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Artificial Neural Networks and Machine Learning – ICANN 2021


30th International Conference on Artificial Neural Networks
Bratislava, Slovakia, September 14–17, 2021
Proceedings, Part III

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ISSN 0302-9743

ISSN 1611-3349 (electronic)

Lecture Notes in Computer Science

ISBN 978-3-030-86364-7

ISBN 978-3-030-86365-4 (eBook)

<https://doi.org/10.1007/978-3-030-86365-4>

LNCS Sublibrary: SL1 – Theoretical Computer Science and General Issues

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The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

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

Generative Neural Networks

Binding and Perspective Taking as Inference in a Generative Neural Network Model.	3
<i>Mahdi Sadeghi, Fabian Schrod, Sebastian Otte, and Martin V. Butz</i>	
Advances in Password Recovery Using Generative Deep Learning Techniques	15
<i>David Biesner, Kostadin Cvejovski, Bogdan Georgiev, Rafet Sifa, and Erik Krupicka</i>	
Dilated Residual Aggregation Network for Text-Guided Image Manipulation.	28
<i>Siwei Lu, Di Luo, Zhenguo Yang, Tianyong Hao, Qing Li, and Wenyin Liu</i>	
Denoising AutoEncoder Based Delete and Generate Approach for Text Style Transfer.	41
<i>Ting Hu, Haojin Yang, and Christoph Meinel</i>	
GUIS2Code: A Computer Vision Tool to Generate Code Automatically from Graphical User Interface Sketches	53
<i>Zhen Feng, Jiaqi Fang, Bo Cai, and Yingtao Zhang</i>	
Generating Math Word Problems from Equations with Topic Consistency Maintaining and Commonsense Enforcement	66
<i>Tianyang Cao, Shuang Zeng, Songge Zhao, Mairgup Mansur, and Baobao Chang</i>	
Generative Properties of Universal Bidirectional Activation-Based Learning.	80
<i>Kristina Malinová and Igor Farkaš</i>	

Graph Neural Networks I

Joint Graph Contextualized Network for Sequential Recommendation	87
<i>Ruoran Huang, Chuanqi Han, and Li Cui</i>	
Relevance-Aware Q-matrix Calibration for Knowledge Tracing.	101
<i>Wentao Wang, Huifang Ma, Yan Zhao, Zhixin Li, and Xiangchun He</i>	

LGACN: A Light Graph Adaptive Convolution Network for Collaborative Filtering	113
<i>Weiguang Jiang, Su Wang, Jun Zheng, and Wenxin Hu</i>	
HawEye: Cross-Platform Malware Detection with Representation Learning on Graphs.	127
<i>Peng Xu, Youyi Zhang, Claudia Eckert, and Apostolis Zarras</i>	
An Empirical Study of the Expressiveness of Graph Kernels and Graph Neural Networks.	139
<i>Giannis Nikolentzos, George Panagopoulos, and Michalis Vazirgiannis</i>	
Multi-resolution Graph Neural Networks for PDE Approximation	151
<i>Wenzhuo Liu, Mouadh Yagoubi, and Marc Schoenauer</i>	
Link Prediction on Knowledge Graph by Rotation Embedding on the Hyperplane in the Complex Vector Space	164
<i>Thanh Le, Ngoc Huynh, and Bac Le</i>	
Graph Neural Networks II	
Contextualise Entities and Relations: An Interaction Method for Knowledge Graph Completion.	179
<i>Kai Chen, Ye Wang, Yitong Li, Aiping Li, and Xiaojuan Zhao</i>	
Civil Unrest Event Forecasting Using Graphical and Sequential Neural Networks.	192
<i>Zheng Chen and Yifan Wang</i>	
Parameterized Hypercomplex Graph Neural Networks for Graph Classification.	204
<i>Tuan Le, Marco Bertolini, Frank Noé, and Djork-Arné Clevert</i>	
Feature Interaction Based Graph Convolutional Networks for Image-Text Retrieval	217
<i>Yongli Hu, Feili Gao, Yanfeng Sun, Junbin Gao, and Baocai Yin</i>	
Generalizing Message Passing Neural Networks to Heterophily Using Position Information	230
<i>Wenzheng Zhang, Jie Liu, and Liting Liu</i>	
Local and Non-local Context Graph Convolutional Networks for Skeleton-Based Action Recognition	243
<i>Zikai Gao, Yang Zhao, Zhe Han, Kang Wang, and Yong Dou</i>	
STGATP: A Spatio-Temporal Graph Attention Network for Long-Term Traffic Prediction	255
<i>Mengting Zhu, Xianqiang Zhu, and Cheng Zhu</i>	

Hierarchical and Ensemble Models

Integrating N-Gram Features into Pre-trained Model: A Novel Ensemble Model for Multi-target Stance Detection.	269
<i>Pengyuan Chen, Kai Ye, and Xiaohui Cui</i>	
Hierarchical Ensemble for Multi-view Clustering	280
<i>Fei Gao and Liu Yang</i>	
Structure-Aware Multi-scale Hierarchical Graph Convolutional Network for Skeleton Action Recognition	293
<i>Changxiang He, Shuting Liu, Ying Zhao, Xiaofei Qin, Jiayuan Zeng, and Xuedian Zhang</i>	
Learning Hierarchical Reasoning for Text-Based Visual Question Answering	305
<i>Caiyuan Li, Qinyi Du, Qingqing Wang, and Yaohui Jin</i>	
Hierarchical Deep Gaussian Processes Latent Variable Model via Expectation Propagation.	317
<i>Nick Taubert and Martin A. Giese</i>	
Adaptive Consensus-Based Ensemble for Improved Deep Learning Inference Cost	330
<i>Nelly David and Nathan S. Netanyahu</i>	

Human Pose Estimation

Multi-Branch Network for Small Human Pose Estimation	343
<i>Yuchen Ge, Zhongqiu Zhao, Yao Gao, Weidong Tian, and Hai Min</i>	
PNO: Personalized Network Optimization for Human Pose and Shape Reconstruction	356
<i>Zhijie Cao, Min Wang, Shanyan Guan, Wentao Liu, Chen Qian, and Lizhuang Ma</i>	
JointPose: Jointly Optimizing Evolutionary Data Augmentation and Prediction Neural Network for 3D Human Pose Estimation	368
<i>Zhiwei Yuan and Songlin Du</i>	
DeepRehab: Real Time Pose Estimation on the Edge for Knee Injury Rehabilitation	380
<i>Bruno Carlos Dos Santos Melício, Gábor Baranyi, Zsófia Gaál, Sohil Zidan, and András Lőrincz</i>	

Image Processing

Subspace Constraint for Single Image Super-Resolution.	395
<i>Yanlin Zhang, Ding Qin, and Xiaodong Gu</i>	
Towards Fine-Grained Control over Latent Space for Unpaired Image-to-Image Translation	408
<i>Lei Luo, William Hsu, and Shangxian Wang</i>	
FMSNet: Underwater Image Restoration by Learning from a Synthesized Dataset	421
<i>Xiangyu Yin, Xiaohong Liu, and Huan Liu</i>	
Towards Measuring Bias in Image Classification.	433
<i>Nina Schaaf, Omar de Mitri, Hang Beom Kim, Alexander Windberger, and Marco F. Huber</i>	
Towards Image Retrieval with Noisy Labels via Non-deterministic Features	446
<i>Hengwei Liu, Jinyu Ma, and Xiaodong Gu</i>	

Image Segmentation

Improving Visual Question Answering by Semantic Segmentation	459
<i>Viet-Quoc Pham, Nao Mishima, and Toshiaki Nakasu</i>	
Weakly Supervised Semantic Segmentation with Patch-Based Metric Learning Enhancement.	471
<i>Patrick P. K. Chan, Keke Chen, Linyi Xu, Xiaoman Hu, and Daniel S. Yeung</i>	
ComBiNet: Compact Convolutional Bayesian Neural Network for Image Segmentation	483
<i>Martin Ferienc, Divyansh Manocha, Hongxiang Fan, and Miguel Rodrigues</i>	
Depth Mapping Hybrid Deep Learning Method for Optic Disc and Cup Segmentation on Stereoscopic Ocular Fundus	495
<i>Gang Yang, Yunfeng Du, Yanni Wang, Donghong Li, Dayong Ding, Jingyuan Yang, and Gangwei Cheng</i>	
RATS: Robust Automated Tracking and Segmentation of Similar Instances.	507
<i>László Kopácsi, Árpád Dobolyi, Áron Fóthi, Dávid Keller, Viktor Varga, and András Lőrincz</i>	

Knowledge Distillation

Data Diversification Revisited: Why Does It Work?	521
<i>Yuheng Song, Tianyi Liu, and Weijia Jia</i>	
A Generalized Meta-loss Function for Distillation Based Learning Using Privileged Information for Classification and Regression	534
<i>Amina Asif, Muhammad Dawood, and Fayyaz ul Amir Afsar Minhas</i>	
Empirical Study of Data-Free Iterative Knowledge Distillation	546
<i>Het Shah, Ashwin Vaswani, Tirtharaj Dash, Ramya Hebbalaguppe, and Ashwin Srinivasan</i>	
Adversarial Variational Knowledge Distillation	558
<i>Xuan Tang and Tong Lin</i>	
Extract then Distill: Efficient and Effective Task-Agnostic BERT Distillation	570
<i>Cheng Chen, Yichun Yin, Lifeng Shang, Zhi Wang, Xin Jiang, Xiao Chen, and Qun Liu</i>	

Medical Image Processing

Semi-supervised Learning Based Right Ventricle Segmentation Using Deep Convolutional Boltzmann Machine Shape Model	585
<i>Kaimin Liao, Ziyu Gan, and Xuan Yang</i>	
Improved U-Net for Plaque Segmentation of Intracoronary Optical Coherence Tomography Images	598
<i>Xinyu Cao, Jiawei Zheng, Zhe Liu, Peilin Jiang, Dengfeng Gao, and Rong Ma</i>	
Approximated Masked Global Context Network for Skin Lesion Segmentation	610
<i>Chunguang Jiang, Yueling Zhang, Jiangtao Wang, and Weiting Chen</i>	
DSNet: Dynamic Selection Network for Biomedical Image Segmentation. . . .	623
<i>Xiaofei Qin, Yan Liu, Liang Tang, Shuhui Zhao, Xingchen Zhou, Xuedian Zhang, and Dengbin Wang</i>	
Computational Approach to Identifying Contrast-Driven Retinal Ganglion Cells	635
<i>Richard Gault, Philip Vance, T. Martin McGinnity, Sonya Coleman, and Dermot Kerr</i>	

Radiological Identification of Hip Joint Centers from X-ray Images Using
Fast Deep Stacked Network and Dynamic Registration Graph 647
*Fuchang Han, Shenghui Liao, Renzhong Wu, Shu Liu, Yuqian Zhao,
and Xiantao Shen*

A Two-Branch Neural Network for Non-Small-Cell Lung Cancer
Classification and Segmentation 660
Borui Gao, Guangtai Ding, Kun Fang, and Peilin Chen

Uncertainty Quantification and Estimation in Medical
Image Classification 671
Sidi Yang and Thomas Fevens

Labeling Chest X-Ray Reports Using Deep Learning. 684
*Maram Mahmoud A. Monshi, Josiah Poon, Vera Chung, and Fahad
Mahmoud Monshi*

Author Index 695