What is a regression model?

A regression model is a statistical tool used to predict or estimate the relationship between a dependent variable (the outcome or target) and one or more independent variables (predictors or features). It aims to find the best-fitting mathematical equation that describes how changes in the independent variables influence the dependent variable. Common types include linear regression, which assumes a straight-line relationship, and nonlinear regression, which fits more complex patterns. These models are widely used in fields like economics, machine learning, and social sciences for forecasting, trend analysis, and understanding variable relationships. For example, a linear regression model might predict house prices based on square footage and location, expressed as $y = \beta_0 + \beta_1 x_1 + \beta_2 x_2$, where y is the price, x_1 and x_2 are predictors, and β terms are coefficients.