中国科学技术大学
University of Science and Technology of China

A Two-Stage Method for Commodity Price Trend Forecasting

SIGIR Workshop: FinIR

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- # Problem Description

The main task is to build prediction models and use data from 2003 to 2018 to predict the six metals' price movement direction in 2019 at three time-horizons.

- Task 1: 1-day
- Task 2: 20-day
- Task 3: 60-day

Data Description

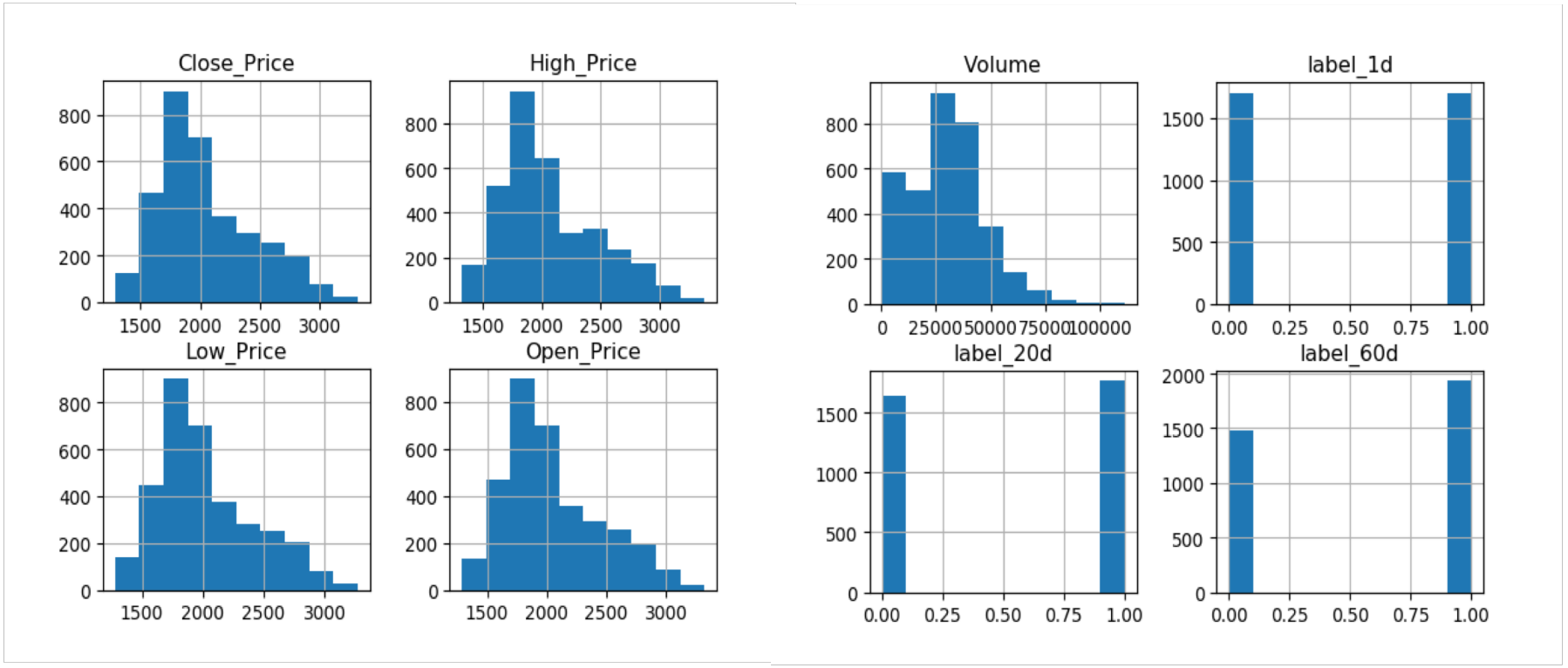
- Time series data
  - Daily transaction data in LME for six metals
  - Daily transaction data of main relevant commodities and financial indices
- Textual data
  - Analyst Reports published by institutional trader and News Reports, collected from both English and Chinese sources.

Data Preprocessing

- Integrate 17 variables corresponding to each metal
- Fill in missing values with previous data
- The features are as follows

Variable	Meaning	Example
Time	Date	2003/12/11
Open_Price	Opening price	1550.0
High_Price	Highest price	1550.0
Low_Price	Lowest price	1535.0
Close_Price	Closing price	1547.0
Volume	Trading volume	563.0
OI	Open interest	559
DXY	DXY index	88.88
NKY	NKY index	10075.14
SHSZ300	SHSZ300 index	1184.63
UKX	UKX index	4335.4
VIX	VIX index	17.87
SPX	SPX index	1059.05
SX5E	SX5E index	2660.73
Label_1d	Price trend label for 1 day	0/1
Label_20d	Price trend label for 20 day	0/1
Label_60d	Price trend label for 60 day	0/1

- # Feature Selection
  - Take Aluminum for example

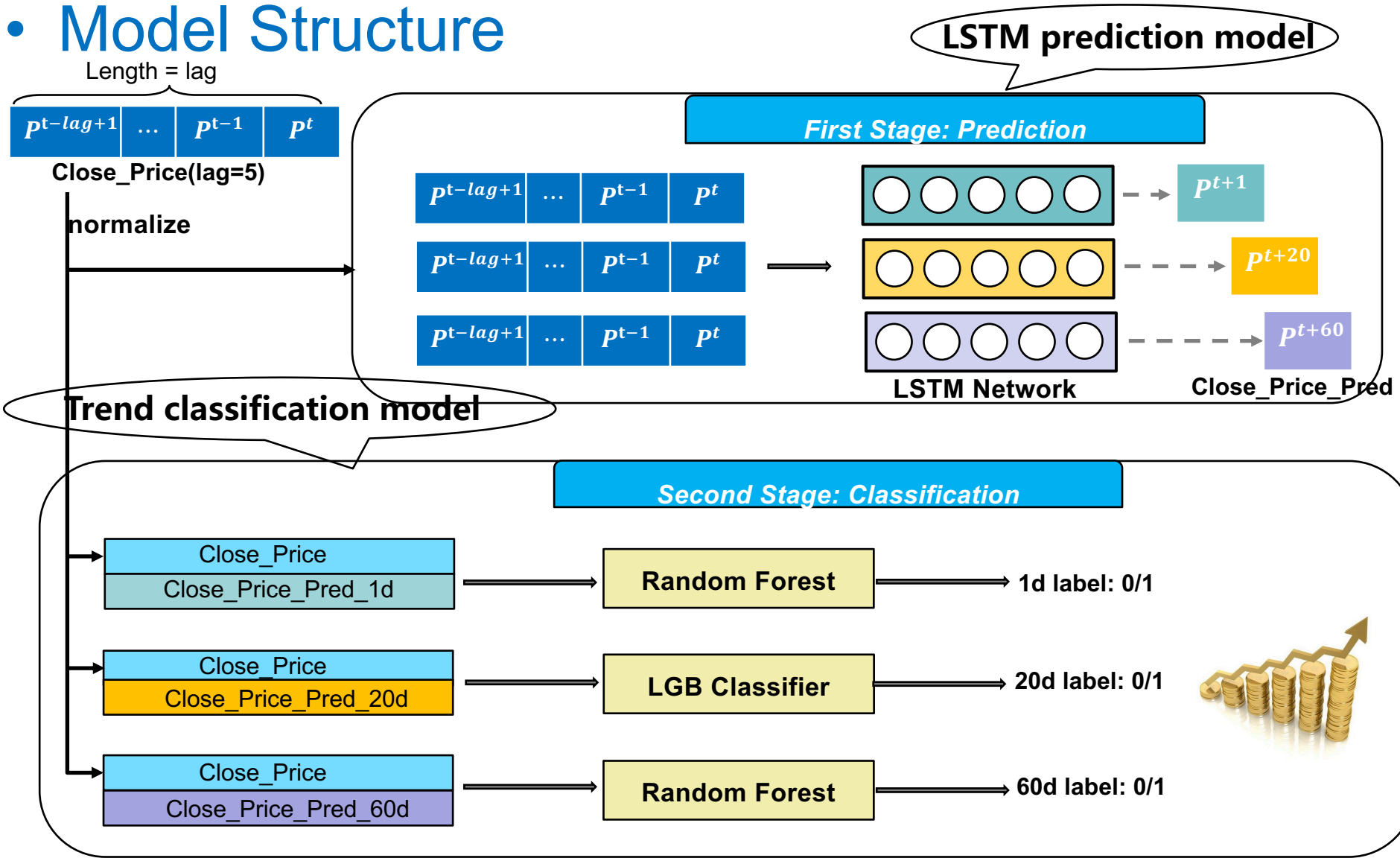


• Feature Selection

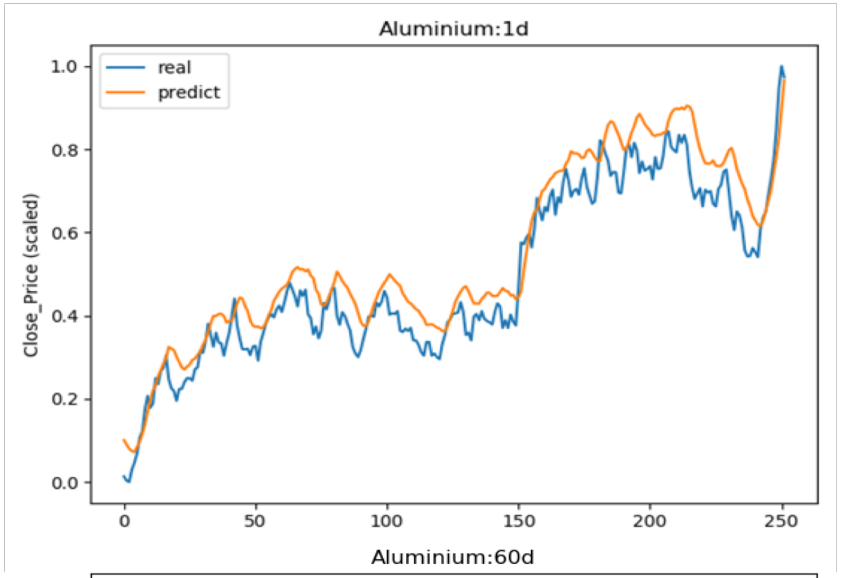
- Use different feature combinations to train traditional classification models
  - Naïve Bayes、KNN、Random Forest、SVM
- Input of classification model
  - Feature values of the current trading day and the expected trading day

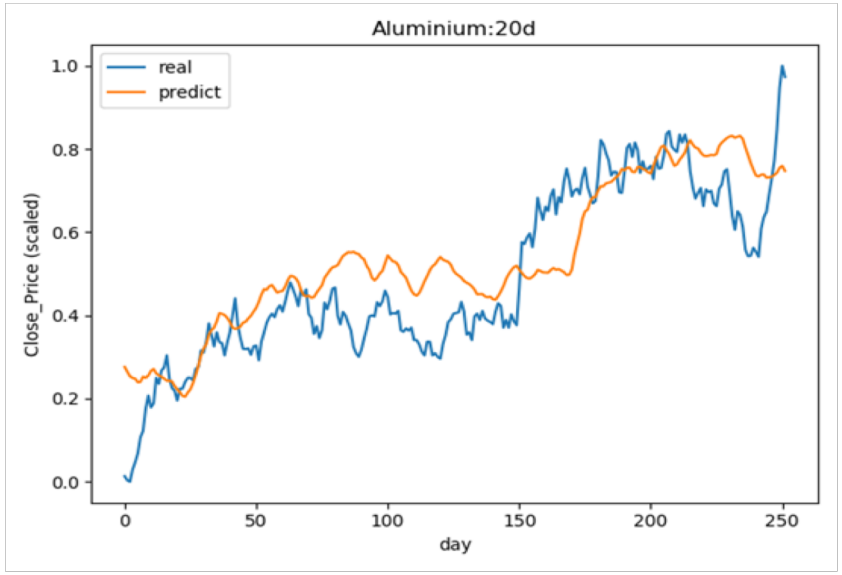
- Important features
  - Open_Price、High_Price、Low_Price、Close_Price

• Model Structure



- # Prediction Curve





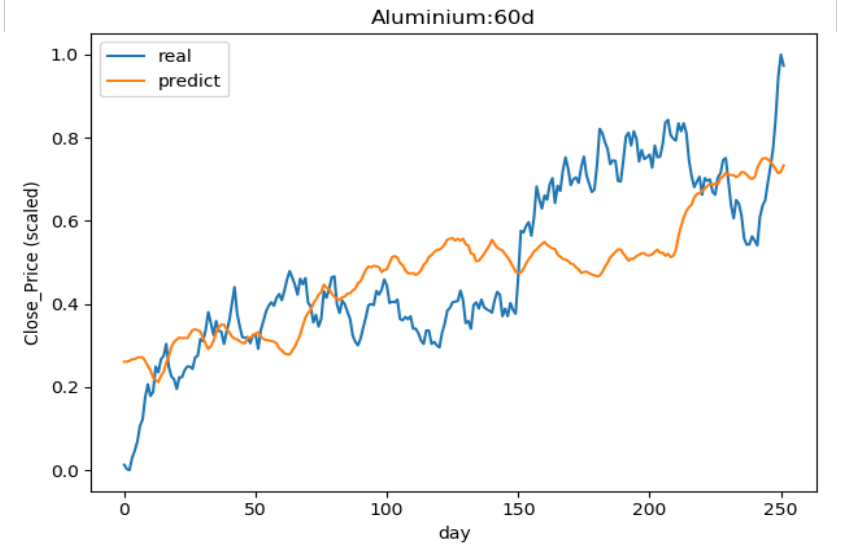


Figure: Prediction curves for Aluminum on validation set

- Results

Total	Task1(1d)	Task2(20d)	Task3(60d)
55.18225736	50.00000000	48.74835310	66.79841897

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Thank you for listening!