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J.K. Mandal · Paramartha Dutta
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Computational Intelligence, Communications, and Business Analytics

First International Conference, CICBA 2017
Kolkata, India, March 24–25, 2017
Revised Selected Papers, Part I

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Foreword

Preparing a foreword for the proceedings of an international conference, in the form of an edited volume, cannot but be an intellectual pleasure which I can ill afford to desist myself from. Accordingly, I avail myself of an opportunity to write a few words for the foreword of the recently concluded First International Conference on Computational Intelligence, Business Analytics, and Communication (CICBA 2017). It was organized by Calcutta Business School in association with the Computer Society of India, on March 24–25, 2017 at the Calcutta Business School campus. The conference was technically sponsored by IEEE Kolkata Chapter, IEEE Young Professionals Kolkata, as well as the IEEE Computational Intelligence Society, Kolkata Chapter. The proceedings of the conference have been published by Springer Nature, in their CCIS series.

With the presence of Prof. Dr. Sankar Pal, former director, of the Indian Statistical Institute, Padmashri; Prof. Dr. Edward Tsang, University of Essex, UK; and Dr. P.N. Suganthan, Nanyang Technological University, Singapore as Keynote speakers, as well as luminaries from leading industries and research/academic institutes as invited speakers, the event could attain the true international standard that it had the intention to achieve. With Prof. Dr. L.M. Patnaik, Indian Institute of Science, Bangalore gracing the occasion as the chief guest, it was further praiseworthy to have had representatives from the Indian Institute of Management Kolkata, the Indian Statistical Institute Kolkata, the Defence Research and Development Organization, the Government of India, IBM, Wipro, Capgemini, Tata Consultancy Service, Accenture, Rediff.com, and LinkedIn for invited speeches and panel discussions.

As per my information, there were 276 papers submitted from across the globe including countries like Australia, the UK, Singapore, Bangladesh, Portugal, Saudi Arabia, Taiwan, Nepal, Thailand, Russia, and the USA – out of which 90 papers were accepted and presented. There were 8 technical tracks at the conference, each chaired by experts in the respective domains, as well as 18 technical sessions, where the authors presented their respective research work in front of the session chairs from academia and industry. The three best papers were awarded by Springer Nature with prizes worth € 250, € 200, and € 150 respectively. Some more awards were also offered by Calcutta Business School, the host, and IEEE Young Professionals Kolkata.

From my experience in general and by virtue of being present in person for some hours during the event, I strongly believe that it was undoubtedly commendable on the part of the organizers of the conference to have made it a grand success, especially this being the first one in the series. I am sure that subsequent events of this conference series will definitely be able to prove its standing as a successful series within the research community in the years ahead.

Last but not the least, I want to avail myself of this opportunity to express my heartfelt thanks to the chairs of the Program Committee of CICBA 2017, along with all my good wishes for the upcoming CICBA series of conferences.

With best wishes



July 2017

Sushmita Mitra

Preface

Calcutta Business School, in collaboration with the Computer Society of India, organized the First International Conference on Computational Intelligence, Communication, and Business Analytics (CICBA 2017), during 24–25 March 2017 at the Calcutta Business School campus. This is the first activity of the Computer Society of India in the eastern region with Springer Nature as the publication partner. This mega event covered all aspects of computational intelligence, communications, and business analytics, where by the scope was not only limited to various engineering disciplines, such as computer science, electronics, and electrical, mechanical, or biomedical engineering, but also included work from allied communities like general science, educational research, and management science, etc.

The volume constitutes a collection of high-quality peer-reviewed research papers received from all over the world. CICBA 2017 attracted a good number of submissions from the different areas spanning eight tracks in various cutting-edge technologies of specialized focus, which were organized and chaired by eminent professors. The eight special sessions focused on computational intelligence, data science and advanced data analytics, signal processing and communications, microelectronics, sensors, intelligent networks, computational forensics (privacy and security), computational intelligence in bio-computing, computational intelligence in mobile & quantum computing, and intelligent data mining & data warehousing. After a rigorous peer-review process, with the help of our Program Committee members and external experts as reviewers (from inland as well as abroad), top-quality papers could be identified for presentation and publication. The review process was extremely stringent with a minimum of three reviews for each submission and occasionally up to six reviews duly supplemented by checks on similarity and overlaps as well. Submitted papers geographically encompass countries like Australia, the UK, Singapore, Bangladesh, Portugal, Saudi Arabia, Taiwan, Nepal, Thailand, Russia, and the USA. Out of the pool of papers submitted, only 30% have been included in these final proceedings.

The Organizing Committee of CICBA 2017 consisted of international academic and industrial luminaries, and the Program Committee comprised around 200 technical experts. These proceedings are published in one volume of Springer's Communications in Computer and Information Science (CCIS) series. We, in the capacity of the volume editors, convey our sincere gratitude to Springer for providing the opportunity to publish the proceedings of CICBA 2017.

Representatives from the Indian Institute of Management Kolkata, the Indian Statistical Institute Kolkata, the Indian Institute of Science Bangalore, the Defence Research Development Organization, the Government of India, IBM, Wipro, Capgemini, TCS, Accenture, Rediff.com, and LinkedIn participated in the panel discussions, keynote addresses, and invited talks. The conference included many distinguished keynote addresses by eminent speakers such as Prof. Dr. Sankar Pal, Indian Statistical Institute, Dr. P.N. Suganthan, Nanyang Technological University, Singapore,

Prof. Dr. L.M. Patnaik, Indian Institute of Science Bangalore, and Prof. Dr. Edward Tsang, University of Essex, UK. Speakers for panel discussions included luminaries from academia and industry, such as Dr. Gautam Mahapatra, RCI Labs, Defence Research Development Organization, Hyderabad; Mr. Lawrence Mohanraj, IBM India Pvt. Ltd., Chennai; Mr. Somnath Chatterjee, Capgemini, Kolkata; Mr. Ajit Balakrishnan, Rediff.com; Dr. Arindam Pal, Data and Decision Sciences Group, TCS Innovation Labs Kolkata, India; Mr. Rajeev Ranjan Kumar, Virtual Desk, Wipro Tech. Hyderabad, etc. Invited talks were delivered by Ms. Suvira Srivastav, Springer Nature and Prof. Dr. Sushmita Mitra, Machine Intelligence Unit, Indian Statistical Institute, Kolkata.

The editors would like to express their sincere gratitude to Prof. Dr. Kalyanmoy Deb, Michigan State University, for taking the time to inaugurate the Call for Papers of CICBA 2017. They also thank the International Advisory Committee and the Chief Guest of CICBA 2017, Prof. Dr. L.M. Patnaik, for providing valuable guidance and inspiration to overcome various difficulties in the process of organizing the conference. We moreover want to avail ourselves of this opportunity to extend our heartfelt thanks to the Honorary Chair of this conference, Prof. Dr. Anirban Basu, Computer Society of India, for his active involvement from the very beginning till the end of the conference, without whose support this conference could never have assumed such a successful shape. Sincerest thanks are due to Prof. Dr. P.K. Roy, APIIT, India, for his valuable suggestions regarding enhancing the editorial review process. The editors also thank the Best Paper Award Committee of CICBA 2017 for taking the trouble to select the best papers from a pool so many formidable acceptances. The conference was sponsored by Calcutta Business School and IEEE Young Professionals.

Special words of appreciation are due to the Calcutta Business School, for coming forward to host the conference, which incidentally was the first in the series. It was indeed heartening to note the enthusiasm of all faculty, staff, and students of Calcutta Business School to organize the conference in a professional manner. Involvement of faculty coordinators and student volunteers are particularly praiseworthy in this regard. The editors also thank technical partners and sponsors for providing all the support and financial assistance.

It is needless to mention the role of the contributors. But for their active support and participation, the question of organizing a conference is bound to fall through. The editors take this opportunity to thank the authors of all the papers submitted as a result of their hard work, more so because all of them considered the conference as a viable platform to ventilate some of their latest findings, not to speak of their adherence to the deadlines and patience with the lengthy review process. The quality of a refereed volume primarily depends on the expertise and dedication of the reviewers who volunteer their efforts with a smiling face. The editors are further indebted to the Program Committee members and external reviewers, who not only produced excellent reviews but also did these in short timeframes, in spite of their very busy schedules. It is because of their quality work that it has been possible to maintain the high academic standard of the proceedings.

A conference is only complete when it has managed to attract a high level of participation. A conference with good papers accepted and devoid of any participants is perhaps the worst form of curse that may be imagined. The editors therefore thank the participants for attending the conference.

Last but not the least, the editors would offer cognizance to all the volunteers for their tireless efforts in meeting the deadlines and arranging every minute detail meticulously to ensure that the conference achieved its goals, academic or otherwise.

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