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Sanghamitra Bandyopadhyay
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Pattern Recognition and Machine Intelligence

First International Conference, PReMI 2005
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Proceedings

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Message from the General Chair

Pattern recognition and machine intelligence form a major area of research and developmental activity that encompasses the processing of multimedia information obtained from the interaction between science, technology and society. An important motivation for the spurt of activity in this field is the desire to design and make intelligent machines capable of performing certain tasks that we human beings do. Potential applications exist in forefront research areas like computational biology, data mining, Web mining, global positioning systems, medical imaging, forensic sciences, besides classical problems of optical character recognition, biometry, target recognition, face recognition, remotely sensed data analysis, and man–machine communication. There have been several conferences around the world in the past few decades individually in these two areas of pattern recognition and artificial intelligence, but hardly any combining the two, although both communities share similar objectives. Therefore holding this international conference covering these domains is very appropriate and timely, considering the recent needs of information technology, which is a key vehicle for the economic development of any country. The first integrated meeting of 2005, under this theme, was PReMI 2005.

The objective of this international meeting is to present state-of-the-art scientific results, encourage academic and industrial interaction, and to promote collaborative research and developmental activities, in pattern recognition, machine intelligence and related fields, involving scientists, engineers, professionals, researchers and students from India and abroad. The conference will be held every two years to make it an ideal platform for people to share their views and experiences in these areas. Particular emphasis in PReMI 2005 was placed on computational biology, data mining and knowledge discovery, soft computing, case-based reasoning, biometry, as well as various upcoming pattern recognition/image processing problems. There were tutorials, keynote talks and invited talks, delivered by speakers of international repute from both academia and industry. These were accompanied by interesting special sessions apart from the regular technical sessions.

It may be mentioned here that in India the activity on pattern recognition started in the 1960s, mainly in ISI, Calcutta, TIFR, Bombay and IISc, Bangalore. ISI, having a long tradition of conducting basic research in statistics/mathematics and related areas, has been able to develop profoundly activities in pattern recognition and machine learning in its different facets and dimensions with real-life applications. These activities have subsequently been consolidated under a few separate units in one division. As a mark of the significant achievements, special mention may be made of the DOE-sponsored KBCS Nodal Center of ISI founded in the 1980s and the Center for Soft Computing Research (CSCR) of ISI established in 2004 by the DST, Government of India.

CSCR, which is the first national center in the country in this domain, has many important objectives including distance learning, establishing linkage to premier institutes/industries, organizing specialized courses, as well as conducting fundamental research.

The conference proceedings of PReMI-05, containing rigorously reviewed papers, is published by Springer in its prestigious *Lecture Notes in Computer Science* (LNCS) series. Different professional sponsors and funding agencies (both national and international) came forward to support this event for its success. These include, International Association of Pattern Recognition (IAPR); Web Intelligence Consortium (WIC); Institute of Electrical and Electronics Engineering (IEEE): International Center for Pure and Applied Mathematics (CIMPA), France; Webel, Government of West Bengal IT Company; Department of Science & Technology (DST), India; Council of Scientific & Industrial Research (CSIR), India. To encourage participation of bright students and young researchers, some fellowships were provided.

I believe the participants found PReMI-05 an academically memorable and intellectually stimulating event. It enabled young researchers to interact and establish contacts with well-known experts in the field

I hope that you have all enjoyed staying in Calcutta (now Kolkata), the city of Joy.

September 2005   Sankar K. Pal, Kolkata
                                                      General Chair, PReMI-05
                                           Director, Indian Statistical Institute

Preface

This volume contains the papers selected for the 1st International Conference on Pattern Recognition and Machine Intelligence (PReMI 2005), held in the Indian Statistical Institute Kolkata, India during December 18–22, 2005. The primary goal of the conference was to present the state-of-the-art scientific results, encourage academic and industrial interaction, and promote collaborative research and developmental activities in pattern recognition, machine intelligence and related fields, involving scientists, engineers, professionals, researchers and students from India and abroad. The conference will be held every two years to make it an ideal platform for people to share their views and experiences in these areas.

The conference had five keynote lectures, 16 invited talks and an evening talk, all by very eminent and distinguished researchers from around the world. The conference received around 250 submissions from 24 countries spanning six continents. Each paper was critically reviewed by two experts in the field, after which about 90 papers were accepted for oral and poster presentations. In addition, there were four special sessions organized by eminent researchers. Accepted papers were divided into 11 groups, although there could be some overlap.

We take this opportunity to express our gratitude to Professors A. K. Jain, R. Chellappa, D. W. Aha, A. Skowron and M. Zhang for accepting our invitation to be the keynote speakers in this conference. We thank Professors B. Bhattacharya, L. Bruzzone, A. Buller, S. K. Das, U. B. Desai, V. D. Gesu, M. Gokmen, J. Hendler, J. Liu, B. Lovell, J. K. Udupa, M. Zaki, D. Zhang and N. Zhong for accepting our invitation to present invited papers in this conference. Our special thanks are due to Professor J. K. Aggarwal for the acceptance of our invitation to deliver a special evening lecture. We also express our deep appreciation to Professors Dominik Ślęzak, Carlos Augusto Paiva da Silva Martins, P. Nagabhushan and Kalyanmoy Gupta for organizing interesting special sessions during the conference. We gratefully acknowledge Mr. Alfred Hofmann, Executive Editor, Computer Science Editorial, Springer, Heidelberg, Germany, for extending his co-operation for publication of the PReMI-05 proceedings. Finally, we would like to thank all the contributors for their enthusiastic response.

We hope that the conference was an enjoyable and academically fruitful meeting for all the participants.

September 2005

Sankar K. Pal
Sanghamitra Bandypodhyay
Sambhunath Biswas
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PReMI 2005 was organized by the Machine Intelligence Unit, Indian Statistical Institute (ISI) in Kolkata during December 18–22, 2005.

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- And others

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