学术报告会

时间：2014年6月13日(周五)10:00-11:00

地点：电院群楼2-410会议室

Neuromorphic Methods and Systems for Machine Learning and Predictive Data Modelling on Streams of Spatio-Temporal or Temporal Data

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Abstract:

The talk presents a new approach to machine learning and predictive data modelling of spatio/spectro temporal or temporal data (SSTD) based on the brain-inspired spiking neural network (SNN) computational models. SSTD is usually characterised by complex dynamic interactions between its spatial/temporal components. Such data has been collected across many domain areas and the collection process is usually very expensive. Existing methods have not been efficient in dealing with such data as they can rarely address the complex relationships between the spatial and temporal aspects of the data as a dynamic process. SNNs use information processing principles similar to those in the brain. Information is represented in the form of temporal sequences of binary signals (spikes) that are transferred between spatially located neurons. SNNs have the potential for compact representation of space and time, parallel information processing, comprehensive learning and pattern recognition from SSTD. SNNs have been chosen as the main information processing paradigm for the development of novel neuromorphic systems of thousands to millions of spiking neurons. The talk presents current research on methods for SSTD analysis, encoding, learning, classification, prediction and knowledge discovery in a SNN architecture called NeuCube.

Biography:

Professor Nikola Kasabov, IEEE Fellow, FRSNZ(新西兰皇家科学院院士), is the Director of the Knowledge Engineering and Discovery Research Institute (KEDRI), Auckland. He holds a Chair of Knowledge Engineering at the School of Computing and Mathematical Sciences at Auckland University of Technology. He is a member of several technical committees of IEEE Computational Intelligence Society and a Distinguished Lecturer of the IEEE CIS. He has served as Associate Editor of Neural Networks, IEEE TrNN, IEEE TrFS, Information Science, J. Theoretical and Computational Nanosciences, Applied Soft Computing and other journals. His main research interests are in the areas of neural networks, intelligent information systems, soft computing, bioinformatics, neuroinformatics. He has published more than 450 publications that include 15 books, 130 journal papers, 60 book chapters, 28 patents and numerous conference papers. More information can be found on web site: http://www.kedri.info.