

Advances in Machine Learning and Neural Networks

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Welcome to the special issue on '*Advances in Machine Learning and Neural Networks*' of IJCIR. In recent years, we have seen tremendous progress in the applications of machine learning techniques to solve real-world problems in various domains. In this special issue of IJCIR, we have collected 20 papers that apply these techniques to five different domains and three papers addressing various theoretical issues in machine learning and neural networks.

The categorization of the papers is as follows:

1. Database Retrieval, Content Management, and Information Systems

- Development of the Neuroinformatics Base Platform System: XooNips, Kazutsuna Yamaji, Hiroyuki Sakai, Yoshihiro Okumura, Osamu Kurosaki and Shiro Usui
- Intrusion Detection by Backpropagation Neural Networks with Sample-Query and Attribute-Query, Ray-I Chang, Liang-Bin Lai, Wen-De Su, Jen-Chieh Wang, Jen-Shaing Kouh
- A Neural Network based Software Retrieval System with Fuzzy-Related Thesaurus, Huilin Ye
- Evolution of Organizational Adaptability: Application of Hexie Management Theory, Jun Ma, Youmin Xi, Pengxiang Li and Ju'e Guo
- RVM Ensemble for Text Classification, Catarina Silva and Bernardete Ribeiro

2. Health Care and Medical Applications

- Using Inverse Neural Network for HIV Adaptive Control, B. Leke Betechuoh, T. Marwala and T. Tetey

- Application of Self-Organizing Map (SOM) for Cerebral Cortex Reconstruction, Cheng-Hung Chuang, Philip E. Cheng, Michelle Liou, Cheng-Yuan Liou and Yen-Ting Kuo
- Estimation of Motor Imaginary Using fMRI Experiment Based EEG Sensor Location, Sang Han Choi and Minho Lee

3. Multimedia Applications

- Multistage Blind Source Separation and Deconvolution for Convolutional Mixture of Speech Signals, Yanxue Liang, Fengyu Cong and Ichiro Hagiwara
- Recognition of Proceeding Vehicles with Specific Information, Hyo Jong Lee
- New Region of Interest Image Coding Using Partial Bitplane Layered Shift for Medical Image Compression, Li-bao Zhang and Xian-chuan Yu
- Eigenblock Approach for Face Recognition, Huiyuan Wang and Xiaojuan Wu

4. Financial Engineering

- Exchange Options Pricing with Evolutionary Neural-based Fuzzy Inference Systems, Hsing-Wen Wang
- Application of Neural Networks to Business Bankruptcy Analysis in Thailand, Kingkarn Sookhanaphibarn, Piruna Polsiri Worawat Choen-sawat and Frank C. Lin

5. Power Systems and Devices.

- Features Selection of SVM and ANN Using Particle Swarm Optimization for Power Transformers

Incipient Fault Symptom Diagnosis, Tsair-Fwu Lee, Ming-Yuan Cho and Fu-Min Fang

- A New Approach for the Short-Term Load Forecasting with Autoregressive and Artificial Neural Network Models, Ummuhan Basaran Filik, Mehmet Kurban
- A Configware Approach for the Implementation of a LVQ Neural Network, Mauricio Kugler and Heitor S. Lopes

In addition to these application oriented papers, this special issue also features three theoretical papers that address issues in general pattern classification, associative memories, and reinforced learning:

- Hierarchical and Interpretable Connectionist Structure Generation from Data, Waratt Rattasiri, Saman K. Halgamuge, Nalin Wickramarachchi
- Alpha-Beta Bidirectional Associative Memories, Mara Elena Acevedo-Mosqueda, Cornelio Ynez-Mrquez and Itzam Lopez-Yez
- Reinforcement Learning Approaches for Constrained MDPs, Peter Geibel

All of these papers have been invited to be presented in the 13th International Conference on Neural Information Processing (ICONIP'2006), which aims to showcase the latest theories, methodologies, and techniques used in neural information processing research. We hope you find these papers interesting and consider attending ICONIP in coming years.

We are grateful to the authors and reviewers who contributed to the 20 papers in this special issue.

Guest Editors' Biography

Man-Wai Mak

Man-Wai Mak received a BEng(Hons) degree in Electronic Engineering from Newcastle Upon Tyne Polytechnic in 1989 and a PhD degree in Electronic Engineering from the University of Northumbria at Newcastle in 1993. He joined the Department of Electronic Engineering at the Hong Kong Polytechnic University as a Lecturer in 1993 and as an Assistant Professor in 1995. Dr. Mak has taught courses in speech processing, neural computing, and software engineering, and he has been the advisor of three MPhil and two PhD graduates. He has authored more than 90 technical papers in speaker recognition, machine learning, and bioinformatics. Dr. Mak is also a co-author of the postgraduate textbook "*Biometric Authentication: A Machine Learning Approach*, Prentice Hall, 2004." Dr. Mak has experience in software design and implementation, and he has provided consultancy services to companies in Hong Kong. He has worked for a

company in the UK in the area of security product design and development.

He has served as program and/or organizing member in international conferences and workshops, e.g., IEEE Workshop on MLSP, ICONIP, ISCSLP, etc. He has also served as reviewer for international journals, such as IEEE Trans. on Neural Networks, IEEE Trans. on Speech and Audio Processing, IEEE Signal Processing Letters, Speech Communications, etc. Since 1995, Dr. Mak has been an executive committee member of the IEEE Hong Kong Section Computer Chapter. He was the Chairman of the IEEE Hong Kong Section Computer Chapter in 2003-2005 and is currently a member of the IEEE Machine Learning for Signal Processing Technical Committee. Dr. Mak received the Faculty of Engineering Research Grant Achievement Award in 2003. Dr. Mak's research interests include speaker recognition, machine learning, and bioinformatics.

Irwin King

Irwin King received the BSc degree in Engineering and Applied Science from California Institute of Technology, Pasadena, in 1984. He received his MSc and PhD degree in Computer Science from the University of Southern California, Los Angeles, in 1988 and 1993 respectively. He joined the Chinese University of Hong Kong in 1993. His research interests include content-based retrieval methods for multimedia databases, distributed multimedia information retrieval in peer-to-peer systems, and statistical learning theory.

He is a member of ACM, IEEE Computer Society, International Neural Network Society (INNS), and Asian Pacific Neural Network Assembly (APNNA). Currently, he is serving the Neural Network Technical Committee (NNTC) under the IEEE Computational Intelligence Society (formerly the IEEE Neural Network Society). He is also a governing board member of the Asian Pacific Neural Network Assembly (APNNA). He is a member of the Editorial Board of the Neural Information Processing—Letters and Reviews Journal (NIP-LR). He has served as program and/or organizing member in international conferences and workshops, e.g., WWW, ICASSP, IJCNN, ICONIP, etc. He has also served as reviewer for international conferences as well as journals, e.g., Information Fusion, IEEE TCAS, SIGMOD, IEEE Transactions on Neural Networks, IEEE Pattern Analysis and Machine Intelligence, IEEE Transactions on Multimedia, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on System, Man, and Cybernetics, Machine Vision and Applications, International Journal of Computer Vision, Real-Time Imaging, SPIE Journal of Electronic Imaging, International Journal of Pattern Recognition and Artificial Intelligence, etc.