

BITCOIN PRICE PREDICTION AND ANALYSIS BY SIMULATING CONSISTENT GROWTH NEAR ALL-TIME HIGH

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Abstract

The methodology presented in the document focuses on using historical Bitcoin data, specifically when the price is near its all-time high, to predict future prices. By calculating the average volatility during these periods and assuming a consistent, small positive growth based on this volatility, the approach aims to estimate future Bitcoin prices systematically. Using a threshold to define 'near all-time high' periods and the specific formulae for calculation offer a structured predictive model.

To predict future Bitcoin prices, we use the following steps:

Let:

P_t : Bitcoin price at time t

t : time in days

t_0 : last recorded date in the historical data

t_f : future date ($t_f = t_0 + 1, 2, \dots, 365 \times 7$ days)

P_{\max} : maximum historical Bitcoin price

Threshold : threshold for 'near all-time high' periods, $\text{Threshold} = 0.05 \times P_{\max}$

The estimation process can be described as follows:

1. Calculate the maximum historical Bitcoin price:

$$P_{\max} = \max(\text{BTC Data})$$

2. Filter data to include periods near the all-time high:

$$\text{NearATH Data} = \text{BTC Data}[P_t \geq (P_{\max} - \text{Threshold})]$$

3. Calculate the average volatility during these near all-time high periods:

$$\text{ATH Average Volatility} = \text{mean}(\text{Volatility}(\text{NearATH Data}))$$

4. Assume a small positive increment for consistent growth:

$$\text{Increment} = 0.1 \times \text{ATH Average Volatility}$$

5. Estimate future prices using the increment:

$$P_t = P_{t-1} + \text{Increment} \quad \text{for } t = t_0 + 1, \dots, t_f$$

Conclusion

The methodology presented in the document focuses on using historical Bitcoin data, specifically during periods when the price is near its all-time high, to predict future prices. By calculating the average volatility during these periods and assuming a consistent, small positive growth based on this volatility, the approach aims to provide a systematic way to estimate future Bitcoin prices. The use of a threshold to define 'near all-time high' periods and the specific formulae for calculation offer a structured predictive model.