**LSTM: Long Short-Term Memory networks**

LSTM are a type of recurrent neural network capable of learning order dependence in sequence prediction problems. Capable of learning long term dependencies in data.

RNN are different from traditional feedforward neural networks.

LSTMs are designed to avoid the long-term dependency problem.

LSTM has feedback connections inside the neural network to learn temporal patterns and overcomes the problem of vanishing or exploding gradients caused by RNNs.

Can look to use de-noise algorithm

Can look to apply wavelet transformation to pre-process input prices

Gunduz and Uhrig-Homburg, 2011 – Forecasting cds with Merton structural models

LSTM networks overcome the vanishing gradients problems and learn long-short term dependencies more easily than vanilla RNNs.

Combine neural network with macroeconomic and financial conditions to enhance the forecasting accuracy.

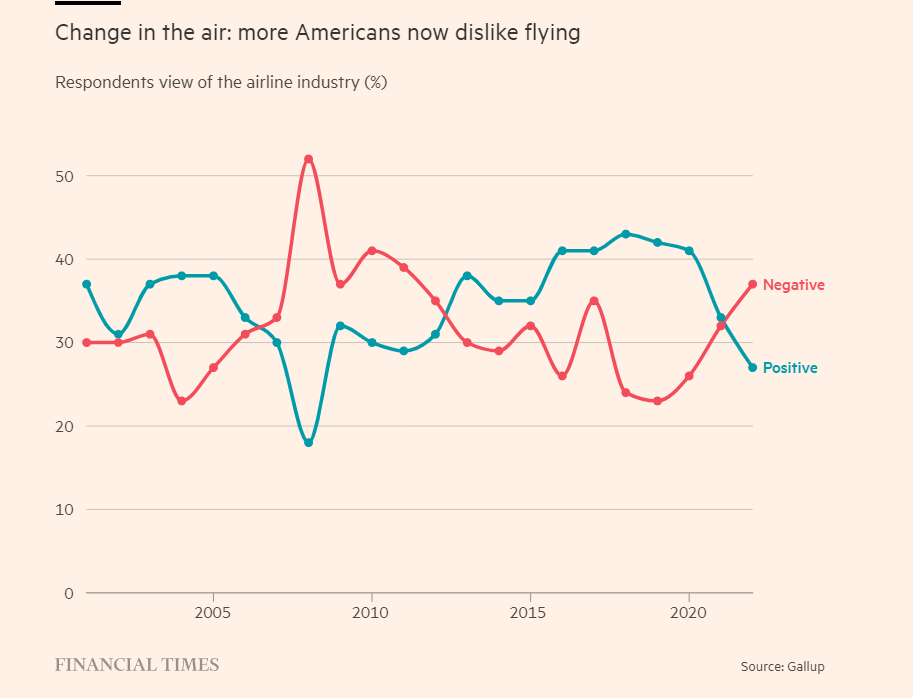
FRED can give us 2s10s Treasury Constant Maturity Rate which represents slope.

Probabilistic computing will soon be able to make decisions with less amounts of data.



Unlike stocks VIX is mean-reverting.

Gallup poll in August 22 found the 37 per cent of Americans held negative views of airline industry compared to 27 per cent who held a favourable impression.



Total US Call Option Volume

OPCVTOTC Index

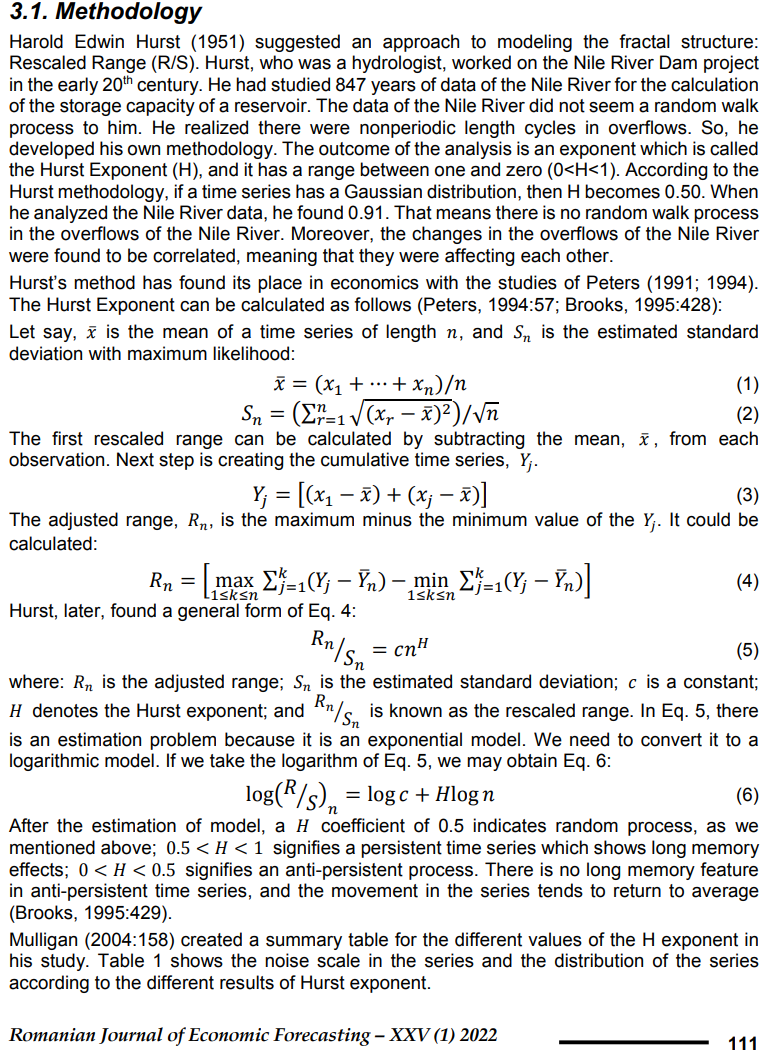
The authors used various factors to define the Black Swan events, among them the Jarque-Bera statistics.

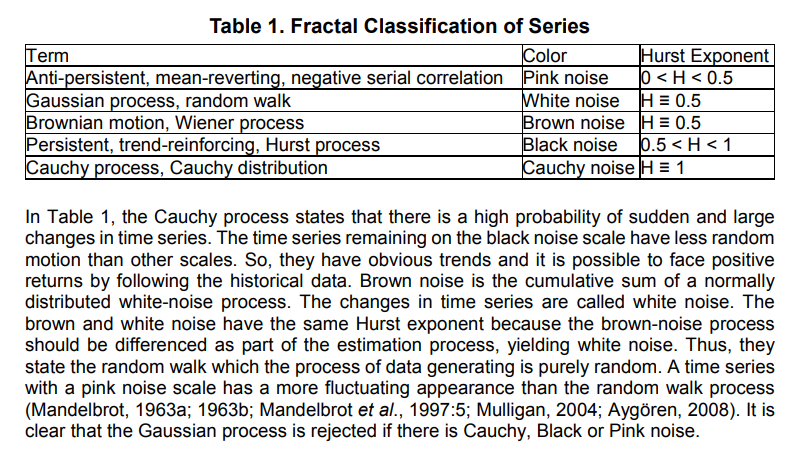
We used the Bayesian Optimization algorithm for choosing the best hyperparameters for our trading strategies.

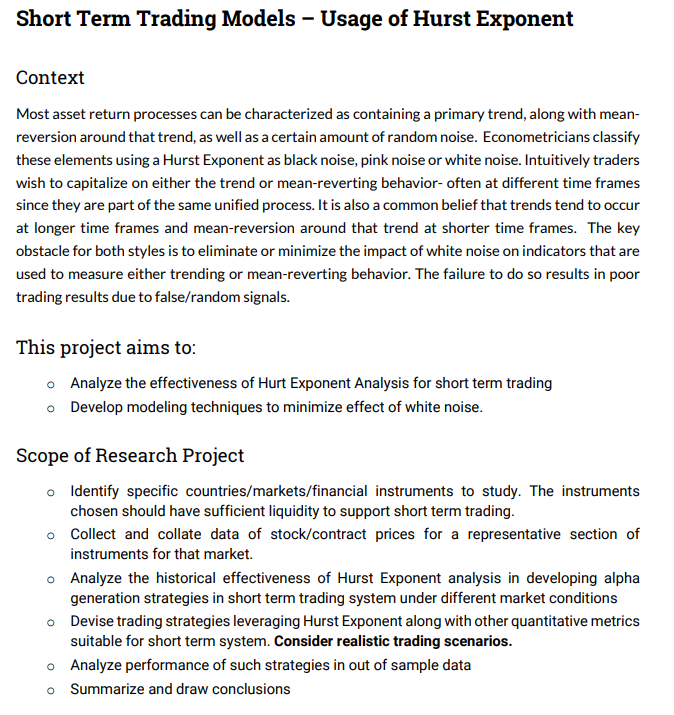
<https://research.macrosynergy.com/the-predictive-superiority-of-ensemble-methods-for-cds-spreads/>

**Hurst and CDS**

<https://ipe.ro/rjef/rjef1_2022/rjef1_2022p106-121.pdf>







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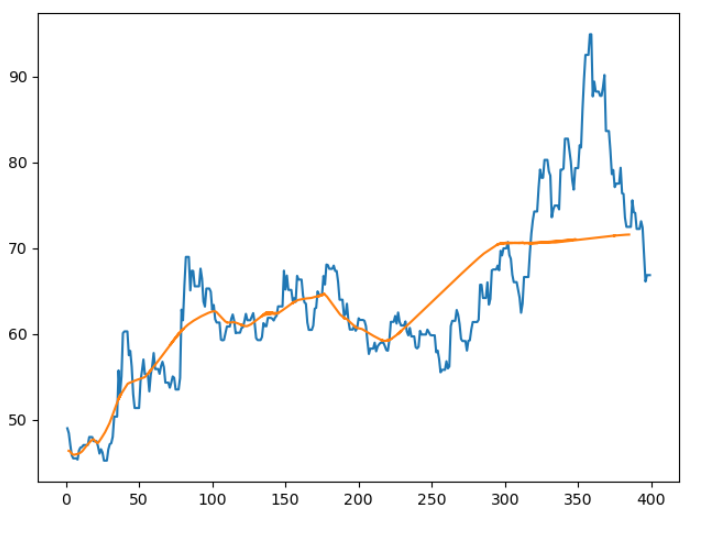
Lookback = 1

Good tutorial on LSTM

<https://lilianweng.github.io/posts/2017-07-08-stock-rnn-part-1/>

Check the references on this page

<https://link.springer.com/article/10.1186/s40537-021-00430-0>



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