講演会のご案内

Extreme Learning Machines (ELM) – Filling the Gap between Machine Learning and Biological Learning

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日付: 2018年01月19日 10:00~12:00, 13:30~14:30, 14:45~15:45
場所: 図書館 L-821室

ABSTRACT: One of the most curious in the world is how brains produce intelligence. Brains have been considered one of the most complicated things in the universe. Machine learning and biological learning are often considered separate topics in the years. The objectives of this talk are three-folds: 1) It will analyze the differences and relationships between artificial intelligence and machine learning, and advocates that artificial intelligence and machine learning tend to become different, they have different focus and techniques; 2) There exists some convergence between machine learning and biological learning; 3) Although there exist many different types of techniques for machine learning and also many different types of learning mechanism in brain, Extreme Learning Machines (ELM) as a common learning mechanism may fill the gap between machine learning and biological learning, in fact, ELM theories have been validated by more and more direct biological evidences recently. ELM theories actually show that brains may be globally ordered but may be locally random. ELM theories further prove that such a learning system happens to have regression, classification, sparse coding, clustering, compression and feature learning capabilities, which are fundamental to cognition and reasoning. This talk also shows how ELM unifies SVM, PCA, NMF and a few other learning algorithms which indeed provide suboptimal solutions compared to ELM.

BIOGRAPHY OF GUANG-BIN HUANG

Guang-Bin Huang is a Full Professor in the School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore. He is a member of Elsevier's Research Data Management Advisory Board. He is one of three Expert Directors for Expert Committee of China Big Data Industry Ecological Alliance organized by China Ministry of Industry and Information Technology, and a member of International Robotic Expert Committee for China. He was a Nominee of 2016 Singapore President Science Award, was awarded by Thomson Reuters "Highly Cited Researcher" (in two fields: Engineering and Computer Science), and listed in Thomson Reuters's "The World's Most Influential Scientific Minds." He received the best paper award from IEEE Transactions on Neural Networks and Learning Systems (2013). His two works on Extreme Learning Machines (ELM) have been listed by Google Scholar in 2017 as Top 2 and Top 7, respectively in its "Classic Papers: Articles That Have Stood The Test of Time" - Top 10 in Artificial Intelligence.

He serves as an Associate Editor of Neurocomputing, Cognitive Computation, neural networks, and IEEE Transactions on Cybernetics.

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