

An Intelligent Financial Trading Support System

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Abstract

Big data analysis and cloud computing are becoming increasingly involved in the area of financial technology (FinTech). Derivatives such as futures and options are complex financial instruments. The risk in trading derivatives is huge. This study aims to develop a future trading support system for investors to control and hedge their risk. Real stock market information from FinTech is huge and complicated. High-dimensional big data tend to obscure the essential feature of data. Identifying intrinsic characteristics of high-dimensional data is important for various fields of research, not limited to financial trading. Reviewing previous studies, there are no suitable methods to deal with high-dimensional future data. Traditional methods from statistics and machine learning are usually shallow models (compared with deep learning models). They cannot fully represent deep, compositional, and hierarchical data features. This study tries to address the problem by constructing classifiers in hyperbolic space, in which one can effectively capture latent hierarchical relationships (or deep features). Recently, embedding data into hyperbolic space—a class of non-Euclidean spaces with constant negative curvature—has received increasing attention due to its effectiveness in capturing latent hierarchical structure (or deep features) of data. The performance of the new model is examined using datasets of Taiwan future markets, and compared with traditional techniques from statistics and machine learning. Empirical results demonstrated that the new model outperforms traditional methods significantly.

Keywords:

Big Data Analysis, Deep Feature, Deep Learning, Financial Trading, Financial Technology

Biography

Professor Shian-Chang Huang received his MS degree in electric engineering from National Tsing Hwa University, Taiwan, and his PhD degree in financial engineering from National Taiwan University, Taiwan. He joined National Changhua University of Education since 2005, and currently is a professor at the Department of Business Administration. His research interests are in big data analysis, data mining, machine learning, soft computing, business intelligence, and financial engineering. Huang has published over 70 peer-reviewed papers. About half of these papers are published in SCI/SSCI indexed journals. He is also the reviewer of over twenty SCI/SSCI journals, and technical program committee member of many international conferences.