Regression

January 14, 2025

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   Regression -->

   Regression is a statistical technique used to model and analyze the␣
↪relationships between
   a dependent variable (also called the target or output) and one or more␣
↪independent variables
   (also called features or inputs). The goal of regression is to predict the␣
↪dependent variable
   based on the independent variables.

   Key Concepts in Regression -->

   Overfitting: Occurs when the model learns not only the underlying␣
↪relationship but also
   the noise in the training data. It leads to poor generalization to new data.

   Underfitting: Occurs when the model is too simple and cannot capture the␣
↪underlying
   patterns in the data.

   Regularization: Techniques like Ridge, Lasso, and Elastic Net are used to␣
↪penalize large
   coefficients and prevent overfitting.
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   Types Of Regression -->

   Linear Regression
   Multi-Linear Regression
   Polynomial Regression
   Support Vector Regression
   Decision Tree Regression
   Random Forest Regression
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    Conclusion -->

    Regression is a powerful tool for predicting continuous outcomes.
    The choice of regression model depends on the relationship between the␣
 ↪independent and dependent
    variables, the nature of the data, and the desired complexity of the model.␣
 ↪Regularization and model
    evaluation metrics help in improving the performance and generalization of␣
 ↪regression models.
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