Distinguished ADSE Seminar Series

Department of Advanced Design and Systems Engineering
香港城市大學
City University of Hong Kong

On the SVM Models for Multi-class Classification

20 Mar 2023 (Mon)
10:30 am

Seminar Link: https://cityu.zoom.us/j/98630705966

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Abstract

Multi-class classification is an important and challenging research topic with many real-life applications. The underlying problem is much harder than the classical binary classification, especially when the given data set is imbalanced. Hidden nonlinear patterns in the data set can further complicate the task of multi-class classification. In this talk, we review several support vector machine (SVM) models using the one-verses-all (OVA) strategy for multi-classification, particularly, we introduce a promising kernel-free least-squares quartic twin support vector machine model with some theoretical analysis. Computational experiments using artificial data sets and public benchmarks are conducted to illustrate and compare the performance of each SVM model.

About the Speaker

Shu-Cherng Fang holds the Walter Clark Chair and University Alumni Distinguished Graduate Professorship at North Carolina State University. He is also Honorary University Chair Professor at Tsinghua University in Beijing, Fudan University in Shanghai, Northeastern University in Shenyang, Shanghai University in Shanghai, National Chiao Tung University in Hsinchu and National Tsing Hua University in Taiwan. Before joining NC State, Professor Fang was Distinguished Member of Technical Staff and Supervisor at AT&T Bell Labs, and Department Manager at the Corporate Headquarters of AT&T Technologies.

Professor Fang has published over two hundred fifty refereed journal articles. He authored the books of Linear Optimization and Extensions: Theory and Algorithms (Prentice Hall 1993, with S. C. Puthenpura), Entropy Optimization and Mathematical Programming (Kluwer Academic 1997, with J.R. Rajasekera and H.-S. Tsao), Linear Conic Programming: Theory and Applications (Science Press 2013, with Wenxun Xing), and Introduction to Linear Conic Optimization (Tsinghua Press 2020, with Wenxun Xing). He is currently serving on the editorial boards of twenty some scientific journals in the general area of Operations Research and Industrial Engineering. He is also the Founding Editor-in-Chief of Fuzzy Optimization and Decision Making.

Professor Fang has graduated over fifty PhD students at NC State. He has won many awards and has been listed in several major biographic references. Professor Fang's research interests include Linear and Nonlinear Programming, Machine Learning, Fuzzy Decision Making, Soft Computing, Logistics and Supply Chain Management.

Enquiry: 3442 8422 | All are welcome