

Regressions are supervised machine learning techniques which are used to predict a continuous target variable based on one or more independent variables.

A regression model is trained on the historical data set where it learns to map the independent variables on to the target variable. Once a regression model has been trained, it can be used to make predictions on new data.

There are two main types of regression:

1. Linear regression: In this type of regression model, linearity is assumed in the relationship between the independent variables and the dependent variable such that they can be represented by straight lines. This is a simple yet flexible technique widely applicable in many areas.
2. Nonlinear regression: This type of regression model does not assume linearity in the relationship between independent variables and dependent variable; hence cannot be represented by straight lines. Non-linear regression is much more complicated than linear one but it can provide more accurate results to some types of data.

Regression has countless applications including:

1. Sales prediction: Projection of future sales using past sales statistics and other matters like economic conditions, promotion strategies etc.

2. Prediction of house prices: Estimation for how much will cost every square meter in particular location.
3. Forecasting customer churn rate: This involves determining whether customers will stop using services considering what they have done before and other factors.

References:

- “An Introduction to Statistical Learning” by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani
- “Regression Analysis” by Douglas C. Montgomery, Elizabeth A. Peck, and G. Geoffrey Vining

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