Lecture Notes on Data Engineering and Communications Technologies 116

V. Suma Xavier Fernando Ke-Lin Du Haoxiang Wang *Editors*

Evolutionary Computing and Mobile Sustainable Networks

Proceedings of ICECMSN 2021



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V. Suma · Xavier Fernando · Ke-Lin Du · Haoxiang Wang Editors

Evolutionary Computing and Mobile Sustainable Networks

Proceedings of ICECMSN 2021



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Foreword

I extend my warm welcome in inviting you all to the proceedings of the International Conference on Evolutionary Computing and Mobile Sustainable Networks (ICECMSN 2021) organized at the Department of CSE/ISE and ECE, RV Institute of Technology and Management, Bengaluru, India, on September 28–29, 2021.

The theme of the conference event is "Emerging Advances in Sustainable Mobile Networks and Computational Intelligence," topics that are quickly gaining research attention from both academia and industries due to the relevance of maintaining sustainability and enhancing intelligence in smart mobile networks. The already established track record of computational intelligence models and sustainable mobile networks seems to be very functional and reliable, where it mandates the need for further exploration in this research area. This makes the ICECMSN 2021 an excellent forum for exploring innovative research ideas in the smart and intelligent networks domain.

The entire success of the ICECMSN 2021 event depends on the research talents and efforts of the authors in the intelligent mobile networks and computer science domains, who have contributed their submissions on almost all the facets of the conference theme. An extensive appreciation is also deserved for all the conference program and review committee members who have invested their valuable time and professional expertise in assessing research papers from multiple domains by maintaining the quality standards for this conference. We extensively thank Springer for their guidance before and after the conference event.

Conference Chair

Dr. J. Anitha HOD and Professor Department of Computer Science and Engineering RV Institute of Technology and Management Bengaluru, India

Preface

It is our pleasure to welcome you to the International Conference on Evolutionary Computing and Mobile Sustainable Networks (ICECMSN 2021) at RV Institute of Technology and Management, Bengaluru, India. The main goal of this conference is to bring academicians, researchers, and industrialists together under one platform to share and exchange research experience and results on various aspects of mobile sustainable networks and computational intelligence research, as well as to discuss real-time challenges and solutions adopted for it.

ICECMSN 2021 has received ample submissions of about 382 papers from both academia and industrial tracks, and based on the selection of conference review committee and advisory committee members, a total of 74 papers appear in the proceedings of ICECMSN 2021. It is to be noted that all the papers regardless of their allotted tracks have extensively received at least three reviews from the research experts. We extend our sincere thanks to our keynote speakers "Dr. Manu Malek, Alcatel-Lucent Bell Labs and Stevens Institute of Technology (ret.), New Jersey, USA, and Dr. R. Kanthavel, Professor, Information and Computing Technology, University of Bisha, Saudi Arabia."

We hope the readers will have a productive, satisfying, and informative experience from the research works gathered from all over the world. Nevertheless, this proceeding will provide a written record of a synergy of research works that exists in communication networks communities and provides a significant framework for a new and futuristic research interactions. Moreover, this proceeding will pave way for the applications of computational intelligence in mobile sustainable networks (MSN).

Bengaluru, India Toronto, Canada Montreal, Canada Ithaca, USA V. Suma Xavier Fernando Ke-Lin Du Haoxiang Wang

Acknowledgments

We would like extend our sincere thanks to all who have helped in making this conference event a great success. We are much pleased in thanking our educational institution RV Institute of Technology and Management, Bengaluru, India, for their pervasive support and effective help during the conference.

The extended support of the conference committee members before and during the conference event has helped to tackle many challenging tasks in a smooth and efficient way, where it has significantly contributed to excel the quality of the conference. Our special thanks belong to all the conference reviewers, who played an indispensable role in providing technical and semantic reviewing assistance to all the research manuscripts received for the conference. We are thankful for their help in guiding us to select the state-of-the-art high-quality papers that deserve the publication under this conference. We also wish to thank all our faculty members and staffs for their technical and non-technical contribution for maintaining the conference participants' contentment.

Our very special thanks will go exceptionally to all the conference delegates for their active participation in the conference event.

At last, the editors would like to gladly acknowledge the local organizing committee and conference organizers, who ensured that all the formal steps of the conference event have been completed in an effortless way.

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