

Cryptocurrency Trading

2018-05-28

Micro Mechanism of Trading

- Limit Order Book (LOB)
- Fairness: price precedence, time precedence
- Oder Type: limit order, market order



价格(USDT)	数量(BTC)	金额(USDT)
7347.00	0.200660	1,474.24902000
7346.90	3.004054	22,070.48433260
7346.66	0.272285	2,000.38531810
7346.00	0.013612	99.99375200
7345.89	1.909710	14,028.51959190
7345.87	2.671808	19,626.75423296
7345.26	0.013486	99.05817636
7345.00	2.107144	15,476.97268000
7344.97	0.942561	6,923.08226817
7344.96	0.014500	106.50192000
7344.93	0.161775	1,188.22605075
7,344.93 ↑		¥ 46,875.34
7340.08	0.097692	717.06709536
7340.07	0.094565	694.11371955
7338.54	0.081729	599.77153566
7338.34	0.057268	420.25205512
7337.66	0.080000	587.01280000
7337.63	0.040000	293.50520000
7337.19	0.500000	3,668.59500000
7337.03	0.013629	99.99638187
7337.01	0.020816	152.72720016
7336.93	0.640787	4,701.40936391
7336.70	0.000000	0.00000000

Different Types of Trading Strategies

- Prediction
 - Trend Following
 - Mean Reversion
 - Machine Learning (some technical indicators may serve as inputs)
- Market Making
- Arbitrage
 - Among different trading pairs
 - Among different exchanges

Trend Following Strategy

- Duel Moving Average Crossover (DMAC)



Trend Following Strategy

- Channel Strategy



Mean Reversion Strategy

- Bollinger Bands



Technical Indicator: RSI

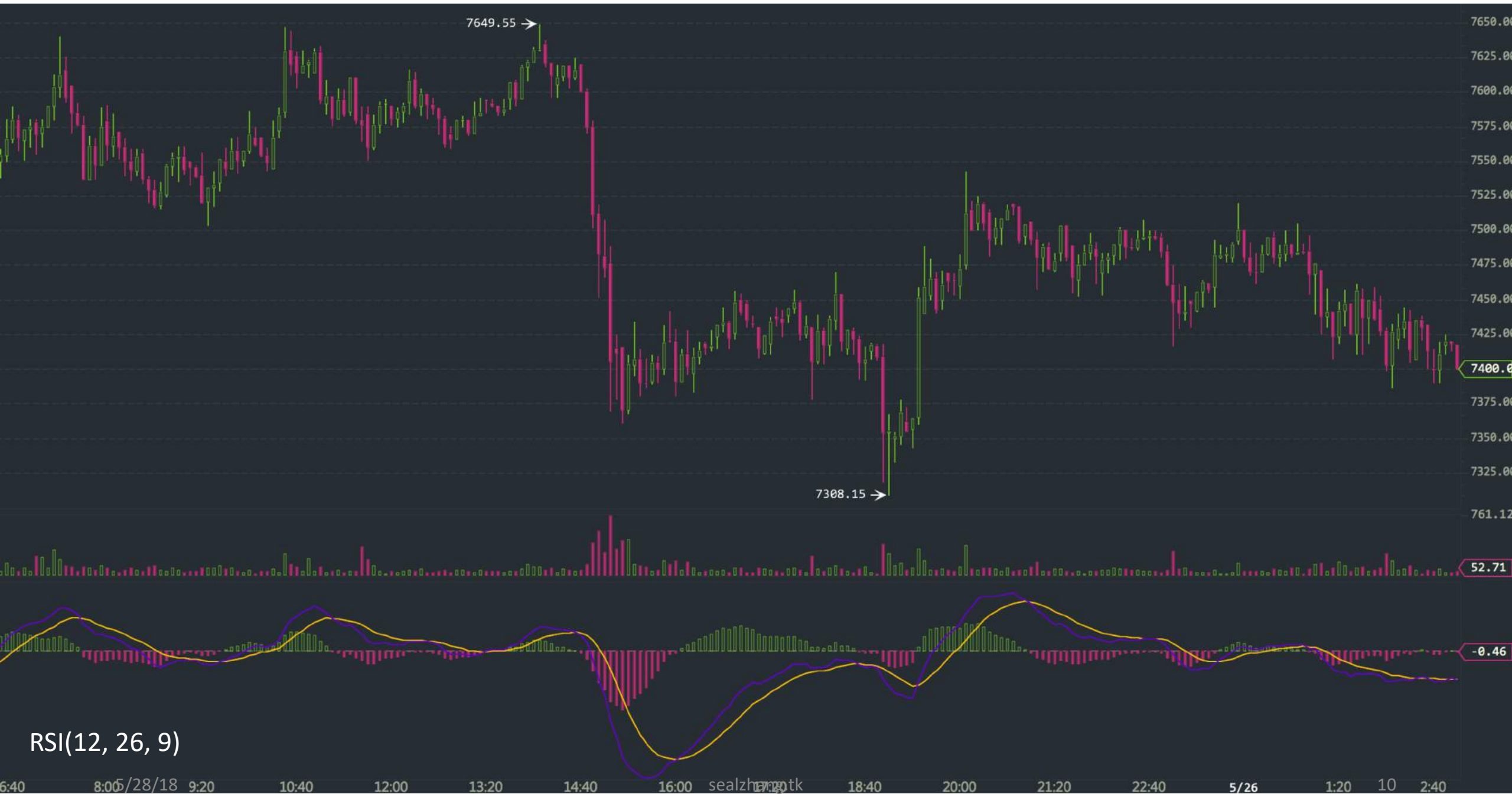
- $RSI = 100 - 100 / (1 + RS)$
- $RS = \frac{\text{Average gain of up periods during the specified time frame}}{\text{Average loss of down periods during the specified time frame}}$

Technical Indicator: RSI



Technical Indicator: MACD

- $DIF = EMA(\text{close}, 12) - EMA(\text{close}, 20)$
- $DEM = EMA(DIF, 9)$
- $OSC = DIF - DEM$



7649.55 →

7308.15 →

7650.00
7625.00
7600.00
7575.00
7550.00
7525.00
7500.00
7475.00
7450.00
7425.00
7400.00
7375.00
7350.00
7325.00
761.12

52.71

-0.46

RSI(12, 26, 9)

6:40 8:00 9:20 10:40 12:00 13:20 14:40 16:00 17:20 18:40 20:00 21:20 22:40 5/26 1:20 10 2:40

Technical Indicator: CCI

- $CCI = (\text{price} - MA) / (0.015 \times STD)$



Machine Learning to Predict

- Scheme: observation $\xrightarrow{ML\ models}$ prediction $\xrightarrow{strategy}$ trading signal
- Difficulty: noisy and unstable
- Advantage: option to say *I don't know*
- Inputs: raw price and volume / technical indicators
- Methods:
 - SVM
 - Decision Trees
 - Deep Learning

Market Making

- Make use of ask-bid spread



Arbitrage

- Identical assets, different prices (market inefficiency)
- Buy and Sell at the same time
- Between different trading pairs
- Between different exchanges

