DISTINGUISHED LECTURE SERIES

Recent Developments in Green Learning: New Modules and Examples

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Abstract

I have focused on devising a new machine learning paradigm, called green learning, as an alternative to deep learning in the last decade. The green learning system has no computational neurons, neural network architectures, or backpropagation-based training. It features smaller model sizes, lower training and testing complexity, transparent mathematics, and a low carbon footprint. In this talk, I will present recent developments in green learning technologies. They include: 1) the use of sparse coding for unsupervised representation learning, 2) the proposal of a new green U-shaped learning (GUSL) system for image-to-image mapping, 3) the generation of more discriminant features based on LNT (Least-Squares Normal Transform) and SVM (Supporting Vector Machine) tools, and 4) a modification to the XGBoost classifier for higher efficiency. Examples will be given to illustrate the advantages of these new tools.

Biography

Dr. C.-C. Jay Kuo received his Ph.D. from the Massachusetts Institute of Technology in 1987. He is now with the University of Southern California (USC) as Ming Hsieh Chair Professor, Distinguished Professor of Electrical and Computer Engineering and Computer Science, and Director of the Media Communications Laboratory. His research interests are in AI, machine learning, visual computing, and communication. He is a Fellow of AAAS, ACM, IEEE, NAI, and SPIE and an Academician of Academia Sinica. He is currently the Editor-in-Chief for the APSIPA Trans. on Signal and Information Processing (2022-2025). He has guided 181 students to their Ph.D. degrees and supervised 31 postdoctoral research fellows.

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