Types of Regressions

1. Linear Regression:

- Description: A method to model the relationship between a dependent variable and one or more independent variables by fitting a linear equation to the observed data.

- Data Types: Best for continuous numerical data where the relationship between variables is approximately linear.

2. Polynomial Regression:

- Description: An extension of linear regression where the relationship between the dependent and independent variables is modeled as a nth-degree polynomial.

- Data Types: Suitable for continuous numerical data, especially when the relationship between variables is non-linear.

3. Stepwise Regression:

- Description: A method of fitting a regression model by adding or removing predictors based on certain criteria, such as p-values or AIC (Akaike Information Criterion).

- Data Types: Can be applied to datasets with multiple independent variables, typically with continuous data, but can also include categorical variables if encoded appropriately.

4. Ridge Regression:

- Description: A technique used to address multicollinearity by adding a penalty equivalent to the square of the magnitude of coefficients to the loss function. It shrinks the coefficients but does not eliminate them entirely.

- Data Types: Best for continuous numerical data with high multicollinearity among independent variables.

5. Lasso Regression:

- Description: Similar to Ridge Regression but adds a penalty equivalent to the absolute value of the magnitude of coefficients. It can shrink some coefficients to zero, effectively performing feature selection.

- Data Types: Suitable for continuous numerical data, especially when dealing with high-dimensional datasets where feature selection is important.

6. ElasticNet Regression:

- Description: A combination of Ridge and Lasso regression, incorporating both penalties to balance the benefits of both methods.

- Data Types: Ideal for continuous numerical data with high multicollinearity and when there is a need for both regularization and feature selection.

These regression techniques are primarily used in scenarios involving numerical data but can also handle categorical data when properly encoded (e.g., one-hot encoding).