MIWAI 2013
Conference Program

December 09, 2013
Venue: Krabi Heritage Hotel

08.30 am – 09.00 am	Registration
09:00 am – 10:30 am	Tutorial 1: Pawan Lingras - "Recursive and iterative clustering in granular hierarchical, network, and temporal datasets "
10:30 am – 10:45 am	Nutrition break
10:45 am – 12:15 pm	Tutorial 1: Pawan Lingras - "Recursive and iterative clustering in granular hierarchical, network, and temporal datasets " (Continue)
12:15 pm – 01:15 pm	Lunch
01:15 pm – 02:45 pm	Tutorial 2: Xiangjian He - "Principle of Image Categorization"
03:00 pm – 03:15 pm	Nutrition break
03:15 pm – 04:30 pm	Tutorial 2: Xiangjian He - "Principle of Image Categorization" (Continue)

MIWAI 2013
Conference Program

December 10, 2013
Venue: Krabi Heritage Hotel

08.30 am – 09.00 am	Registration
09.00 am – 09.15 am	Inauguration ceremony
09:15 am – 10:15 am	Keynote speech: **Nick Cercone** Title: Big Data - Big Deal. Chair: Chattrakul Sombattheera
10:15 am – 10:30 am	Nutrition break
10:30 am – 12:10 pm	Unsupervised learning, Chair: Arun Agarwal (5 papers) 1, 2, 6, 13, 68
12:10 pm – 1:10 pm	Lunch
01:10 pm – 2:50 pm	Computer Vision, Chair: Xiangjian He (5 papers) 7, 9, 24, 25, 50
02:50 pm – 03:05pm	Nutrition break
03:05 pm – 04:45 pm	Intelligent Planning, Chair: Aneesh Krishna (5 papers) 17, 29, 31, 42, 48
07:00 pm – 10:00 pm	**Conference Reception**

Unsupervised learning December 10, 10:30 pm - 12:10 pm, Chair: Arun Agarwal
- 1 - Asma Ammar, Zied Elouedi and Pawan Lingras - Incremental Rough Possibilistic K-Modes
- 2 - Shigehiro Ohhara, Keisuke Yamazaki and Sumio Watanabe - A Geometric Evaluation of Self-Organizing Map and Application to City Data Analysis
- 6 - Vinay Kumar Verma, Rajeev Wankar, C.R. Rao and Arun Agarwal - Hand Gesture Segmentation From Complex Color-Texture Background Image
- 13 - Said Jadid Abdulkadir and Suet-Peng Yong - Unscented Kalman Filter for Noisy Multivariate Financial Time-Series Data
- 68 - Kittipong Dapa, Pornpat Loreungthup, Srisatja Vitayasak and Pupong Pongcharoen - Bat Algorithm, Genetic Algorithm and Shuffled Frog Leaping Algorithm for designing non-identical rectangular machine layout

Computer Vision December 10, 01:10 pm - 02:50 pm, Chair: Xiangjian He
- 7 - Amit Singh, Mayank Dave and Anand Mohan - A Hybrid Algorithm for Image Watermarking Against Signal Processing Attacks
- 9 - James F. Peters, Doungrat Chitcharoen and Sheela Ramanna - Reasoning with Near Set-based Digital Image Flow Graphs
- 24 - Raghava Morusupalli, Arun Agarwal and Raghavendra Rao Ch - Spatial Anisotropic Interpolation Approach for Text Removal from an Image
- 25 - Farzana Kabir Ahmad and Nooraini Yusoff - Reconstructing Gene Regulatory Network Using Heterogeneous Biological Data
- 50 - Minho Han - The Hue Modeling for Object Tracking in Multiple Non-Overlapping Cameras

Intelligent Planning December 10, 03:05 pm - 04:45 pm, Chair: Aneesh Krishna
- 17 - Yu-Cheng Chuang, Pingyu Hsu and Hung-Hao Chen - Unifying multi-level business process discovered by Heuristic miner Algorithm
- 29 - Junghoon Lee and Gyung-Leen Park - Design of a multi-day tour-and-charging scheduler for electric vehicles
- 31 - Yu-Cheng Chuang, Pingyu Hsu, Mintzu Wang, Ming-Te Lin and Ming Shien Cheng - User Distributions in N-Tier platform with effective memory reusability
- 42 - Naoki Yamada and Chiaki Sakama - Evolution of Self-Interested Agents: An Experimental Study
- 48 - Kasun Senevirathna and Pradeep Atrey - A Secure and Privacy-aware Cloud-Based Architecture for Online Social Networks

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December 11, 2013.

Venue: Krabi Heritage Hotel

09:15 am – 10:15 am	Keynote speech: **Xiangjian He** Title: Multiple Instance Learning for Visual Categorisation Chair: Arun Agarwal
10:15 am – 10:30 am	Nutrition break
10:30 am – 12:10 pm	Supervised learning Chair: Vivek Kumar Singh (5 papers) 4, 5, 10, 11, 60
12:10 pm – 1:10 pm	Lunch
01:10 pm – 2:50 pm	Pattern Analysis Chair: Pawan Lingras (5 papers) 22, 30, 39, 44, 67
02:50 pm – 03:05pm	Nutrition break
03:05 pm – 04:45 pm	Foundations Chair: Pupong Pongcharoen (5 papers) 47, 49, 53, 54, 58
04:45 pm – 05:00pm	Valedictory

Supervised learning December 11, 10:30 am - 12:10 pm, Chair: Vivek Kumar Singh
- 4 - Mohd Zaki Ayob and E. D. Chesmore - Probabilistic Neural Network for the Automated Identification of the Harlequin Ladybird (Harmonia Axyridis)
- 5 - Gerhard Wohlgenannt, Stefan Belk and Matthias Schett - Computing Semantic Association: Comparing Spreading Activation and Spectral Association for Ontology Learning
- 10 - Satyendr Singh, Vivek Kumar Singh and Tanveer J. Siddiqui - Hindi Word Sense Disambiguation using Semantic Relatedness measure
- 11 - Xi Ao Ma, Guo Yin Wang, Hong Yu and Feng Hu -Test-Cost-Sensitive Attribute Reduction in Decision-Theoretic Rough Sets
- 60 - Verayuth Lertnattee, Sinthop Chomya and Virach Sornlertlamvanich - Using a Normalized Score Centroid-based Classifier to Classify Multi-label Herbal Formulae

Pattern analysis December 11, 01:10 pm - 02:50 pm, Chair: Pawan Lingras
- 22 - Hui Chun Wang, Yeh-Kuang Wu, Liung-Chun Chang and Ke-Chun Li - Using HMMs and Depth Information for Singer-Independent Sign Language Recognition
- 30 - Kiyoshi Akama and Ekawit Nantajeewarawat - An ET-Based Low-Level Solution for Query-Answering Problems
- 39 - Thi Bao Tran Phan, Thi Ngoc Chau Vo and Tuan Anh Duong - An Efficient Interval-based Approach to Mining Frequent Patterns in a Time Series Database
- 44 - Vivek Kumar Singh, Rajesh Piryani, Ashraf Uddin and David Pinto - A Content-based eResource Recommender System to augment eBook-based Learning
- 67 - Yoshiaki Okubo, Makoto Haraguchi and Etsuji TOMITA - Relational Change Pattern Mining Based on Modularity Difference

Foundations December 11, 03:05 pm - 04:45 pm, Chair: Pupong Pongcharoen
- 47 - Olivier Spanjaard and Paul Weng - Markov Decision Processes with Functional Rewards
- 49 - Paul Weng - Axiomatic Foundations of Generalized Qualitative Utility
- 53 - T. V. Vijay Kumar, Biri Arun and Lokendra Kumar - Distributed Query Plan Generation using HBMO
- 54 - Tenda Okimoto, Maxime Clement and Katsumi Inoue - AOF-technique based algorithm for Dynamic Multi-Objective Distributed Constraint Optimization
- 58 - Thibaut Lust and Antoine Rolland - On the computation of Choquet optimal solutions in multicriteria decision contexts

MIWAI 2013
Conference Program

Keynote Speech by Professor Nick Cercone, December 10, 09:15 am – 10:15 am, Chair: Chattrakul Sombattheera

- Title: Big Data - Big Deal

- Abstract: This paper is based on a major cooperative research and development proposal to Canada's Natural Science and Engineering Research Council for a Big Data Research, Analytics, and Information Network (BRAIN).

- Biography of Professor Nick Cercone:
  Nick Cercone is Professor and former Dean of the Faculty of Science & Engineering at York University. Prior to that he was Dean of the Faculty of Computer Science at Dalhousie University in Halifax, Nova Scotia, Canada from 2002-2006. He was Chair of Computer Science at the University of Waterloo from 1997-2002. From 1993 until 1997 he was Associate Vice President (Research), Dean of Graduate Studies and International Liaison Officer at the University or Regina. Formerly he was Director of the Centre for Systems Science at Simon Fraser University (1987-1992) and chairman of the School of Computing Science (1980-1985) at Simon Fraser.

  Cercone's research interests include natural language processing, knowledge-based systems, knowledge-discovery in databases, data mining, computational linguistics, and design and human interfaces. He is the author of over 400 refereed publications, several best paper awards, and has graduated 100 graduate students.

  Cercone co-founded Computational Intelligence, edits Knowledge and Information Systems, and serves on the editorial board of six journals. He is a member of the ACM, IEEE, AAAI, AISB, AGS, and ACL, and a past president of the CSCSI/SCEIO (Canadian Society for Computational Studies of Intelligence), of the Canadian Society for Fifth Generation Research, and of the Canadian Association for Computer Science (CACS/AIC). Cercone served on the Canadian Genome Assessment and Technology Board, the CANARIE Board, CanWest, the Institute for Robotics and Intelligent Systems (IRIS) Research Committee, the Saskatchewan Research Council Board, and the Regina Economic Development Authority (information technology). Cercone also serves on NSERC, CFI, CHRP, CRC, CITO and NSF committees, and in 1996 he won the Canadian Artificial Intelligence Society's Distinguished Service Award. In 2002 Cercone became a Fellow of the IEEE for contributions to Knowledge Discovery. In 2010 Cercone became a Fellow of the Canadian artificial intelligence society.

  Cercone received the BS degree in Engineering Science from the University of Steubenville in 1968, the MS degree in Computer and Information Science from Ohio State University in 1970, and a PhD degree in Computing Science from the University of Alberta in 1975. Cercone worked for IBM Corporation in 1969 and 1971 on design automation.

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Keynote Speech by Professor Xiangjian He, December 11, 09:15 am – 10:15 am, Chair: Arun Agarwal

- Title: Multiple Instance Learning for Visual Categorisation

- Abstract: Nowadays, huge amounts of visual data, e.g., videos and images, have become widely accessible. Therefore, intelligently categorizing the large and growing collections of data for access convenience has been a central goal for modern computer vision research. In this talk, several newly-developed approaches are presented for visual categorization upon multiple instance learning (MIL) cases. We focus on object categorisation. We propose a novel algorithm, multiple-instance learning with a supervised kernel density estimation (MIL-SKDE). Our algorithm extends the twin technologies, kernel density estimation (SKDE) and mean shift, to their supervised versions in which the labels of data points will affect the mode seeking. We apply MIL-SKDE for object categorization, and our algorithm performs superiorly compared with other state-of-the-art methods. Furthermore, to address the complexity issue of MIL-SKDE, we propose MIL-SS (MIL with speed-up SKDE) to speed up the training process.

- Biography of Professor Xiangjian He:
Professor Xiangjian He, as a Chief Investigator has received various research grants including four national Research Grants awarded by Australian Research Council (ARC).

  He is the Director of Computer Vision and Recognition Laboratory, and the Deputy Director of Research Centre for Innovation in IT Services and Applications (iNEXT) at the University of Technology, Sydney (UTS).

  He is an IEEE Senior Member. He has been awarded 'Internationally Registered Technology Specialist' by International Technology Institute (ITI). He has been carrying out research mainly in the areas of image processing, network security, pattern recognition and computer vision in the previous years. He is a leading researcher for image processing based on hexagonal structure. He has played a chairman role in various international conferences including IEEE CIT, IEEE AVSS and ICARCV.

  He is a guest editor for various international journals such as Journal of Computer Networks and Computer Applications (Elsevier) ,and in the editorial boards of various international journals. He is a supervisor of postdoctoral research fellows and PhD students.

  Since 1985, he has been an academic, a visiting professor, an adjunct professor, a postdoctoral researcher or a senior researcher in various universities/institutions including Xiamen University, China, University of New England, Australia, University of Georgia, USA, Electronic and Telecommunication Research Institute (ETRI) of Korea, University of Aizu, Japan, and Hongkong Polytechnic University.

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Tutorial 1 by Professor Pawan Lingras, December 09, 01:00 pm – 02:30 pm

- Title: Recursive and iterative clustering in granular hierarchical, network, and temporal datasets

- Abstract: Clustering is one of the frequently used unsupervised data mining techniques for grouping similar objects. The proposed research program will investigate a novel iterative approach to clustering in a granular environment. An information granule represents an object. For example, a customer with certain purchasing patterns could be represented by an information granule. A granule is usually connected to other granules. For example, in a hierarchical environment, a customer granule will be connected to a number of product granules and vice versa. In a granular network, phone users are connected to other phone users. In a granular temporal environment, a daily pattern of events is connected to historical and future daily patterns. Traditionally, clustering of granules is done in isolation without any information on clustering of the connected granules. The primary theme of the proposed research is to simultaneously cluster all the granules iteratively. Each iteration will use results of previous clustering of connected granules, until a stable clustering of all the granules is achieved. In a hierarchical environment such as customers and products, it will mean that clustering of customers uses profiles of product clusters, and vice versa. For networked granules, a phone user is clustered using cluster profiles of the other connected users. In a temporal granular clustering, daily patterns will be clustered based on clustered profiles of historical and future patterns. These repeated applications of clustering are termed iterative in a hierarchy and are termed recursive in networks. The integrated meta-clustering of hierarchical, network, and temporal data is a multi-faceted project. Since clustering is unsupervised and we do not know the expected outcomes, it is important to study the quality of the resultant clustering. In addition to deriving quantitative evaluations, the notion of preference will be used to value a cluster based on how well-connected it is to more desirable objects. The iterative and recursive algorithms will be further modified for fuzzy and rough clustering, which allow an object to belong to multiple clusters. We plan to design, develop, implement, and test variations of the clustering algorithms for retail, mobile phone, engineering, and financial datasets.

- About the Presenter:
Pawan Lingras is a graduate of IIT Bombay with graduate studies from University of Regina. He is currently a professor at Saint Mary's University, Halifax and recently served as a UGC funded Scholar-in-Residence at SRTM University, Nanded and visiting professor at IIT Gandhinagar. He has authored more than 160 research papers in various international journals and conferences. He has also co-authored two textbooks, and co-edited two books and five volumes of research papers. His areas of interests include artificial intelligence, information retrieval, data mining, web intelligence, and intelligent transportation systems. He has served as the general co-chair, program co-chair, review committee chair, program committee member, and reviewer for various international conferences on artificial intelligence and data mining. He is also on editorial boards of a number of international journals.

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Tutorial 2 by Professor Xiangjian He, December 09, 03:00 pm – 04:30 pm

- Title: Principle of Image Categorization

- Abstract: In this tutorial, an overview of image categorization will be presented. Various image features and image representations for image categorization are introduced. Then, classifiers for categorization including SVM, K-NN, decision tree and boosting are reviewed and compared.

- About the Presenter:
Professor Xiangjian He, as a Chief Investigator has received various research grants including four national Research Grants awarded by Australian Research Council (ARC).

He is the Director of Computer Vision and Recognition Laboratory, and the Deputy Director of Research Centre for Innovation in IT Services and Applications (iNEXT) at the University of Technology, Sydney (UTS).

He is an IEEE Senior Member. He has been awarded 'Internationally Registered Technology Specialist' by International Technology Institute (ITI). He has been carrying out research mainly in the areas of image processing, network security, pattern recognition and computer vision in the previous years. He is a leading researcher for image processing based on hexagonal structure. He has played a chairman role in various international conferences including IEEE CIT, IEEE AVSS and ICARCV.

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