

Lecture Notes on Data Engineering
and Communications Technologies 84

Bernard J. Jansen
Haibo Liang
Jun Ye *Editors*



International Conference on Cognitive based Information Processing and Applications (CIPA 2021)

Volume 1

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Jun Ye
Editors

International Conference
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Information Processing
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(CIPA 2021)

Volume 1

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Foreword

Cognition has emerged as a new and promising methodology with the development of cognitive-inspired computing, cognitive-inspired interaction, and systems that enable a large class of applications and has developed a great potential to change our life. However, recent advances in artificial intelligence (AI), fog computing, big data, and cognitive computational theory show that multidisciplinary cognitive-inspired computing still struggles with fundamental, long-standing problems, such as computational models and decision-making mechanisms based on the neurobiological processes of the brain, cognitive sciences, and psychology. How to enhance human cognitive performance with machine learning, common sense, natural language processing, etc., is worth exploring.

2021 International Conference on Cognitive-based Information Processing and Applications includes data mining, intelligent computing, deep learning, and all other theories, models, techniques related to artificial intelligence.

The purpose of CIPA2021 is to provide a forum for the presentation and discussion of innovative ideas, cutting-edge research results, and novel techniques, methods, and applications on all aspects of technology and intelligence in intelligent computing.

At least two independent experts reviewed each paper. The conference would not have been a reality without the contributions of the authors. We sincerely thank all the authors for their valuable contributions. We would like to express our appreciation to all Program Committee members for their valuable efforts in the review process that helped us guarantee the highest quality of the selected papers for the conference.

We would like to express our thanks for the strong support of the Publication Chairs, Organizing Chairs, Program Committee members, and all volunteers.

Our special thanks are also due to the editors of the Springer book series “Advances in Intelligent Systems and Computing”, Ramesh Nath Premnath and Karthik Raj Selvaraj, for their assistance throughout the publication process.

Bernard J. Jansen
Haibo Liang
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Welcome Message

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Jim Jansen
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Jim Jansen is a Principal Scientist in the social computing group of the Qatar Computing Research Institute. He is a graduate of West Point and has a Ph.D. in computer science from Texas A&M University. Professor Jansen is editor-in-chief of the journal, *Information Processing & Management* (Elsevier), a member of the editorial boards of seven international journals, and former editor-in-chief of the journal, *Internet Research* (Emerald). He has received several awards and honors, including an ACM Research Award, six application development awards, and a university-level teaching award, along with other writing, publishing, research, teaching, and leadership honors. Dr. Jansen has authored or co-authored 300 or so research publications, with articles appearing in a multidisciplinary range of journals and conferences. He is author of the book, *Understanding Sponsored Search: A Coverage of the Core Elements of Keyword Advertising* (Cambridge University Press).



Jemal Abawajy is a faculty member at Deakin University and has published more than 100 articles in refereed journals and conferences as well as a number of technical reports. He is on the editorial board of several international journals and edited several international journals and conference proceedings. He has also been a member of the organizing committee for over 60 international conferences and workshops serving in various capacities including best paper award chair, general co-chair, publication chair, vice-chair, and program committee. He is actively involved in funded research in building secure, efficient, and reliable infrastructures for large-scale distributed systems. Toward this vision, he is working in several areas including pervasive and networked systems (mobile, wireless network, sensor networks, grid, cluster, and P2P), e-science and e-business technologies and applications, and performance analysis and evaluation.

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