Statistical Modeling

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2 Regression Analysis

We use regression analysis in a certain pattern recognition problem when the dependent variable is real-valued.

2.1 Linear Regression

Definition 2.1.1: Linear Regression Model

A linear regression model assumes the relationship between the dependent random variable Y and the independent random variables $X_1, \ldots, X_n$ are linear. In other words, there exists $\beta_0, \ldots, \beta_n \in \mathbb{R}$ together with an unobserved random variable ε such that

$$Y = \beta_0 + \sum_{k=1}^{n} \beta_k X_k + \varepsilon$$

2.2 Logistic Regression

3 Statistical Classification

We use statistical classification methods in a certain pattern recognition problem when the dependent variable is discrete.

3.1 Classification following Logistic Regression