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An Intraday Trading Decision Based on Gramian Angular Field Transformation and Ensemble Convolutional Neural Networks

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摘要

This study proposes an intra-day trading decision based on Gramian Angular Field (GAF) transformation and ensemble convolutional neural networks (CNN) techniques. The GAF can fuse multiple sequences of stock features in a fixed period into a two-dimensional GAF image. Feature extraction is carried out separately through different CNN models based on a sequence of GAF images to obtain the classification results of economic states. Finally, the classification results of different CNN models are combined to determine the trading direction at any time point. The high-frequency trading data of the Intel company from July 2007 to July 2017 are employed for our empirical investigation. The numerical results reveal that the proposed trading strategy has better investment performance than the buy-and-hold strategy considering transaction costs.

Keywords: CNN, Gramian angular field, intra-day trading, multivariate high-frequency time series

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