

# Editorial

## Neural Networks and Learning Systems Come Together

**T**HIS issue marks the beginning of the IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS (TNNLS). By adding “Learning Systems” to the title, we now state explicitly the scope of the TRANSACTIONS to include neural networks as well as related learning systems.

### I. THE STORY FOR WHAT REALLY HAPPENED

Neural-networks research reached its peak in the 1990s. People studied multilayer feed-forward networks, recurrent neural networks, associative memories, radial basis function networks, self-organizing maps, adaptive resonance theory neural networks, and more recently, support vector machines, principal component analysis, feature extraction, clustering, and reinforcement learning. The IEEE TRANSACTIONS ON NEURAL NETWORKS went through exactly the same path as above, by initially publishing only neural-network papers to now also publishing papers that are within the scope of neural networks but are not under the traditional coverage of neural networks. With the growth of our community, research in neural networks and learning systems becomes inseparable. In 2009, a discussion started regarding changing the title of IEEE TNN, to make it more reflective of TNN’s publication reality. Marios Polycarpou, my predecessor, led the discussion and convinced everyone to initiate this effort. It was after several meetings, many discussions, and lengthy negotiation that we finally were able to get the approval of IEEE in February 2011. So, sincere thanks go to the great efforts of Marios Polycarpou, Gary Yen, and Xin Yao, who really made it possible.

Here we are today. We have this very first issue of IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS in print. This issue marks a new era in the history of our TRANSACTIONS. The TRANSACTIONS is now ready to face the challenges of the next 10-20 years. With the evolution of the fields of neural networks in particular and computational intelligence in general, the IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS will continue to grow and to succeed in this ever-changing world.

### II. REVIEW COMMENTS

In my December 2011 editorial, I made a few comments about the review process of TNN manuscripts, and mentioned that among the 600 submissions received between Jan. 1, 2010, and Dec. 31, 2010, there are 169 papers accepted

for publication, which leads to a final 28-percent acceptance rate for 2010. The remaining 431 papers were not accepted, including those rejected after review, withdrawn after review, and rejected without review.

In terms of percentages, the “papers rejected after review” group has the largest share. If a manuscript receives only one reject recommendation from a reviewer, we may still ask the author to revise the manuscript with the possibility of resubmission after revision, unless the reject recommendation was based on hard facts such as a duplicate submission or was based on comments that make it almost impossible for the author to revise. If a paper receives more than one reject recommendation, I usually have no choice but to reject the manuscript unless the reviewer does not provide any detailed review comments with the reject recommendation.

We also had a number of manuscripts whose authors decided not to revise and resubmit after reading the review comments. Our dedicated reviewers have always provided detailed review comments that are critical for improving the quality of manuscripts. However, some authors may view these comments differently, and feel a lack of encouragement to revise their manuscripts.

We had a small number of manuscripts rejected without going through the review process. These are typically manuscripts that are clearly out of scope or of obviously poor quality.

I am always intrigued by a few reviewers who make a recommendation to revise a paper without providing any comments. Such reviewers may or may not have read the manuscript but somehow are not willing to write any comments. If you ask authors to revise their papers and if you do not tell them what to do, how could they possibly know what, or how to revise the paper?

### III. NEW ASSOCIATE EDITORS APPOINTMENT

I would like to take this opportunity to introduce the following 14 new TNNLS Associate Editors (V. Sree Hari Rao started in June 2011 with TNN). All of them are established researchers in neural networks and learning systems. They are listed below in alphabetical order.

BART BAESENS  
Catholic University of Leuven, Belgium

PANTELIS BOUBOULIS  
University of Athens, Greece

SERGIO CRUCES  
University of Seville, Spain

CARLOTTA DOMENICONI  
George Mason University, USA

SHIRO IKEDA  
Institute of Statistical Mathematics, Japan

XUELONG LI  
University of London, U.K.

PATRICIA MELIN  
Tijuana Institute of Technology, Mexico

V. SREE HARI RAO  
Jawaharlal Nehru Technological University, India

BJÖRN W. SCHULLER  
Technische Universität München, Germany

YI SHEN  
Huazhong University of Science and Technology, China

HUAJIN TANG  
Institute for Infocomm Research, Singapore

CONG WANG  
South China University of Technology, China

JIAN YANG  
Nanjing University of Science and Technology, China

DONGBIN ZHAO  
Chinese Academy of Sciences, China

A more detailed introduction of these associate editors is listed at the end of this editorial.

DERONG LIU, *Editor-in-Chief*  
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and Control for Complex Systems  
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**Derong Liu** (S'91–M'94–SM'96–F'05) received the B.S. degree in mechanical engineering from the East China Institute of Technology (now Nanjing University of Science and Technology), Nanjing, China, the M.S. degree in automatic control theory and applications from the Institute of Automation, Chinese Academy of Sciences, Beijing, China, and the Ph.D. degree in electrical engineering from the University of Notre Dame, Notre Dame, IN, in 1982, 1987, and 1994, respectively.

He was a Product Design Engineer with China North Industries Corporation, Jilin, China, from 1982 to 1984. He was an Instructor with the Graduate School of Chinese Academy of Sciences, Beijing, from 1987 to 1990. He was a Staff Fellow with General Motors Research and Development Center, Warren, MI, from 1993 to 1995. He was an Assistant Professor with the Department of Electrical and Computer Engineering, Stevens Institute of Technology, Hoboken, NJ, from 1995 to 1999. He joined the University of Illinois, Chicago, in 1999, and became a Full Professor of electrical and computer engineering and of computer science in

2006. He was selected for the 100 Talents Program by the Chinese Academy of Sciences in 2008. He has published ten books including five research monographs and five edited volumes.

Dr. Liu is an Associate Editor of *Automatica* from 2006 to 2009, *Neurocomputing*, the *International Journal of Neural Systems*, *Science in China (Series F: Information Sciences)*, and *Acta Automatica Sinica*. He was the General Chair for the International Symposium on Neural Networks, Nanjing, in 2007, the IEEE International Conference on Networking, Sensing and Control, Sanya, China, in 2008, and the IEEE Conference on Service Operations, Logistics, and Informatics, Chicago, in 2009. He is an Elected Member of the Board of Governors of the International Neural Network Society and a Standing Director of the Chinese Association of Automation. He is a fellow of the Chinese Association of Automation. He received the Best Paper Award from *Acta Automatica Sinica* in 2011. He was the Conference Editorial Board Member of the IEEE Control Systems Society from 1995 to 2000. He was an Associate Editor of the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS-I: FUNDAMENTAL THEORY AND APPLICATIONS from 1997 to 1999, the IEEE TRANSACTIONS ON SIGNAL PROCESSING from 2001 to 2003, the IEEE TRANSACTIONS ON NEURAL NETWORKS from 2004 to 2009, the IEEE Computational Intelligence Magazine from 2006 to 2009, and the IEEE Circuits and Systems Magazine from 2008 to 2009. He was the Letters Editor of the IEEE TRANSACTIONS ON NEURAL NETWORKS from 2006 to 2008 and the Editor-in-Chief of the IEEE TRANSACTIONS ON NEURAL NETWORKS from 2010 to 2011. He was the Founding Editor of the IEEE Computational Intelligence Society's

Electronic Letter from 2004 to 2009. Currently, he is the Editor-in-Chief of the IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS and an Associate Editor of the IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY. He is the General Chair of the IEEE World Congress on Computational Intelligence, Beijing, in 2014. He was an elected AdCom Member of the IEEE Computational Intelligence Society from 2006 to 2008. He received the Michael J. Birck Fellowship from the University of Notre Dame in 1990, the Harvey N. Davis Distinguished Teaching Award from the Stevens Institute of Technology in 1997, the Faculty Early Career Development Award from the National Science Foundation in 1999, the University Scholar Award from the University of Illinois in 2006, and the Overseas Outstanding Young Scholar Award from the National Natural Science Foundation of China in 2008. He is a Distinguished Lecturer of the IEEE Computational Intelligence Society from 2012 to 2014. He is a member of Eta Kappa Nu. He is currently an Associate Director with the State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences.

#### INTRODUCTION OF NEW TNNLS ASSOCIATE EDITORS



**Bart Baesens** (M'12) received the B.S., M.S., and Ph.D. degrees in business engineering and applied economics in 1995, 1998, and 2003, respectively.

He is currently an Associate Professor with the Catholic University of Leuven, Leuven, Belgium, and a Guest Lecturer with the University of Southampton, Southampton, U.K. He has published one book and over 50 international journal papers. His current research interests include white-box non-linear modeling, neural networks/support vector machine (SVM) rule extraction, and economical applications of neural networks and SVMs.



**Pantelis Bouboulis** (M'10) received the B.S. degree in mathematics and the M.Sc. and Ph.D. degrees in informatics and telecommunications from the National and Kapodistrian University of Athens, Athens, Greece, in 1998, 2002, and 2006, respectively.

He was an Assistant Professor with the Department of Informatics and Telecommunications, University of Athens, from 2007 to 2008. He is currently a Mathematics Professor for the second degree Greek Educational System and as a Research Assistant with the Department of Informatics and Telecommunications, University of Athens. His current research interests include the areas of machine learning, kernel-based techniques, fractals, wavelets, and image processing.



**Sergio Cruces** (S'93–M'99–SM'06) received the Graduate and Ph.D. degrees (with highest distinction) in telecommunications engineering from the University of Vigo, Vigo, Spain, in 1994 and 1999, respectively.

He has been a usual Visiting Researcher with the Laboratory for Advanced Brain Signal Processing, RIKEN Brain Science Institute, Wako City, Japan, since 1999. He is currently an Associate Professor with the Department of Signal Processing and Communications, University of Seville, Seville, Spain. He has published over 50 papers in various journals and conference proceedings. His current research interests include statistical signal processing and information theoretic aspects in learning methods with emphasis on independent component analysis, signal separation or extraction and their application to communication, and neurosciences.

Dr. Cruces has served as an Associate Editor for the *Journal of Computational Intelligence and Neuroscience* and a Program Committee Member for several international conferences.



**Carlotta Domeniconi** received the Laurea degree in computer science from the University of Milan, Milan, Italy, the M.S. degree in information and communication technologies from the International Institute for Advanced Scientific Studies, Salerno, Italy, and the Ph.D. degree in computer science from the University of California, Riverside, in 1992, 1997, and 2002, respectively.

She has been an Associate Professor with the Department of Computer Science, George Mason University, Fairfax, VA, since August 2008. She was an Assistant Professor with the same department from August 2002 to August 2008. She has published extensively in premier journals and conferences in machine learning and data mining. Her current research interests include clustering, subspace clustering, clustering ensembles, classification, and feature relevance estimation with applications in text mining and bioinformatics.

Dr. Domeniconi was the recipient of an ORAU Ralph E. Powe Junior Faculty Enhancement Award and the George Mason University Emerging Researcher, Scholar and Creator Award in 2008. Her research has been supported in part by the National Science Foundation CAREER Award.

**Shiro Ikeda** (M'00) received the B.Eng., M.Eng., and Dr.Eng. degrees in information physics from the University of Tokyo, Tokyo, Japan, in 1991, 1993, and 1996, respectively.

He was with RIKEN Brain Science Institute, Saitama, Japan, from 1996 to 2001, former half as a Special Post-Doctoral Researcher of RIKEN, and the latter half as a Researcher of Japan Science and Technology Agency, Tokyo. He was an Associate Professor with the Kyushu Institute of Technology, Fukuoka, Japan, from 2001 to 2003, and since February 2003, he has been an Associate Professor with the Institute of Statistical Mathematics, Tokyo. His current research interests include the areas of statistical signal processing, learning theory, and information geometry.



**Xuelong Li** (M'02–SM'07–F'12) received the B.Eng. and Ph.D. degrees from the University of Science and Technology of China, Hefei, China.

He is the Founding Director with the Center for OPTical IMagery Analysis and Learning, XIOPM, Chinese Academy of Science, Beijing, China. He has over 60 papers in IEEE transactions and over 60 in Elsevier/Springer journals. His current research interests include image and video processing, pattern recognition, and multimedia.

Dr. Li is a fellow of the British Computer Society, the International Association for Pattern Recognition, the Institution of Engineering and Technology/Institution of Electrical Engineers, and the International Society for Optical Engineering.



**Patricia Melin** (M'98–SM'04) received the D.Sc. degree (Doctor Habilitatus D.Sc.) in computer science from the Polish Academy of Sciences, Warsaw, Poland.

She has been a Professor of computer science with Graduate Division, Tijuana Institute of Technology, Tijuana, Mexico, since 1998. She has been the Director of Graduate Studies in computer science and the Head of the Research Group on Computational Intelligence since 2000. She has published over 80 international journal papers, six authored books, and 12 edited books. Her current research interests include modular neural networks, pattern recognition, type-2 neuro-fuzzy, and neuro-genetic-fuzzy hybrid approaches.

Dr. Melin is currently the Chair of the Task Force on Hybrid Intelligent Systems of the Neural Networks Technical Committee of the IEEE Computational Intelligence Society and the Founding Chair of the Mexican Chapter of the IEEE Computational Intelligence Society.



**Vadrevu Sree Hari Rao** (M'04–SM'05) is working in the areas dynamical systems modeling and simulation, neural networks, mathematics of finance, data mining, and knowledge discovery. He has about 30 years experience in research and teaching. He has guided 11 students for their Ph.D. degrees. He has published over 80 papers.

He has professional memberships in various reputed organizations including the National Academy of Sciences, India, the American Mathematical Society, and the Institution of Electronics and Telecommunication Engineers, India. He is the Editor-in-Chief of the *International Journal of Dynamical Systems and Differential Equations*. He is an International Advisory Editor of Engineering Simulations, Associate Editor of a research monograph of Stability and Control. He is a member of editorial boards and reviewer for about 20 international journals.



**Björn Schuller** (M'05) received the Diploma and the Doctoral degrees in electrical engineering and information technology from the Munich University of Technology (TUM), Munich, Germany, in 1999 and 2006, respectively.

He was with CNRS-LIMSI Spoken Language Processing Group, Orsay, France, from 2009 to 2010. He was a Visiting Scientist with the Department of Computing, Imperial College London, London, U.K., in 2010. He was a Guest Lecturer with Università Politecnica delle Marche, Ancona, Italy, in 2011, and a Visiting Researcher of National ICT Australia Ltd., Sydney, Australia. He is a Tenured Senior Lecturer in pattern recognition and speech processing at TUM's Institute for Human-Machine Communication. He has co-authored two books and more than 30 international journal articles and 200 further peer-reviewed contributions to books. His current H-index equals 25 proceedings.

Dr. Schuller serves as an Associate Editor for the IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS, a member and secretary of the Steering Committee, and repeated Guest Editor of the IEEE TRANSACTIONS ON AFFECTIVE COMPUTING, and the Guest Editor for the IEEE *Intelligent Systems Magazine*, *Computer Speech and Language*, *Speech Communication*, *Image and Vision Computing*, *Cognitive Computation*, and the *EURASIP Journal on Advances in Signal Processing*.



**Yi Shen** (M'12) received the M.S. degree in applied mathematics and the Ph.D. degree in systems engineering from the Huazhong University of Science and Technology, Wuhan, China, in 1995 and 1998, respectively.

He was a Post-Doctoral Fellow with the Huazhong University of Science and Technology from July 1999 to June 2001. He is currently a Professor with the Department of Control Science and Engineering with the same university. He has published over 30 international journal papers. His current research interests include the areas of neural networks, nonlinear stochastic systems, and memristors.



**Huajin Tang** (M'02) received the B.Eng. degree from Zhejiang University, Hangzhou, China, the M.Eng. degree from Shanghai Jiao Tong University, Shanghai, China, and the Ph.D. degree in electrical and computer engineering from the National University of Singapore, Singapore, in 1998, 2001, and 2005, respectively.

He was a Research and Development Engineer with STMicroelectronics, Singapore, from 2004 to 2006. From 2006 to 2008, he was a Post-Doctoral Fellow with Queensland Brain Institute, University of Queensland, Castries, Australia. He is currently a Research Scientist with the Institute for Infocomm Research, Singapore. He has published one monograph and over 20 international journal papers. His current research interests include neural computation, machine learning, neuromorphic systems, computational and biological intelligence, and neuro-cognitive robotics.



**Cong Wang** (M'02) received the B.E. and M.E. degrees from the Beijing University of Aeronautic and Astronautics, Beijing, China, in 1989 and 1997, respectively, and the Ph.D. degree from the Department of Electrical and Computer Engineering, National University of Singapore, Singapore, in 2002.

He was a Post-Doctoral Researcher with the Department of Electronic Engineering, City University of Hong Kong, Kowloon, Hong Kong, from 2001 to 2004. He is currently a Professor with the School of Automation, South China University of Technology, Guangzhou, China. He has published over 60 international journal and conference papers and the book *Deterministic Learning Theory for Identification, Recognition and Control*. His current research interests include the area of intelligent and autonomous controls, deterministic learning, dynamic pattern recognition, oscillation fault diagnosis, and radial basis function neural networks.



**Jian Yang** (M'07) received the B.S. degree in mathematics from Xuzhou Normal University, Xuzhou, China, in 1995, the M.S. degree in applied mathematics from Changsha Railway University, Changsha, China, in 1998, and the Ph.D. degree in computer science from the Nanjing University of Science and Technology (NUST), Nanjing, China.

He was a Post-Doctoral Researcher with the University of Zaragoza, Zaragoza, China, in 2003. From 2004 to 2006, he was a Post-Doctoral Fellow with Biometrics Centre, Hong Kong Polytechnic University, Kowloon, Hong Kong. From 2006 to 2007, he was a Post-Doctoral Fellow with the Department of Computer Science, New Jersey Institute of Technology, Newark. He is currently a Professor with the School of Computer Science and Technology, NUST. He is the author of more than 50 scientific papers in pattern recognition and computer vision. His journal papers have been cited over 1200 times in the ISI Web of Science and over 2500 times in Google Scholar. His current research interests include pattern recognition, computer vision, and machine learning.

Dr. Yang was awarded the RyC Program Research Fellowship sponsored by the Spanish Ministry of Science and Technology in 2003.



**Dongbin Zhao** (M'06–SM'10) received the B.S., M.S., and Ph.D. degrees in material processing engineering from the Harbin Institute of Technology, Harbin, China, in 1994, 1996, and 2000, respectively.

He was a Post-Doctoral Fellow with Tsinghua University, Beijing, China, from May 2000 to January 2002. He is currently an Associate Professor with the State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China. He has published one book and over 30 international journal papers. His current research interests include the areas of computational intelligence, adaptive dynamic programming, robotics, intelligent transportation systems, and process simulation.