

Predicting Stock Value Changes

The global stock market is expansive and volatile. With thousands of stocks whose values change constantly due to (macro) economic events, it's almost impossible for investors to keep track. Furthermore, reliable and current data are not available to everyone. If traders were able to collect real-time stock information, they would be able to not only monitor these stocks of interest, but also predict change in value over time and react accordingly.



A team of data scientists build a workflow in KNIME Analytics Platform to estimate the percentage change in stock value for the following day. The workflow uses the Python Integration to collect stock information via the pandas-datareader library. This library enables remote access to financial sources such as Yahoo Finance, NASDAQ, and OECD. Currently, fifty default stocks are included, however data scientists can easily edit the workflow with their own, custom watch list

In the workflow, the dependent variables are extracted using several pre-processing nodes such as the Lag Variable and the Extract Date & Time Fields nodes. The Feature Selection node then selects the independent variables for the regression model, which predicts the stock value for the following day. The predictions, stored as .csv files and as bar charts, are sent to traders using the Send Email node.

The workflow is then deployed on KNIME Server and, using the built-in scheduling feature, is executed at the start of each working day. A report is generated (Fig. 1), which is delivered to the trader's inbox as soon as it's finished executing and is ready for them to read the minute they open their mail.

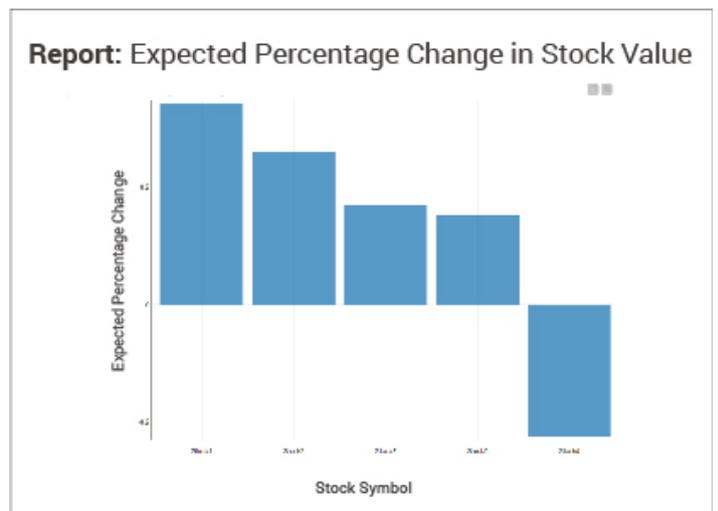


Fig. 1: Daily report sent via email using KNIME Server

Results:

With this workflow, traders have daily access to accurate stock market information, enabling them to:

- React in a timely manner to changes in the stock market
- Make better decisions in terms of what stocks they buy and sell
- Increase profits and reduce losses for their clients



Fig 2. High-level KNIME workflow

KNIME Analytics Platform enables data scientists to seamlessly integrate other technologies within one familiar environment. In this case, data is read in from Yahoo Finance using the Python Integration. KNIME Server makes it possible to schedule and execute the workflow daily, making important stock information available to traders and other decision makers.

Try it out for yourself!

This workflow is available on the KNIME Hub:
[50_Applications/58_Stock-Modeling](https://www.knime.com/hub/50_Applications/58_Stock-Modeling)

