

國立高雄大學統計學研究所

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A Dynamic Stock Trading Strategy Based on Machining  
Learning and Statistical Hypothesis Test

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Abstract

This study proposes a dynamic stock trading strategy based on unsupervised learning. The dynamic stock trading strategy consists of three steps. The first step is using daily stock prices and the associated features such as daily moving average prices, volumes, volatilities, RSI, etc., collected from the TEJ database to learn the status at each time point by the SIMLR method, silhouette coefficient, and statistical hypothesis tests. Next, the optimal take-profit threshold (OTTP) and optimal stop-loss threshold (OTSL) for 20 consecutive trading days are determined by solving two optimal criteria separately for each status under a rolling window framework with the training data. The third step is to classify each test data into one of the statuses by an assembly method based on several machine learning techniques and use the associated OTTP and OTSL for 20 consecutive trading days. We apply the proposed method to several Taiwan stocks from Jan. 2012 to Dec. 2020 for empirical investigation. The numerical results reveal that the proposed method has a satisfactory investment performance compared to the buy-and-hold strategy and other existing strategies under considering transaction costs.

Keywords: machine learning, OTSL, OTTP, silhouette coefficient, SIMLR

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