



[PreMI 2013](#)

## 5th International Conference on Pattern Recognition and Machine Intelligence

Kolkata, India

December 10-14, 2013

<http://www.isical.ac.in/~premi13/>

General Chair:

[Sankar K. Pal](#) (Indian Statistical Institute, India)

by Sankar K. Pal

The International Conference on Pattern Recognition and Machine Intelligence (PReMI) is the most important conference in the field of pattern recognition, machine learning, computational intelligence and related application areas. It is held every alternate year, preferably at different places. The 2005 and 2007 editions were held at the Indian Statistical Institute, Kolkata, India. The Indian Institute of Technology, New Delhi, India, hosted in 2009, and the Higher School of Economics (HSE), Moscow, Russia, in 2011. Just like previous editions, PReMI-13 at the Indian Statistical Institute, Kolkata was of five-days duration, the first two days for tutorials followed by the three-day conference. It was attended by large number of researchers and leading experts from all over the world. The primary goals of the conference was to present the state-of-the-art scientific results, encourage academic and industrial interaction, and promote collaborative research activities in pattern recognition, machine intelligence and related fields, involving scientists, engineers, professionals, researchers and students across the globe.

PReMI 2013 received more than 300 submissions from 22 countries

spanning six continents. After critical review, 101 papers were accepted for inclusion in the proceedings, which were divided into nine categories. The papers were presented by researchers in three parallel sessions on various theoretical and application areas, including new developments in bioinformatics & computational biology, and social media mining. The conference took place in seventeen sessions, each being preceded by a keynote speech, plenary speech or an invited talk. Besides these, PReMI-13 had a unique feature, namely, a workshop on "Big Data: A Soft Computing Perspective" consisting of a balanced mixture of seven speakers from industry and academia (a brief report is appended below).

The conference was inaugurated by Prof. Bimal Ray, Director of the ISI, in the presence of Prof. Andrzej Skowron, University of Warsaw (Guest of Honour), Prof. Sushanta Dattagupta (Vice Chancellor), Visva-Bharati (Chief Guest), Prof. Sankar K. Pal (Distinguished Scientist, FIAPR and General Chair), Prof. Ashish Ghosh (Head, Machine Intelligence Unit, and Program Co-Chair, Prof. C.A. Murthy (Prof.-in-Charge, Computer and Communication Sciences Division), Dr. Shubhra S. Ray (Organizing Co-Chair) and

other dignitaries. There were more than 100 externally registered participants.

The speakers at the conference tutorials were Prof. Jayaram Udupa (USA), Prof. Y. Narahari (India), Prof. Sung-Bae Cho (Korea), and Prof. Santanu Choudhuri (India).

The conference highlights were marked by some of the leading researchers in the areas of pattern recognition and machine learning who have presented the keynote, plenary and invited talks covering various aspects and the forefront application areas:

- Prof. Mark Girolami (UK) spoke on Detecting DNA Strands in Multiplexed SERRS (keynote)
- Prof. Andrzej Skowron (Poland) gave a plenary talk on Interactive Computations: Toward Risk Management in Interactive Intelligent Systems
- Prof. Jayaram Udupa (USA) gave a plenary talk on Body-wide Automatic Recognition in Medical Imagery via Fuzzy Models
- Prof. Dipankar Dasgupta (USA) discussed Genetic learning algorithms in developing cloud security insurance framework
- Prof. S.B. Cho (Korea) spoke about Recognizing gestures

with smartphone sensors using recurrent neural networks

- Sergei Kuznetsov (Russia) spoke on Scalable knowledge discovery in complex data with pattern structures
- Nilay Ganguli (India) gave a talk about Identifying topics, topical experts and users in twitter,
- Dominik Slezak (Poland) spoke on Rough sets and granular attribute selection for MRI segmentation
- Sitabhra Sinha (India) talked on Data driven modeling of market dynamics for inferring the "Laws" of finance from big data
- Punam Saha (USA) discussed Fuzzy digital topology and geometry for medical imaging, respectively.

There were 83 oral presentations out of 101 accepted papers, in parallel sessions on various theoretical and application areas, demonstrating new developments

in the areas like image analysis, machine learning and pattern recognition, biometrics, text and data mining, speech, signal and video processing, natural language processing, document image processing, bioinformatics, social media mining, and big data analysis. The program included a welcome dinner, cultural event and a banquet. The conference was concluded with a valedictory ceremony.



A proceeding of the Conference is published by Springer as [Lecture Notes in Computer Science, Volume 8251](#).

Three post-conference special issues of international journals like [IET Image Processing](#) (UK), [Journal of Biosciences](#) (Springer), and [Natural Computing](#) (Springer), were planned to be published out of the extended versions of some selected papers together

with others obtained through open CFPs.

Different sponsors of the conference who made the event successful include: Department of Science & Technology (DST), Govt. of India; Council of Scientific and Industrial Research (CSIR), Govt. of India; Defence Research & Development Organization (DRDO), Govt. of India; Centre for Soft Computing Research: A National Facility (ISI, Kolkata); International Association for Pattern Recognition (IAPR); International Rough Set Society (IRSS); Web Intelligence Consortium (WIC); and Indian National Academy of Engineering (INAE), Kolkata Chapter.

In conclusion, PReMI 2013 had been a great success academically and otherwise with several interesting presentations on state of the art subjects, thereby generating new ideas and avenues of research, and possible collaborations within India and outside.

## ◆◆◆◆ IUPRAI Workshop on Big Data: A Soft Computing Perspective ◆◆◆◆

The IUPRAI (Indian Unit for Pattern Recognition and Artificial Intelligence) Workshop on Big Data: A Soft Computing Perspective was held in conjunction with PreMI 2013. This workshop was organised by Prof. Santanu Chaudhury (India), Prof. Dominik Slezak (Poland) and Dr. Lipika Dey (India), with Prof. Sankar Pal, FIAPR (India) as the advisor.

This workshop brought together researchers and practitioners who are working on applications of soft computing principles to handle big data challenges, both from academics and industry. The participants discussed challenges and opportunities in the application of soft computing techniques to the

emerging field of big data. There were three sessions.

Deliberations of the workshop began with introductory remarks by Prof. Sankar Pal. He highlighted the background and context of the emergence of the field of big data. He also indicated the research challenges involved, particularly in the soft computing framework. Prof. Jayaram K. Udupa (USA), in response to Prof. Pal's presentation, pointed out that the big data scenario is becoming relevant and important also in the field of medical informatics.

Prof. Pawan Lingeras (Canada) presented a novel iterative approach to clustering in a granular environment.

Prof. Dominik Slezak (Poland) presented an approach to interactive analytics over machine generated data. He focussed on specific problems of carrying out investigative and predictive query workloads over rapidly changing datasets generated by systems, devices and sensors. Over the last decade and a half, support vector machines have become the paradigm of choice for most learning applications. However, new sources of data have emerged, ranging from high dimensional micro-array and bio-informatics data, to very large databases emanating from social networks and telecom service providers. Prof. Jayadeva (India) touched upon these issues and

presented an outline of the approach proposed by him for adapting SVM for newer problems in an efficient fashion.

Mr. Saugoto Mukherjee (Marketoppers, India) made a presentation on Soft Computing challenges in algorithmic trading. The big data platform is critical for developing market intelligence about mobile network users. Mr. Prateek Kapadia described systems implemented by Flytxt.

Dr. Girish Keshav Palsikar (TCS, India) talked about text analytics and the use of soft computing for this application in the context of big data technology. Dr. Raghavendra Singh (IBM Research, India) described a cognitive computing initiative of IBM. He provided an insight of a project called SyNAPSE (Systems of Neuromorphic Adaptive Plastic Scalable Electronics), funded by the U.S. Defense Advanced Research Projects Agency

(DARPA), which aims to develop electronic neuromorphic machine technology that scales to a biological level and is inspired by the structure and architecture of the organic brain.

The workshop came to an end with concluding remarks from Prof. Andrzej Skowron (Poland) who emphasized the need for fundamental research in soft computing for meeting challenges of big data.



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