Order Execution Strategies With Support Vector Machines

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Abstract

In this report, we propose an application of support vector regression (SVR) for executing orders on stock markets. We use SVR for predicting a function of volume participation. We propose the improvement of predicting participation function by using support vector machines (SVM) with incorporated additional nonlinear constraint to the problem. We show that quality of the prediction influences execution costs. Moreover, we show how we can incorporate knowledge about stock prices. We compared ε-insensitive support vector regression (ε-SVR) and δ support vector regression (δ-SVR) with simple predictors such as the average price of execution from previous days. The tests were performed on data for stocks from NASDAQ-100 index. For both methods we achieved smaller variance of execution costs. Moreover, we decreased costs of order execution by using prediction of stock prices.