Forecasting Stock Indexes Using Bayesian Additive Regression Tree

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Abstract : Forecasting the stock market is a very challenging task. Various economic indicators such as GDP, exchange rates, interest rates, and unemployment have a substantial impact on the stock market. Time series models are the traditional methods used to predict stock market changes. In this paper, a machine learning method, Bayesian Additive Regression Tree (BART) is used in predicting stock market indexes based on multiple economic indicators. BART can be used to model heterogeneous treatment effects, and thereby works well when models are misspecified. It also has the capability to handle non-linear main effects and multi-way interactions without much input from financial analysts. In this research, BART is proposed to provide a reliable prediction on day-to-day stock market activities. By comparing the analysis results from BART and with time series method, BART can perform well and has better prediction capability than the traditional methods.