

DRAFT ONLY Abstract for IJCNN 2015 temperature prediction contest

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The contest goal is to predict temperature extrema for September 1 to 21, 2014 from the time series supplied for 2007 to 2014.

The series contains extrema temperatures and rainfall. A few dates contain no rainfall statistics, and this analysis consequently excludes those to evaluate 2822 dates. The mean daily temperature is also derived for each date.

The Kanban cell neuron stock trading system (KCNSTS), US patent pending, is applied to the time series. The maximum daily temperature is the fiducial measure of profitability. The variable assignment is by logical cluster band for a 2-tuple as $\langle 11, 10, 01, 00 \rangle$. The logical formula is the linear expression of (maximum temperature AND minimum temperature) OR rainfall. The mean temperature per day is the basis for prediction. Both buy-side and sell-side algorithms are evaluated. When a trading signal is indicated, the mean temperature of that date is applied to the next calendar date as the temperature value predicted. The observed value is the mean temperature of the next day to be predicted, and the expected value is the prediction from the previous day on which the signal is indicated.

Each prediction analysis for the respective 2822 days in the series is based on the previous 68-days of data. Therefore the date prediction uses a moving window of 68-days backward in time. Other extents for a historical time window were not evaluated. This is because the arbitrary 68-days is generally deemed in the financial sector as a sufficient default range for making predictions.

KCNSTS does not predict the temperature for every day in September, 2014 (it predicts only two days on 2014/09/21 and 2014/09/06). KCNSTS rejected 2495 out of 2822 dates or about 88% of the time series to predict 327 dates. For 326 degrees of freedom, the mean squared error (MSE) is 4.06.

Tabulated statistical results by predicted date are available for inspection.

The processing on a two core laptop took about 110-minutes including I/O of about 110K files in 1 GB of disk space.

Modification of the forward looking rules engine to improve the statistical performance was not undertaken because the KCNSTS software used is identical to that for trading signal analysis.