionnaires providing the reviewers' areas of expertise. The reviewers were assigned one to four papers, and the papers with undecided scores also received reports from PC members which helped in making a final decision.

In total, 265 articles were accepted for the proceedings and the authors were requested to submit final versions. The acceptance rate was hence about 47% when calculated from all initial submissions. A list of PC members and reviewers who agreed to publish their names is included in the proceedings. With these procedures we tried to keep the quality of the proceedings high while still having a critical mass of contributions reflecting the progress of the field. Overall we hope that these proceedings will contribute to the dissemination of new results by the neural network community during these challenging times and we hope that we can have a physical ICANN in 2022.

Finally, we very much thank the Program Committee and the reviewers for their invaluable work.

September 2021

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Contents – Part III

Hierarchical and Ensemble Models

Human Pose Estimation

Image Processing

Image Segmentation

Knowledge Distillation

Medical Image Processing