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COMPARISON OF EXPLICIT AND NOT EXPLICIT MATHEMATICAL METHODS OF FINANCIAL FORECASTING

ALEXEY STANKUS

Methods selection

- Exponential Moving Average (EMA)
- Triple EMA (TEMA)
- Bollinger Bands
- TensorFlow

EMA, TEMA

EMA[k, n] = EMA[k-1, n]+(2/(n+1))·(P-EMA[k-1, n]),where

- EMA[k, n] — exponential moving average of period n at time k
- P — current price

TEMA (i)=3*EMA (i) – 3*EMAofEMA (i) + EMAofEMAofEMA (i),

Bollinger Bands

1. **The middle line ML** (the usual moving average) is calculated as follows:

ML = SUM (CLOSE, N) / N = SMA (CLOSE, N), where:

- SUM (..., N) - the sum for N periods;
- CLOSE - the closing price;
- N - the number of periods used for the calculation;
- SMA - simple moving average.

2. **The upper line TL** (the average line ML, shifted up by a certain number D of standard deviations StdDev) is calculated by the formula:

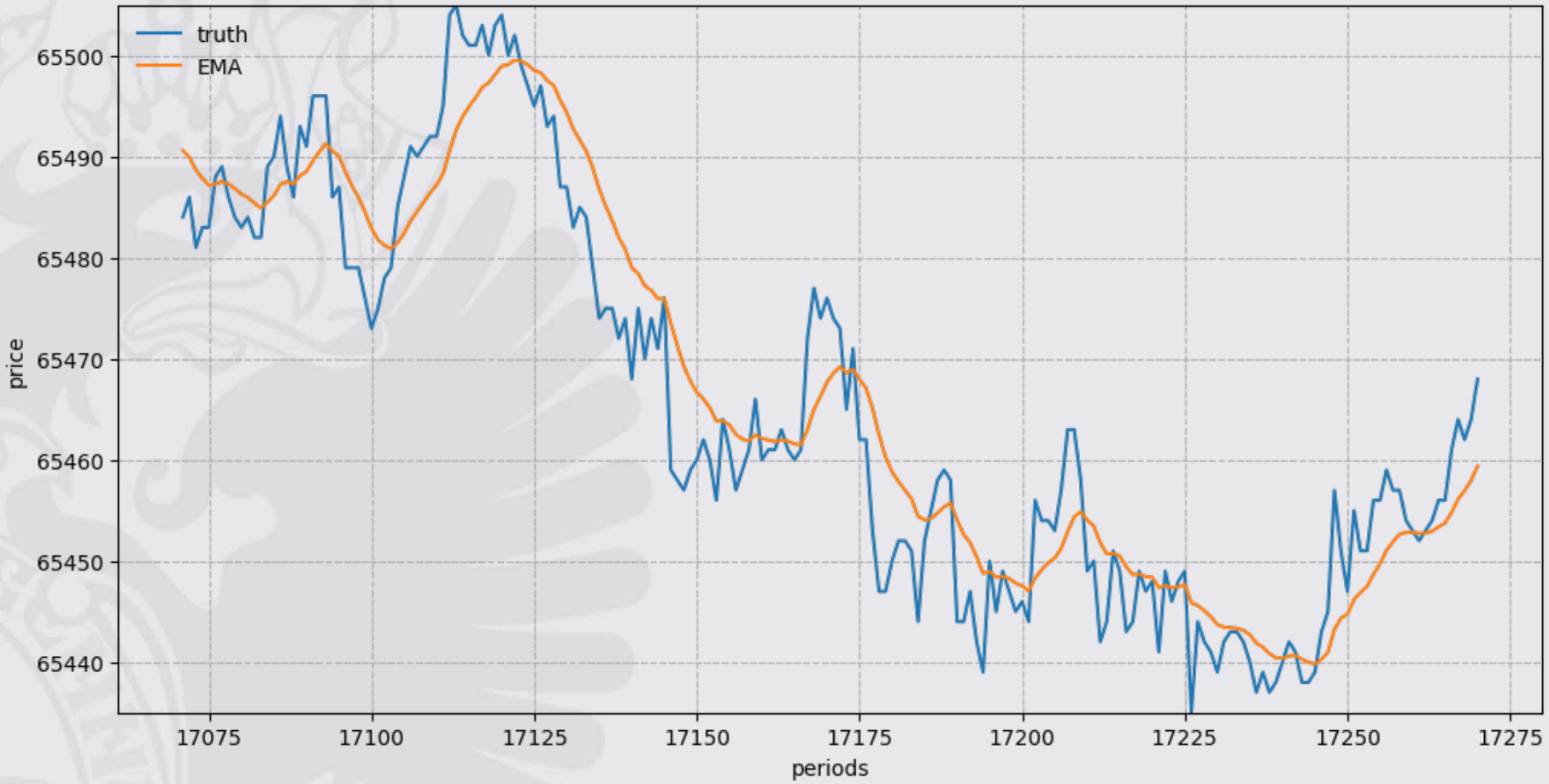
TL = ML + (D * StdDev)

3. **The bottom line BL** (the middle line ML, shifted down by the number of standard D deviations StdDev) is calculated by the formula:

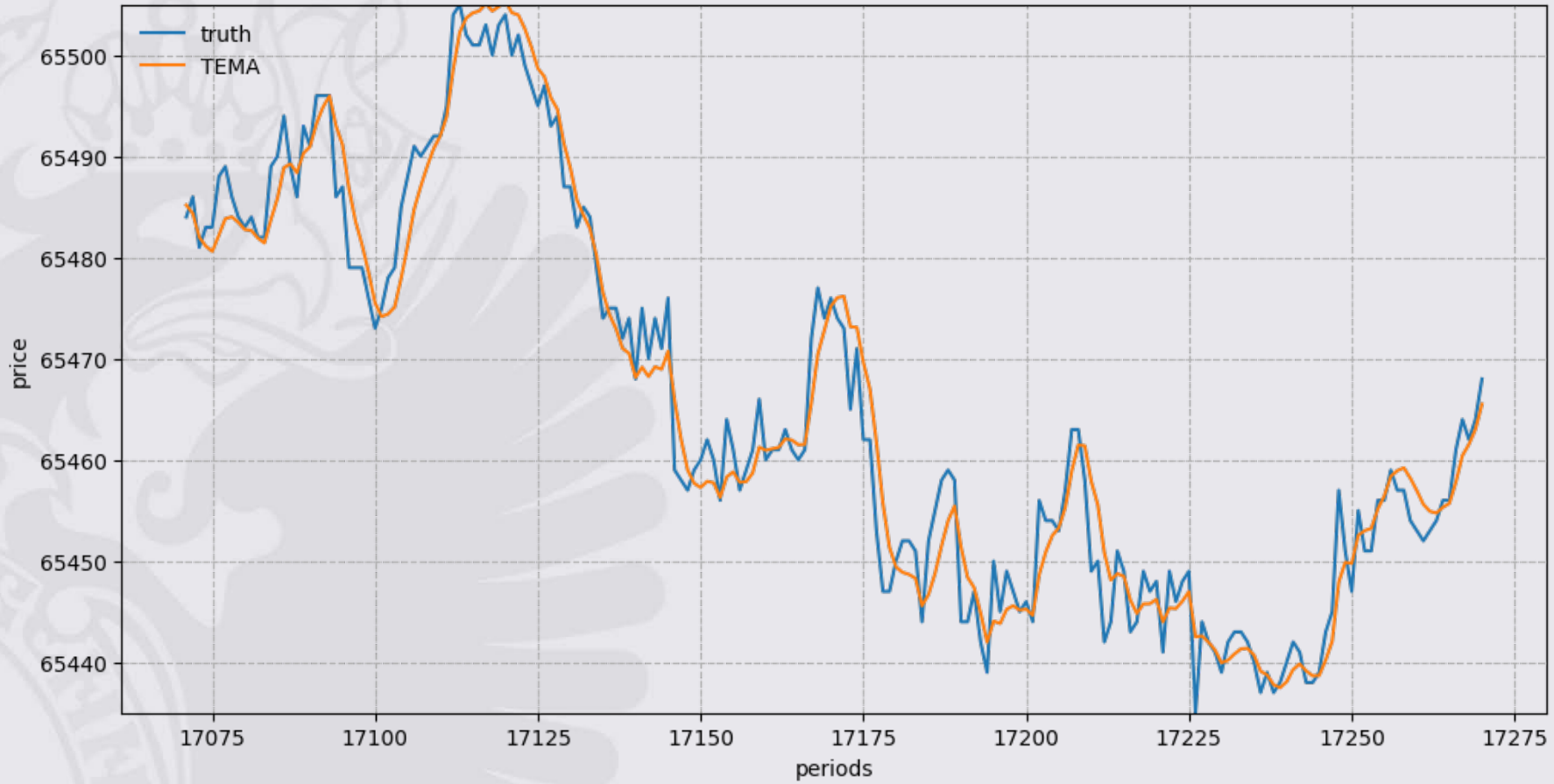
BL = ML - (D * StdDev).

- StdDev - standard deviation is calculated as:
- StdDev = SQRT (SUM ((CLOSE-SMA (CLOSE, N)) ^ 2, N) / N),
- where SQRT is the square root.

EMA


truth
EMA
65500
65490
65480
65470
65460
65450
65440
price
17075
17100
17125
17150
17175
17200
17225
17250
17275
periods

TEMA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TEMA & EMA

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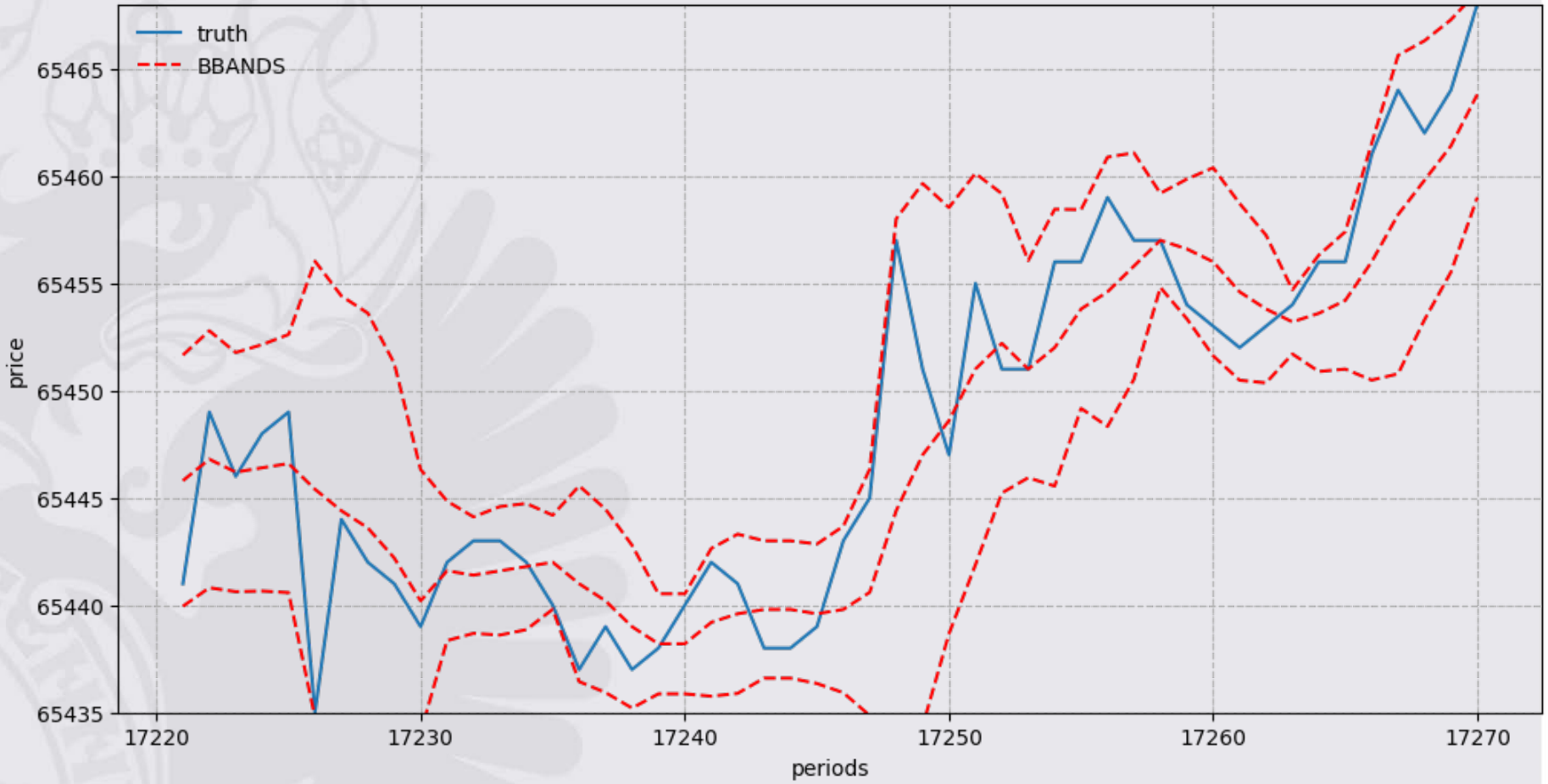
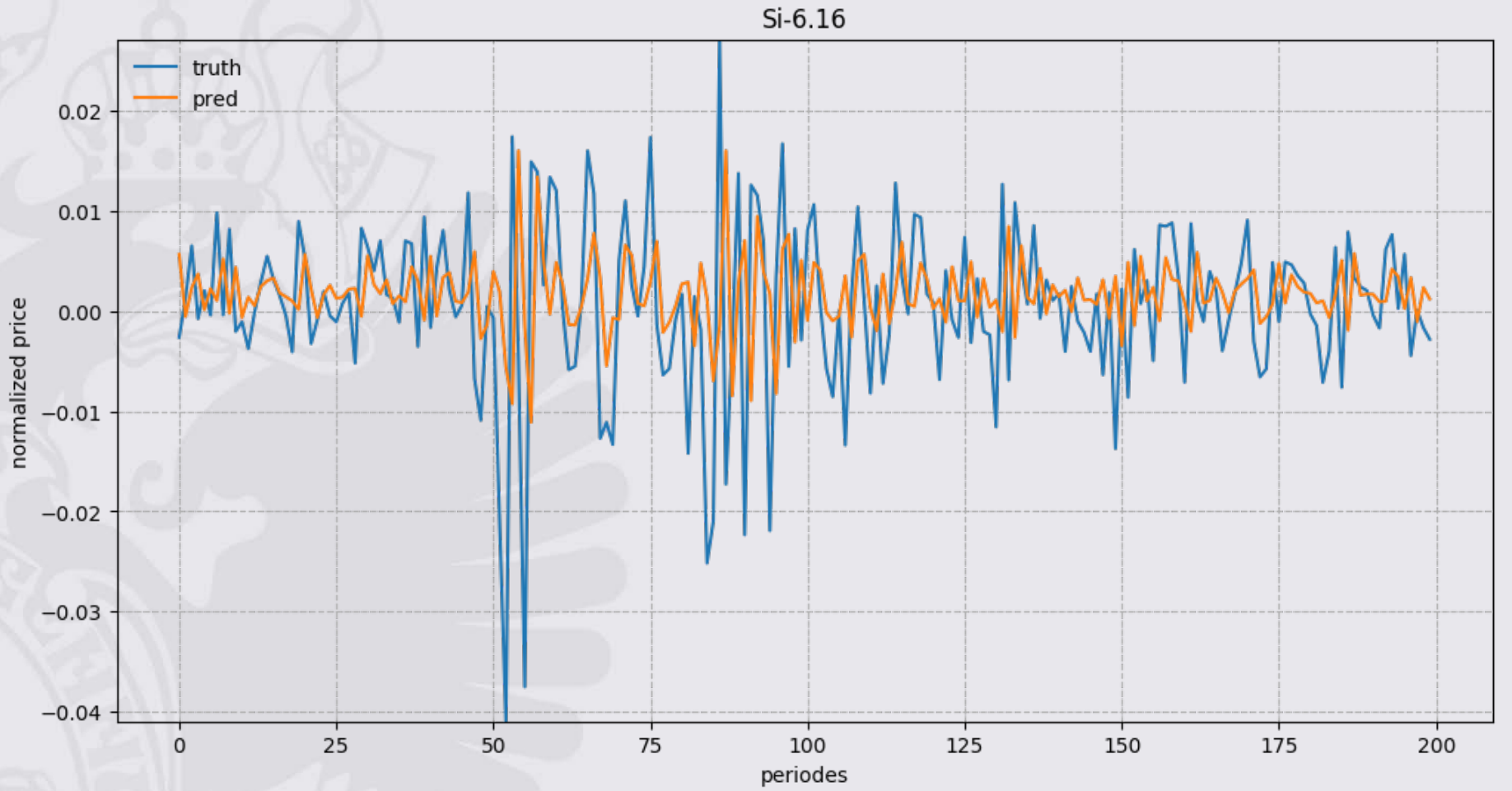
Bollinger Bands



TensorFlow RNN



Accuracy

Average accuracy (of a single instrument):

- RNN – 62+ %
- set of indicators – 70+ %

Any questions?

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