

(1987–1993), Assistant Professor (1993), Associate Professor (1994–1999) and Full Professor (1999–2017). Currently he is with Southern University of Science and Technology as Chair Professor.

He has been a chair of a number of international conferences such as General Chair of ICMLA 2011, IEEE CIFE 2019 and EMO 2021, and Program Chair of SoCPaR 2009, IEEE CEC 2010, IES 2014, ICACI 2018 and

IEEE SSCI 2022. In the IEEE CIS, he was the Chair of the Fuzzy Systems Technical Committee (2008–2009), the Vice-President for Technical Activities (2010–2013), an AdCom member (2014–2019), the Editor-in-Chief of IEEE Computational Intelligence Magazine (2014–2019), and Distinguished Lecturer (2015–2017, 2021–2023).

He is an IEEE Fellow. He received the JSPS Prize in 2007, IEEE CIS Fuzzy

Systems Pioneer Award in 2019, IEEE Trans. on Evolutionary Computation Outstanding Paper Award in 2020, and Best Paper Award from a number of international conferences such as GECCO 2004, 2017, 2018, 2020, FUZZ-IEEE 2009, 2011 and EMO 2019. His students also received Student Best Paper Award from a number of international conferences such as IEEE CEC 2020 and FUZZ-IEEE 2020.

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Gary G. Yen  
IEEE CIS 2020 Fellow Committee Chair

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## IEEE Fellows—Class of 2021

### De-Shuang Huang Tongji University, CHINA

*for contributions to neural networks for pattern recognition and bioinformatics.*



De-Shuang Huang is currently a Professor in Department of Computer Science and Director of Institute of Machine Learning and Systems Biology at Tongji University, China. He received his M.S. and Ph.D. in electronic engineering from National Defense University of Science and Technology and Xidian University, China, in 1989 and 1993, respectively. He was the Recipient of “Hundred Talents Program of Chinese Academy of Sciences” (2000). He was also visiting professors at the George Washington University, Washington DC, USA (2003), Queen’s University of Belfast,

UK (2006) and Inha University, Korea (2007, 2008 & 2009). He was also the visiting professor of the Liverpool John-Moore University, UK (2015–2018). De-Shuang Huang was elected as the Fellow of the International Association of Pattern Recognition (IAPR Fellow) in 2014, the Board Member of the International Neural Network Society (INNS) Governors (2013–2019), and associated editors of several mainstream international journals such as IEEE/ACM Transactions on Computational Biology & Bioinformatics, etc. He founded the International Conference on Intelligent Computing (ICIC) in 2005. ICIC has since been successfully held annually with him serving as General or Steering Committee Chair. He also served as the 2015 International Joint Conference on Neural Networks (IJCNN 2015) General Chair, July 12–17, 2015, Killarney, Ireland, the 2014 11th IEEE Computational Intelligence in Bioinformatics and Computational Biology Confer-

ence (IEEE-CIBCBC) Program Committee Chair, May 21–24, 2014, Honolulu, USA, and the 2014 IEEE World Congress on Computational Intelligence-International Joint Conference on Neural Networks, Technical Committee Co-Chair, July 6–11, 2014, Beijing, China.

He has published over 400 papers in international journals, international conferences proceedings, and edited 52 books or proceedings as well as 26 Special Issues as guest editor in different journals. Also, he published three monographs (in Chinese), one of which, entitled with “Systematic Theory of Neural Networks for Pattern Recognition,” won the Second-Class Prize of the 8th Excellent High Technology Books of China in 1997. He was invited speaker at over 90 international/national conferences and workshops, including 16 keynote speeches at some international conferences. His main research interest includes neural networks, pattern recognition and bioinformatics.

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## João Gama

**University of Porto, PORTUGAL**

*for contributions to mining data streams.*



João Gama is a Full Professor at the School of Economics, University of Porto, Portugal. He received his Ph.D. in Computer Science from the University of Porto in 2000. He is EurIA Fellow, IEEE Fellow, and member of the board of directors of the LIAAD, a group belonging to INESC TEC, a research lab of the University of Porto. He is an Associate Editor of Machine Learning journal, Knowledge and Information Systems, IEEE Transactions on Knowledge and Data Engineering, and Editor of several top-level Machine Learning and Data Mining journals. He has been ACM Distinguished Speaker. He served as Program Chair of ECMLPKDD 2005, DS09, ADMA09, EPIA 2017, DSAA 2017, served as Conference Chair of IDA 2011, ECMLPKDD 2015, DSAA'2021, and a series of Workshops on KDDs and Knowledge Discovery from Sensor Data with ACM SIGKDD.

His main research interests are in knowledge discovery from data streams and evolving data. His h-index at Google Scholar is 57. He published more than 300 reviewed papers in journals and major conferences. He has an extensive list of publications in data stream learning. In the area of data stream mining, his major scientific contribution is a generic schema to design learning algorithms for continuously processing time-evolving data, composed of a two-layer learning schema. The first layer, the predictive layer, learns a predictive model from the raw stream as in a regular learning problem. The second layer monitors the evolution of the first-layer learning process. The system can self-diagnose degradations of this process, using change detection mechanisms and self-repairs the decision models. In the proposed algorithm architecture, learning is modeled as a continuous process, that needs to be monitored for self-diagnosis. Monitor-

ing the learning process opens the possibility to reason and learn meta-models for the adaptive process.

## Jonathan Garibaldi

**University of Nottingham, UK**

*for contributions to computational intelligence techniques in data analysis and decision support.*



Jon is currently the Head of School and a Professor of Computer Science at the University of Nottingham, UK, where he leads the Intelligent Modelling and Analysis (IMA) Research Group. He received the B.Sc (Hons) degree in Physics from Bristol University, UK in 1984, and the M.Sc. degree in Intelligent Systems and the Ph.D. degree in Uncertainty Handling in Immediate Neonatal Assessment from the University of Plymouth, UK in 1990 and 1997, respectively. The IMA research group undertakes research into intelligent modelling, utilizing data analysis and transformation techniques to enable deeper and clearer understanding of complex problems. Jon's main research interests are in using non-standard fuzzy sets and systems, such as type-2 fuzzy sets and systems, to model human reasoning processes. In addition, he has interests in intelligent data analysis, particularly of complex and uncertain data, data mining, clustering and classification, and in the deployment of decision support systems in practical medical applications. He has made many theoretical and practical contributions in fuzzy sets and systems, and in a wide range of generic machine learning techniques in real-world applications. Jon has led or participated in many multi-disciplinary research projects, mainly in various topics on real-world medical data analysis, both nationally and internationally. Jon has published over 300 papers on fuzzy systems and intelligent data analysis, and is the current Editor-in-Chief of IEEE Transactions on Fuzzy Systems. He has served regularly in the organizing committees and program committees of a range of leading international confer-

ences and workshops, such as FUZZ-IEEE, WCCI, EURO and PPSN.

## Lise Getoor

**University of California, Santa Cruz, USA**

*for contributions to machine learning and reasoning under uncertainty.*



Lise Getoor is a Professor in the Computer Science Department at UC Santa Cruz, and founding Director of the UC Santa Cruz D3 Data Science Research Center, and the UCSC PI for the UW-led NSF Institute for Foundations of Data Science. Her research areas include machine learning and reasoning under uncertainty; in addition, she works in data management, visual analytics and computational social science. She has over 250 publications and extensive experience with machine learning and probabilistic modeling methods for graph and network data. She is a Fellow of Association for Computing Machinery (ACM) and the Association for Artificial Intelligence (AAAI). She has served as an elected board member of the International Machine Learning Society, on the board of the Computing Research Association (CRA), has served as Machine Learning Journal Action Editor, Associate Editor for the ACM Transactions of Knowledge Discovery from Data, JAIR Associate Editor, and on the AAAI Executive Council. She was co-chair for ICML, and has served on the PC of many conferences including the senior PC of AAAI, ICML, KDD, UAI, WSDM and the PC of SIGMOD, VLDB, and WWW. She is a recipient of an NSF Career Award and thirteen best paper and best student paper awards. She was selected to give the UC Santa Cruz Faculty Research Lecture 2018–19, one of the highest recognitions given to UC faculty. In 2019, she was selected as a Distinguished Alumna of the UC Santa Barbara Computer Science Department and she also received the UCSC Women in Science & Engineering (WISE) award, for her efforts mentoring

women in computer science. She has given numerous keynotes, distinguished lectures and invited talks at top conferences, universities and companies. She has recently given keynotes and talks on “Responsible Data Science” at SIGMOD 19, IEEE Big Data 19, ScaledML 19, and talks on Ethics and Data Science at NSF workshops on Teaching Data Science Ethics, and the Global Forum on AI for Humanity. She received her PhD from Stanford University in 2001, her MS from UC Berkeley, and her BS from UC Santa Barbara, and was a professor at the University of Maryland, College Park from 2001–2013.

**Xiaofeng Liao**  
**Chongqing University, CHINA**

*for contributions to neurodynamic systems and chaotic cryptography.*



Xiaofeng Liao is a professor at the College of Computer Science, Chongqing University, China. He was also a Changjiang Distinguished Professor of the Ministry of Education of China. He received his BS and MS degrees in computing mathematics from Sichuan University, Chengdu, China, in 1986 and 1992, respectively, and the PhD degree in circuits and systems from the University of Electronic Science and Technology of China in 1997. From May 1999 to July 2012, he was a professor at Chongqing University. From January 2013 to November 2018, he was a professor and the Dean of College of Electronic and Information Engineering, Southwest University. From November 1997 to April 1998, he was a research associate at the Chinese University of Hong Kong. From October 1999 to October 2000, he was a research associate at the City University of Hong Kong. From March 2001 to June 2001 and March 2002 to June 2002, he was a senior research associate at the City University of Hong Kong. From March 2006 to April 2007, he was a research fellow at the City University of Hong Kong. At present, he was a professor and the Dean of College of Com-

puter Science, and the deputy director of information science department, Chongqing University. He also is Director of Key Laboratory of Ministry of Education at Chongqing University. Professor Liao is associate editor for IEEE Transaction on Cybernetics and IEEE Transaction on Neural Network and Learning Systems, and Professor Liao holds 4 patents, and published 4 books and over 300 international journal and conference papers. He is Member at Large of ACM China and Vice-Chairman of IEEE Computational Intelligence Society Chapter of Chongqing, China.

**Jose A. Lozano**  
**University of the Basque Country UPV/EHU, SPAIN**

*for contributions to the estimation of distribution algorithms in evolutionary computation.*



Jose A. Lozano is currently scientific director of the Basque Center for Applied Mathematics (BCAM, Bilbao, Spain) and full professor with the School of Computer Science at the University of the Basque Country UPV/EHU (Donostia, Spain). Prof. Lozano received the BA degrees in Mathematics and Computer Science in 1990 and 1991 respectively and the PhD degree in 1998 all from the University of the Basque Country UPV/EHU. His research interests focus on artificial intelligence, and particularly heuristic optimization, machine learning and probabilistic graphical models, and its application to the solution of different real problems in biology, medicine and ecology, to name a few. He pioneered the use of machine learning methods in the field of evolutionary computation.

Jose A. Lozano has published more than 130 JCR papers which has received about 14100 citations (google scholar) for an h-index of 49 and has supervised 21 PhD thesis. Jose A. Lozano is a member of the editorial board of 8 journals, particularly the main journals of his research fields such as IEEE Trans. on Neural Networks and Learning Sys-

tems and IEEE Trans. on Evolutionary Computation. In addition he has contributed to the most important congresses of the area, being for instance the general chair of IEEE Congress on Evolutionary Computation 2017. Finally he was for several years, the chair of the task force on Evolutionary Algorithms based on Probabilistic Models.

**Bao-Liang Lu**  
**Shanghai Jiao Tong University, CHINA**

*for contributions to artificial neural networks and affective brain-computer interfaces.*



Bao-Liang Lu received the B.S. degree in instrument and control engineering from the Qingdao University of Science and Technology, Qingdao, China, in 1982, the M.S. degree in computer science and technology from Northwestern Polytechnical University, Xi'an, China, in 1989, and the Dr. Eng. degree in electrical engineering from Kyoto University, Kyoto, Japan, in 1994. He was with the Qingdao University of Science and Technology from 1982 to 1986. From April 1994 to March 1999, he was a Frontier Researcher at the Bio-Mimetic Control Research Center, the Institute of Physical and Chemical Research (RIKEN), Japan. From April 1999 to August 2002, he joined the RIKEN Brain Science Institute, Japan, as a research scientist. Since August 2002, he has been a full professor at the Department of Computer Science and Engineering, Shanghai Jiao Tong University, China.

Prof. Lu is currently Directors of the Center for Brain-Like Computing and Machine Intelligence and the Key Laboratory of Shanghai Education Commission for Intelligent Interaction and Cognitive Engineering, Executive Director of Qing Yuan Research Institute, Shanghai Jiao Tong University, and Co-director of the Center for Brain-Machine Interface and Neuromodulation, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine. His research interests include brain-like computing, neural networks, deep

learning, emotion artificial intelligence, and affective brain-computer interface. He received the IEEE Transactions on Autonomous Mental Development Outstanding Paper Award from the IEEE Computational Intelligence Society in 2018.

Prof. Lu was the past President of the Asia Pacific Neural Network Assembly and the general Chair of the 18th International Conference on Neural Information Processing. He served as a Steering Committee member of the IEEE Transactions on Affective Computing from 2018 to 2020. Prof. Lu is currently a Board Member of the Asia Pacific Neural Network Society, and an

Associate Editor of IEEE Transactions on Cognitive and Developmental Systems.

**Vincent S. Tseng**  
**National Chiao Tung University,**  
**TAIWAN**

*for contributions to utility pattern mining and biomedical applications.*



Vincent S. Tseng is currently a Chair Professor at Department of Computer Science, National Chiao Tung University (NCTU), Taiwan. He received his Ph.D. degree from National Chiao Tung University in 1997

and then joined Computer Science Division of EECS Department in University of California at Berkeley as a postdoctoral research fellow during 1998–1999. He was the founding director for Institute of Data Science and Engineering in NCTU during 2017–2020, chair for IEEE Computational Intelligence Society Tainan Chapter during 2013–2015 and the president of Taiwanese Association for Artificial Intelligence during 2011–2012. He was a Distinguished Professor and director for Institute of Medical Informatics in National Cheng Kung University, Taiwan.

His research interests include data mining, big data analytics, machine learning, and interdisciplinary applications,

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especially in biomedical domains. He has published more than 350 research papers, 1 monograph and more than 15 patents. By Google Scholar, his publications have been cited by more than 10,000 times with H-Index 53. He has been recognized for profound contributions to the area of novel patterns mining (especially on utility pattern mining) by not only creating numerous research lines but also innovating valuable applications, especially in biomedical fields covering biomarker discovery, disease detection and early prediction of health risks, with practical applications to various kinds of diseases. His pioneering works on utility pattern mining at both algorithmic and system levels also triggered emerging applications in wide areas covering life science, engineering, finance, education, manufacturing, etc.

Dr. Tseng has been on the editorial board of a number of journals including *IEEE Transactions on Knowledge and Data Engineering*, *IEEE Journal of Biomedical and Health Informatics*, *ACM Transactions*

*on Knowledge Discovery from Data*, etc. He has also served as the Steering Committee Chair for the community of Pacific-Asia Knowledge Discovery and Data Mining (PAKDD) since 2020. He is an ACM Distinguished Scientist (2019) and has been honored by numerous awards, including the Outstanding I.T. Elite Award (2018), FutureTech Breakthrough Award (2018), K. T. Li Breakthrough Award (2014) and Outstanding Research Award (2015 & 2019) by Ministry of Science and Technology Taiwan.

### **Ganesh Kumar Venayagamoorthy Clemson University, USA**

*for contributions to the application of artificial intelligence to power systems.*



Ganesh Kumar Venayagamoorthy is the Duke Energy Distinguished Professor of Power Engineering and Professor of Electrical and Computer







Engineering at Clemson University. Dr. Venayagamoorthy is the Founder and Director of the Real-Time Power and Intelligent Systems Laboratory. He holds an Honorary Professor position in the School of Engineering at the University of Kwazulu-Natal, South Africa. Dr. Venayagamoorthy received his Ph.D. and MScEng degrees in Electrical Engineering from the University of Natal, Durban, South Africa. He received his BEng (Honors) degree with a First Class from Abubakar Tafawa Balewa University, Bauchi, Nigeria. He holds a MBA degree in Entrepreneurship and Innovation from Clemson University, SC.

Dr. Venayagamoorthy's interests are in the research, development and innovation of smart grid technologies and operations, including artificial intelligence and intelligent systems. He has published over 500 refereed technical articles which have received ~20,000 citations with a *h*-index of 65. He has given over 500 invited keynotes, plenaries, presentations, tutorials and lectures in over 40 countries to date.

Dr. Venayagamoorthy is the founding chair of the IEEE CIS Task Force on Power Systems and Smart Grid. He is the founding (2011) and current Chair of the IEEE CIS Symposium on Computational Intelligence Applications in Smart Grid (CIASG) and the IEEE PES Working Group on Intelligent Control Systems. He is the Series Editor for the IEEE Press on Power and Energy Systems. Dr. Venayagamoorthy was the Technical Program co-Chair and Program Chair of the 2003 and 2009 International Joint Conference on Neural Networks (IJCNN), respectively. He is the General Chair of the IEEE Technical co-sponsored Clemson University Power System Conference (PSC) since 2013. Dr. Venayagamoorthy has served on the Board of Governors of the International Neural Network Society (INNS) for two consecutive terms, between 2009 and 2014.

Dr. Venayagamoorthy is a Senior Member of INNS and also a Fellow of the IET (UK) and the SAIEE (South Africa).

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