HW-Topic-10

Data Acquisition, Modeling and Analysis: Big Data Analytics

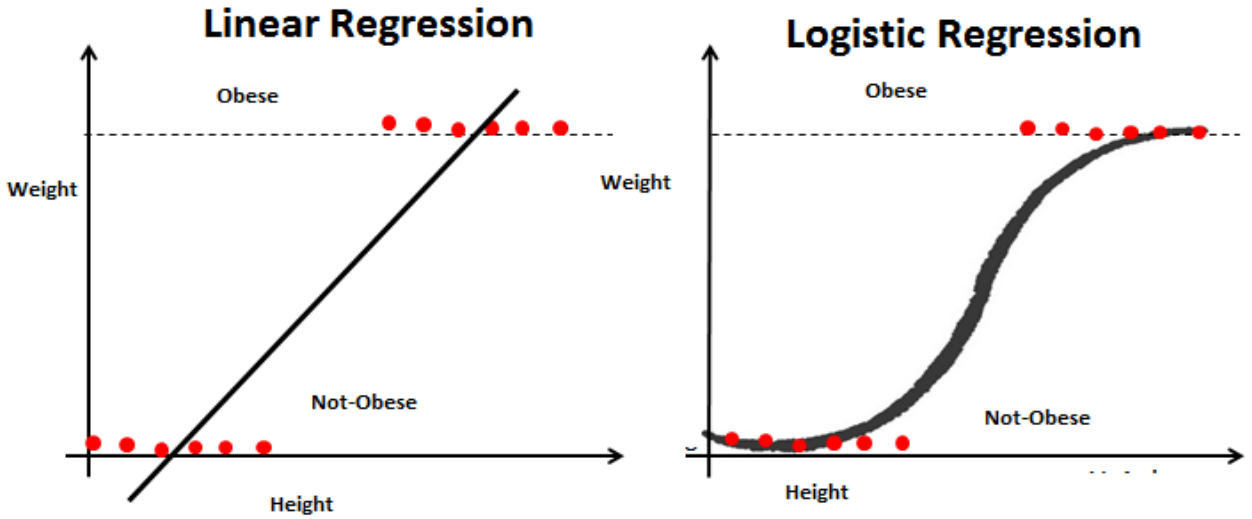
Submitted By – **Sudhanshu Kakkar**
CWID – **20036779**

Linear Regression & Logistic Regression

Sudhanshu Kakkar | ID - 20036779

CORE IDEA

- **Linear:** predicts a continuous numeric value using a straight-line relationship between input features and output.
- **Logistic:** predicts a categorical outcome (like yes/no) by estimating probabilities using the logistic (sigmoid) function.



MATHEMATICAL FORM:

- **Linear:** $\hat{y} = \beta_0 + \beta_1 x$
- **Logistic:** $P(y = 1|x) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x)}}$

APPLICATIONS

- **Linear**: House price, temperature, sales forecasting.
- **Logistic**: Disease detection, churn prediction, fraud detection.

Advantages

- **Linear:**
  - Simple & fast
  - Easy to interpret
  - Good for linear data
- **Logistic:**
  - Gives probabilities
  - Good for classification
  - Works well on small, separable data