

Abstract

The thesis aims to investigate whether image-based convolutional neural networks (CNN) can help predict volatility of financial markets. Unlike any other academic work, it converts price and volume indicators of the index E-Mini S&P 500 from 2010 to 2019 into pictures and strives to forecast one day ahead level of realised volatility. The results suggest that this method can produce reasonable outcomes, but lacks in accuracy compared to benchmark standard models used in the literature, probably due to their autoregressive feature. Apart from this finding, the best length of the input days in the CNN specification appears to be one month, followed by a week and quarter, which achieve similar results. These conclusions were also subject to a robustness check, which, however, did not generate any contradictory evidence.

Keywords

Volatility, Stock Market, CNN, Deep Learning, Image Classification