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Proceedings of the Third International Conference on Trends in Computational and Cognitive Engineering

TCCE 2021

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Preface

The Third International Conference on Trends in Computational and Cognitive Engineering, TCCE 2021, was held from October 21 to 22, 2021. The conference is hosted by Universiti Tun Hussein Onn Malaysia (UTHM), 86400 Parit Raja, Batu Pahat, Johor, Malaysia. The inaugural and second events of this series took place at Central University of Haryana in Mahendergarh, India, on November 28–30, 2019 and at Jahangirnagar University in Dhaka, Bangladesh, on December 17–18, 2020. The Center for Computational and Cognitive Engineering (TCCE) is dedicated to the experimental, theoretical, and applied aspects of computational and cognitive engineering. Computational and cognitive engineering analyzes diseases and behavioral disorders using computer and mathematical methods that are widely used in all fields of science, engineering, technology, and industry. The conference's objective is to bring together researchers, educators, and business professionals involved in related fields of research and development. This volume compiles the peer-reviewed papers presented at the meeting.

The conference on TCCE 2021 attracted 127 full papers from 9 countries in 6 tracks. These tracks include—Artificial Intelligence and Soft Computing, Cognitive Science and Computational Biology, IoT and Data Analytics, Network and Security, and Computer Vision. The submitted papers underwent a single-blind review process, soliciting expert opinion from at least two experts: at least two independent reviewers, the track co-chair, and the respective track chair. Following rigorous review reports from the reviewers and the track chairs, the technical program committee has selected 52 high-quality full papers from 09 countries that were accepted for presentation at the conference. Consequently, this volume of the TCCE 2021 conference proceedings contains those 45 full papers presented on October 21 and 22, 2021. Due to the COVID-19 pandemic, the Organizing Committee decided to host the event virtually. However, the research community reacted amazingly in this challenging time.

The book series will be insightful and fascinating for those interested in learning about computational intelligence and cognitive engineering that explores the dynamics of exponentially increasing knowledge in core and related fields. We

are thankful to the authors who have made a significant contribution to the conference and have developed relevant research and literature in computation and cognitive engineering.

We would like to express our gratitude to the Organizing Committee and the Technical Committee members for their unconditional support, particularly the Chair, the Co-Chair, and the Reviewers. Special thanks to the advisors Prof. Dr. Jalil Ali and A. P. Dr. Nafarizal bin Nayan for their thorough support. TCCE 2021 could not have taken place without the tremendous work of the team and the gracious assistance. We would like to thank IEEE UTHM Student Branch. We are grateful to Mr. Aninda Bose, Ms. Sharmila Mary Panner Selvam, and other team members of Springer Nature for their continuous support in coordinating this volume publication. We would also like to thank Mr. Md. Mahfuzur Rahman of DIU and Milon Biswas of BUBT for continuous support. Last but not the least, we thank all of our contributors and volunteers for their support during this challenging time to make TCCE 2021 a success.

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October 2021

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