



یادگیری ماشین

(Regression)

محمد دهقانی

data - hub

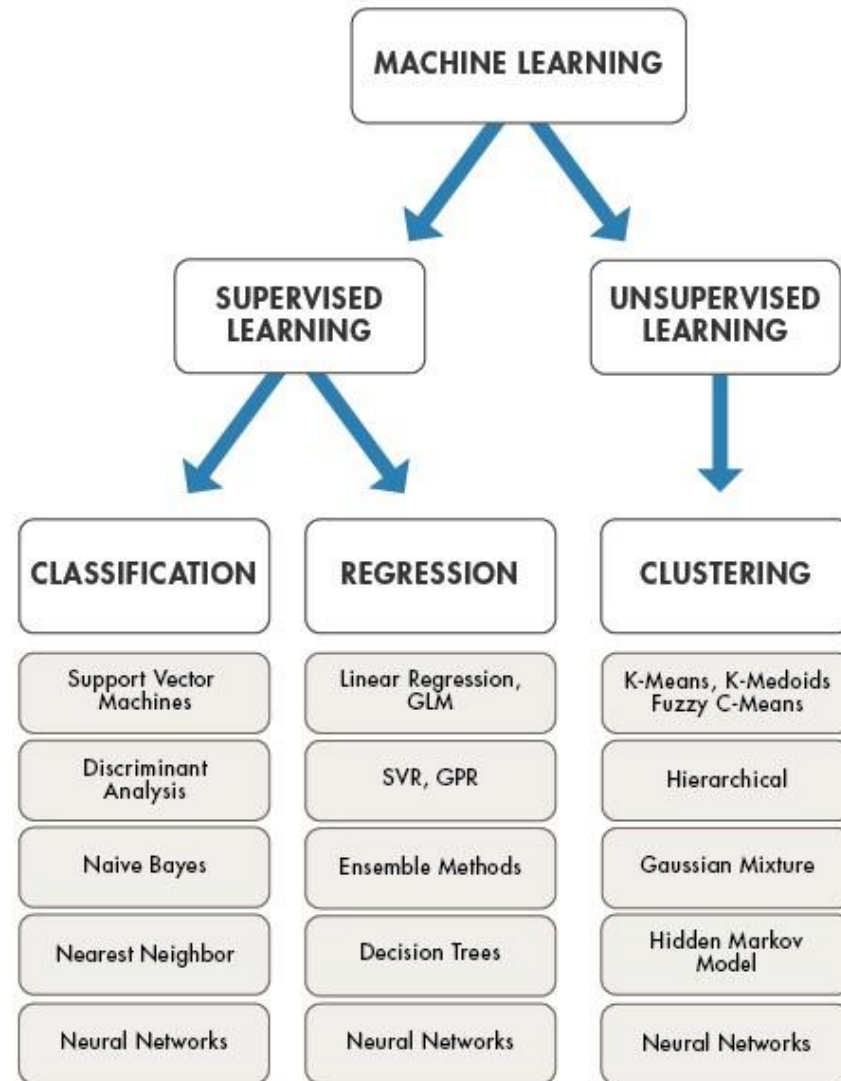
آنچه در این جلسه یاد خواهیم گرفت:

۱. بررسی الگوریتم Linear Regression

۲. بررسی کاربردهای مختلف رگرسیون

۳. بررسی الگوریتم Logistic Regression

یادگیری ماشین



Linear Regression



DEPENDENT

/predicted/

INDEPENDENT

/predictors/



$$Y = F(x_1, x_2, \dots, x_k)$$

The dependent variable Y is a function of the independent variables x_1 to x_k

Linear Regression

SIMPLE LINEAR REGRESSION MODEL

$$y = \beta_0 + \beta_1 x_1 + \varepsilon$$

↓
Dependent
variable

↓
Independent
variable

Linear Regression

SIMPLE LINEAR REGRESSION MODEL

$$y = \beta_0 + \beta_1 x_1 + \varepsilon$$

Income



Education



Linear Regression

SIMPLE LINEAR REGRESSION MODEL

$$y = \beta_0 + \beta_1 x_1 + \varepsilon$$

Income ← Education



More education translates into a higher income

Linear Regression

SIMPLE LINEAR REGRESSION MODEL

$$y = \beta_0 + \beta_1 x_1 + \varepsilon$$

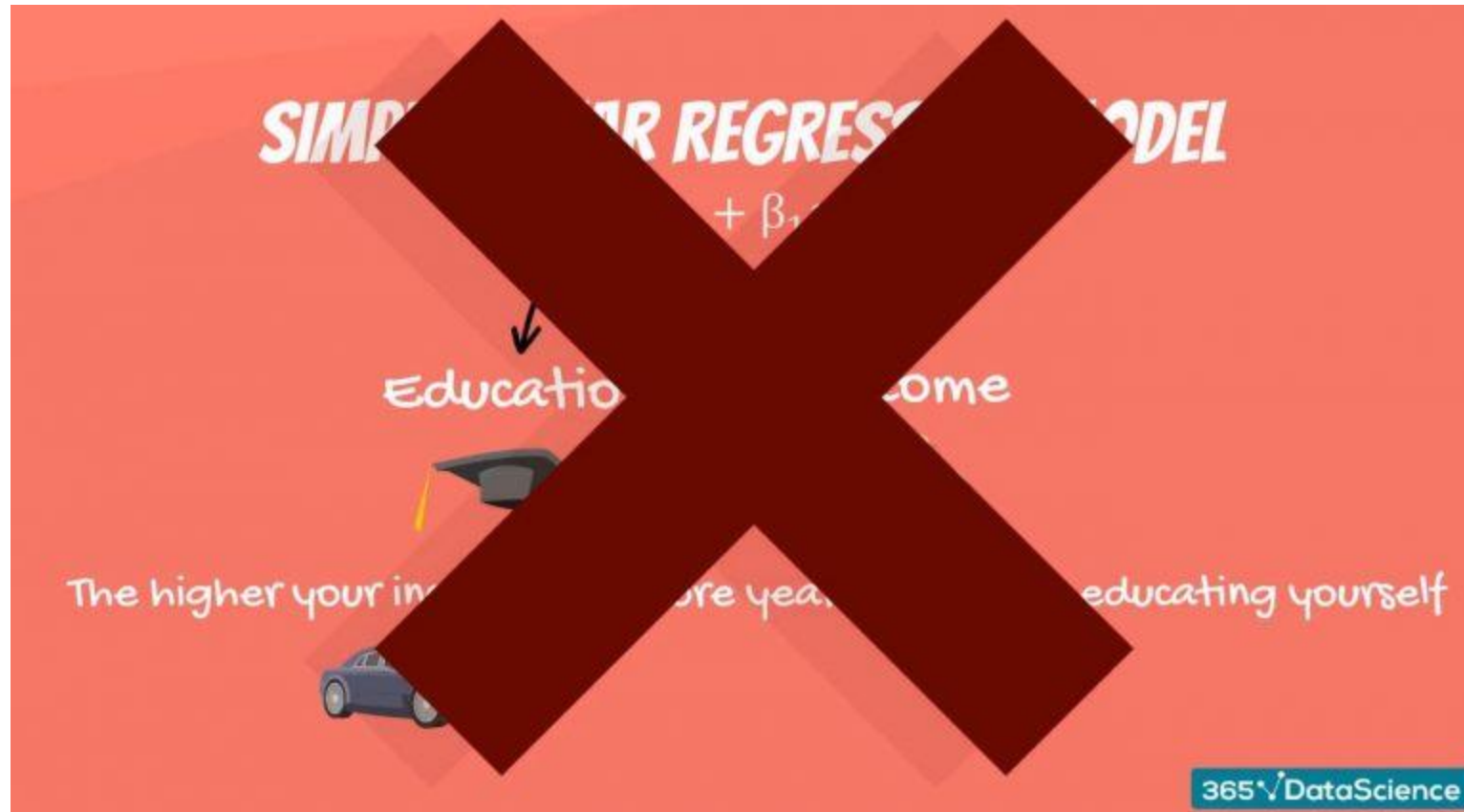
Education



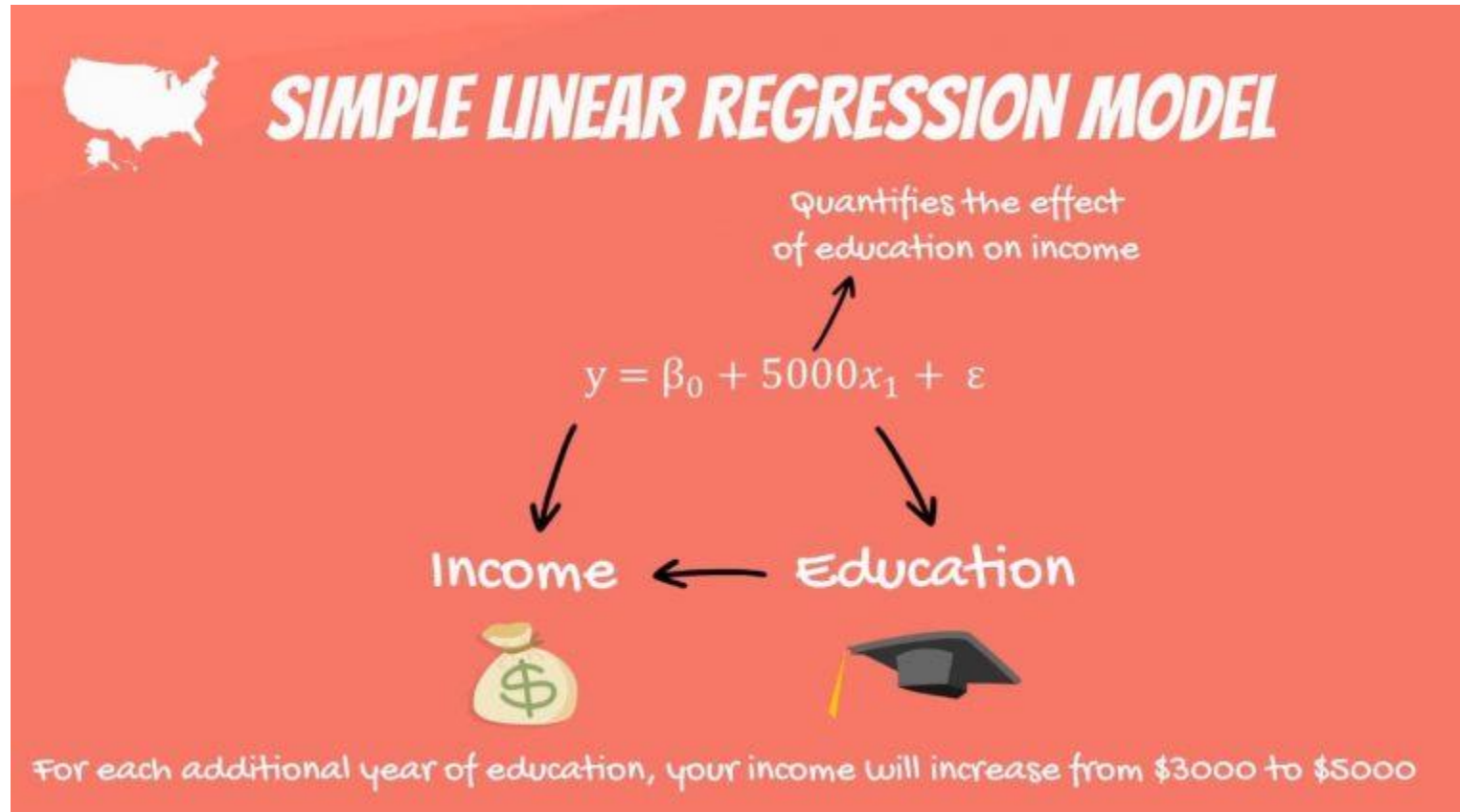
Income



Linear Regression



Linear Regression



Linear Regression



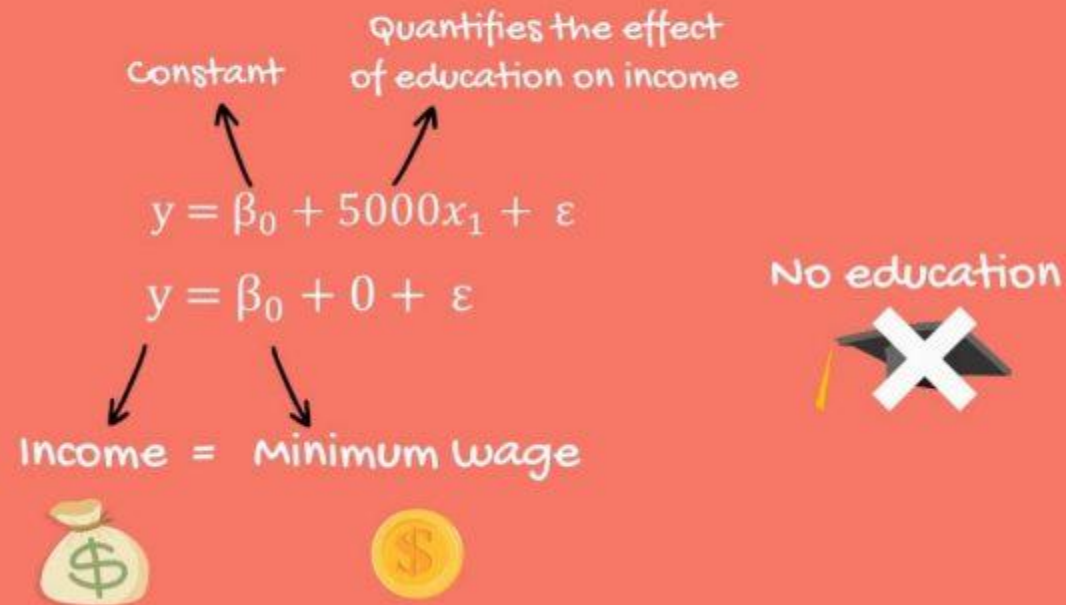
SIMPLE LINEAR REGRESSION MODEL

Constant Quantifies the effect of education on income

$$y = \beta_0 + 5000x_1 + \varepsilon$$
$$y = \beta_0 + 0 + \varepsilon$$

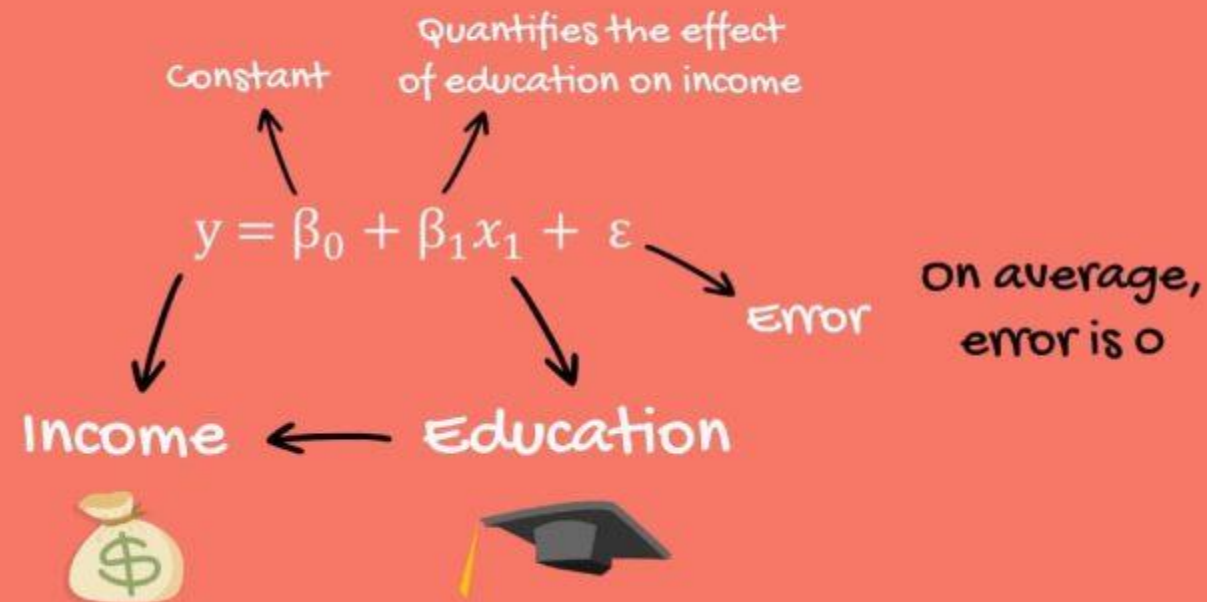
No education

Income = Minimum wage



Linear Regression

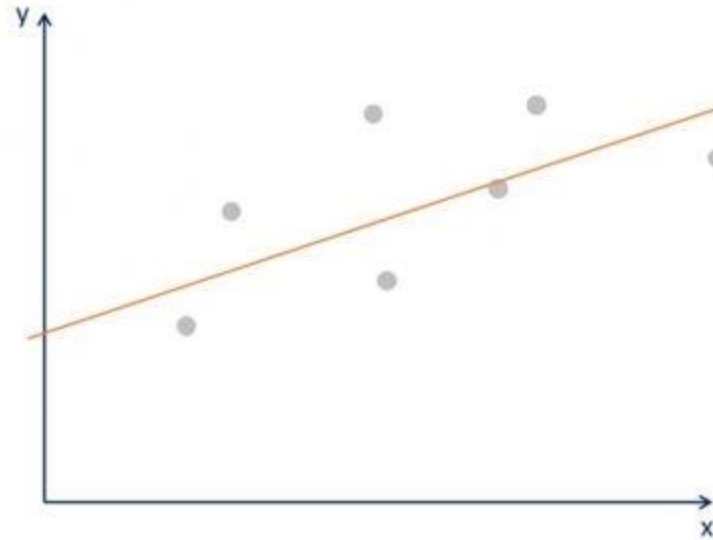
SIMPLE LINEAR REGRESSION MODEL



Linear Regression

Linear regression model. Geometrical representation

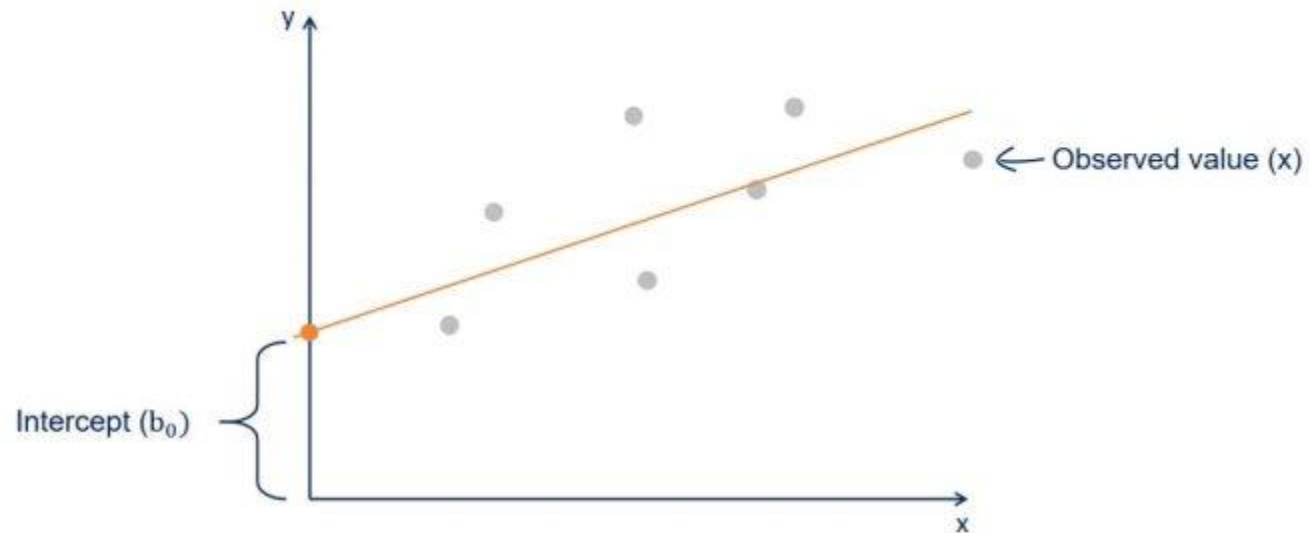
$$\hat{y}_i = b_0 + b_1 x_i$$



Linear Regression

Linear regression model. Geometrical representation

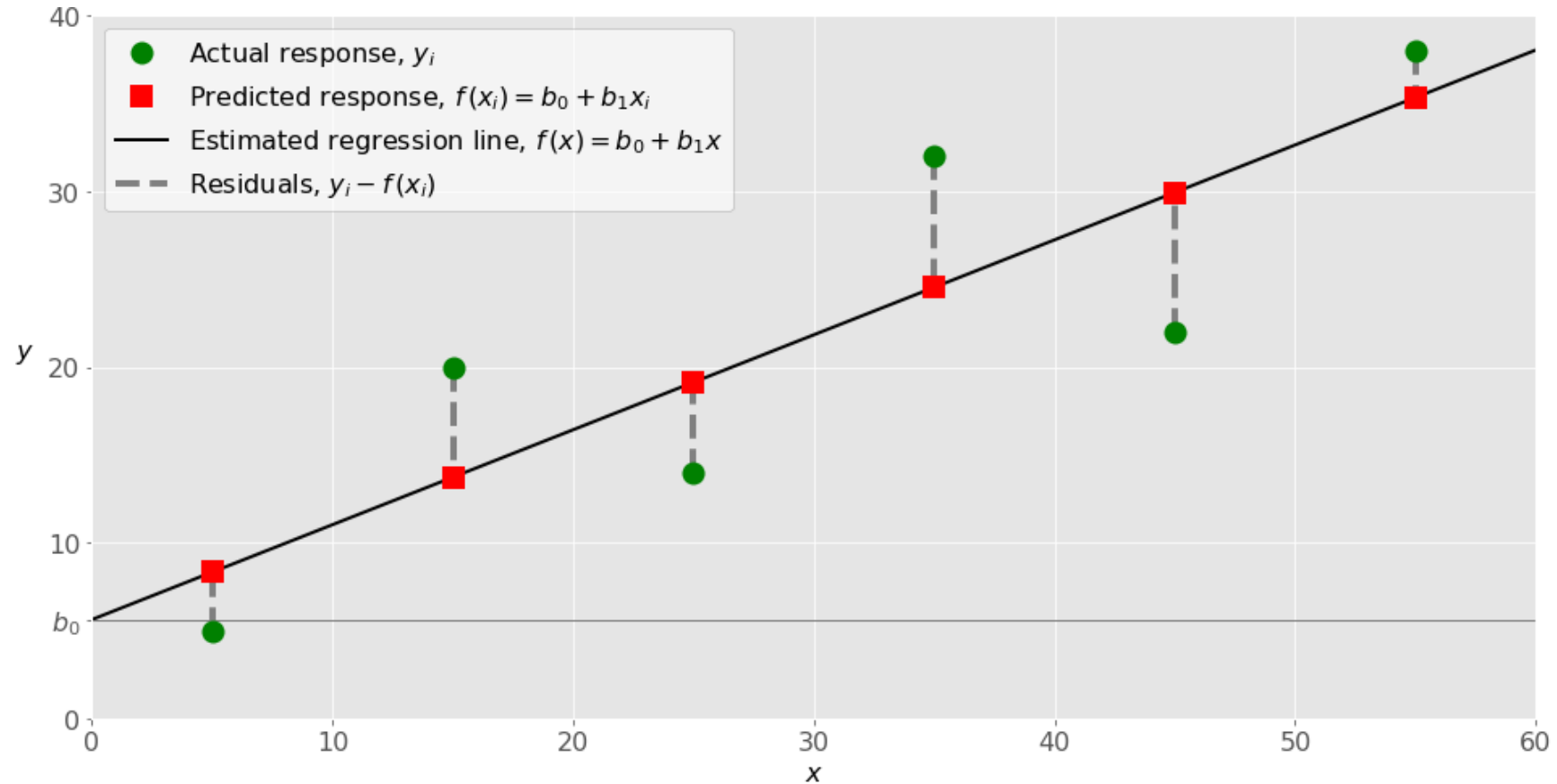
$$\hat{y}_i = b_0 + b_1 x_i$$



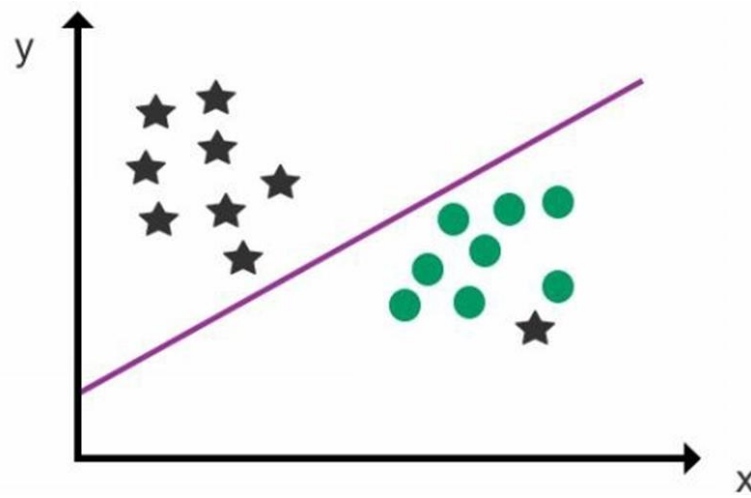
Linear Regression

$$Y = aX_1 + bX_2 + \cdots + nX_n + C$$

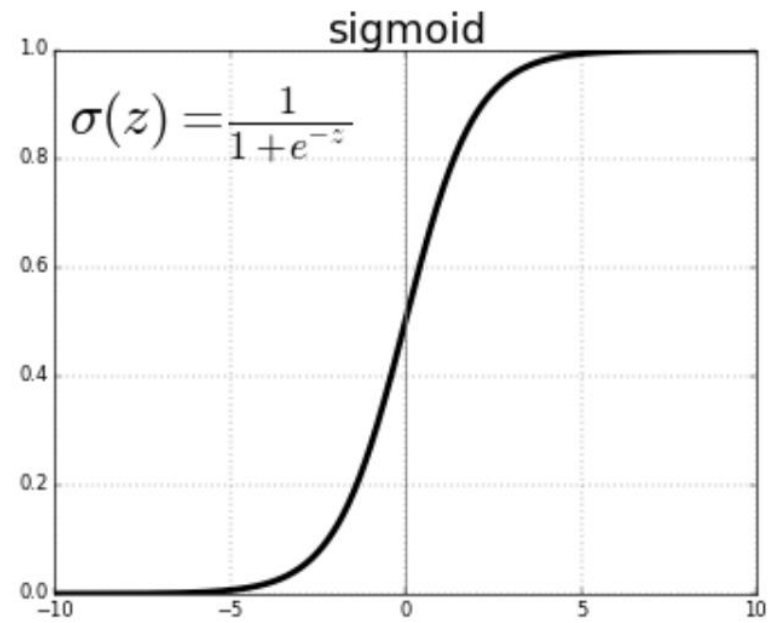
Linear Regression



Logistic Regression



Sigmoid



#DONTFORGETUS

آموزش های
رایگان بیشتر

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