

**DEVELOP PYTHON PROGRAM FOR POLYNOMIAL
REGRESSION MODEL FOR THE CRYPTOCURRENCY
AND VALIDATE THE SAME USING PYTORCH**

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Polynomial Regression in Crypto Price Prediction

Using polynomial regression in predicting cryptocurrency values involves applying a non-linear regression technique to analyze historical data and forecast future price movements of cryptocurrencies. Unlike linear regression, polynomial regression can capture more complex relationships between variables, making it suitable for modeling the volatile and often non-linear nature of cryptocurrency markets.



By fitting a polynomial function to historical price data, polynomial regression attempts to identify patterns and trends that may not be apparent with simpler models. This allows analysts and traders to make more informed predictions about potential price movements, support and resistance levels, as well as overall market trends.

Polynomial Regression

Polynomial regression is a type of regression analysis used in statistics and machine learning when the relationship between the independent variable (input) and the dependent variable (output) is not linear. While simple linear regression models the relationship as a straight line, polynomial regression allows for more flexibility by fitting a polynomial equation to the data.

When the relationship between the variables is better represented by a curve rather than a straight line, polynomial regression can capture the non-linear patterns in the data.

Working of Polynomial Regression

The general form of a polynomial regression equation of degree n is:

$$y = b_0 + b_1x_1 + b_2x_1^2 + \dots + b_nx_1^n$$

- y is the dependent variable.
- x is the independent variable.
- 0,1, , n are the coefficients of the polynomial terms.
- n is the degree of the polynomial.

The basic goal of regression analysis is to model the expected value of a dependent variable y in terms of the value of an independent variable x.

Working of Polynomial Regression

- The choice of the polynomial degree (n) is a crucial aspect of polynomial regression. A higher degree allows the model to fit the training data more closely, but it may also lead to overfitting, especially if the degree is too high. Therefore, the degree should be chosen based on the complexity of the underlying relationship in the data.
- The polynomial regression model is trained to find the coefficients that minimize the difference between the predicted values and the actual values in the training data.
- Once the model is trained, it can be used to make predictions on new, unseen data. The polynomial equation captures the non-linear patterns observed in the training data, allowing the model to generalize to non-linear relationships.