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Bio-Inspired Computing: Theories and Applications

16th International Conference, BIC-TA 2021
Taiyuan, China, December 17–19, 2021
Revised Selected Papers, Part I

Part 1

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Preface

Bio-inspired computing is a field of study that abstracts computing ideas (data structures, operations with data, ways to control operations, computing models, artificial intelligence, multisource data-driven methods and analysis, etc.) from living phenomena or biological systems such as cells, tissue, the brain, neural networks, the immune system, ant colonies, evolution, etc. The areas of bio-inspired computing include neural networks, brain-inspired computing, neuromorphic computing and architectures, cellular automata and cellular neural networks, evolutionary computing, swarm intelligence, fuzzy logic and systems, DNA and molecular computing, membrane computing, and artificial intelligence and its application in other disciplines such as machine learning, deep learning, image processing, computer science, cybernetics, etc. The Bio-Inspired Computing: Theories and Applications (BIC-TA) conference series aims to bring together researchers working in the main areas of bio-inspired computing, to present their recent results, exchange ideas, and foster cooperation in a friendly framework.

Since 2006, the conference has taken place in Wuhan (2006), Zhengzhou (2007), Adelaide (2008), Beijing (2009), Liverpool and Changsha (2010), Penang (2011), Gwalior (2012), Anhui (2013), Wuhan (2014), Anhui (2015), Xi'an (2016), Harbin (2017), Beijing (2018), Zhengzhou (2019), and Qingdao (2020). Following the success of previous editions, the 16th International Conference on Bio-Inspired Computing: Theories and Applications (BIC-TA 2021) was held in Taiyuan, China, during December 17–19, 2021, which was organized by the Taiyuan University of Science and Technology with the support of the Operations Research Society of Hubei.

We would like to thank the keynote speakers for their excellent presentations: Mingyong Han (Tianjin University, China), Chengde Mao (Purdue University, USA), Ling Wang (Tsinghua University, China), Rui Wang (National University of Defense Technology, China), and Wensheng Zhang (Chinese Academy of Sciences, China). Thanks are also given to the tutorial speakers for their informative presentations: Weigang Chen (Tianjin University, China), Cheng He (Southern University of Science and Technology, China), Tingfang Wu (Soochow University, China), and Gexiang Zhang (Chengdu University of Information Technology, China).

A special mention is given to Honorable Chair Gang Xie for his guidance and support to the conference.

We gratefully thank Xingjuan Cai, Yihao Cao, Guotong Chen, Weigang Chen, Tian Fan, Wanwan Guo, Yang Lan, Zhuoxuan Lan, Jie Wen, Lijie Xie, Linxia Yan, Huan Zhang, Jingbo Zhang, Zhixia Zhang, and Lihong Zhao for their contribution in organizing the conference. We also gratefully thank Shi Cheng, Weian Guo, Yinan Guo, Chaoli Sun, and Hui Wang for hosting the meetings.

Although BIC-TA 2021 was affected by COVID-19, we still received 211 submissions on various aspects of bio-inspired computing, and 67 papers were selected for this volume of Communications in Computer and Information Science. We are grateful to all the authors for submitting their interesting research work. The warmest thanks should

be given to the external referees for their careful and efficient work in the reviewing process.

We thank Jianqing Lin and Guotong Chen for their help in collecting the final files of the papers and editing the volume. We thank Lianghao Li and Lianlang Duan for their contribution in maintaining the website of BIC-TA 2021 (http://2021.bicta.org/). We also thank all the other volunteers, whose efforts ensured the smooth running of the conference.

Special thanks are due to Springer for their skilled cooperation in the timely production of these volumes.

January 2022

Linqiang Pan
Zhihua Cui
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