Supervised Learning in Action

Regression & Classification Examples

MUTLU LEARNING HUB

Contents

Previously on Mutlu Learning Hub...

Quick Recap

- **Statistical Learning:** Find patterns in data
- **Supervised Learning:** Learn from labeled data
- **Unsupervised Learning:** Discover hidden structure
- **Parametric Methods:** Simple, fixed form (Linear Regression)
- **Non-Parametric Methods:** Flexible, data-driven (kNN)

Next: Supervised Learning in Action!

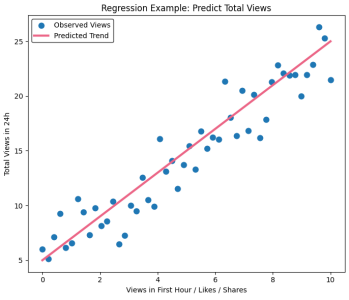
Supervised Learning: Regression vs Classification

Question:

Are we predicting a continuous number, or a discrete category?

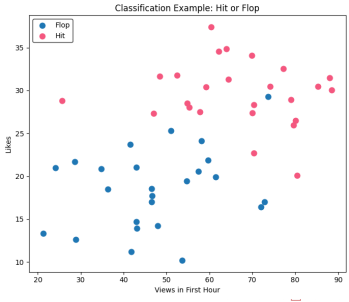
Regression

- **Predict:** number (continuous outcome)



Classification

- **Predict:** category (discrete outcome)

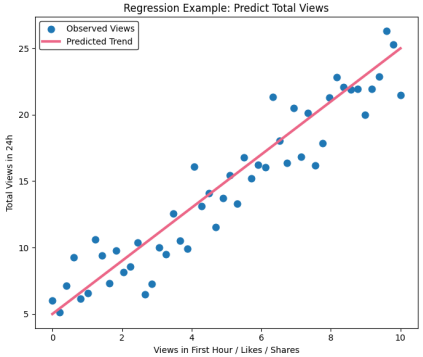


Regression Example: Predict Views

Concept:

Predict the total views a video will get in 24 hours based on early engagement metrics.

- **Inputs (X):** Views in first hour, likes, shares
- **Output (Y):** Total views in 24 hours
- **Model:** $Y = \beta_0 + \beta_1 X + \epsilon$
- **Goal:** Estimate a number based on observed patterns



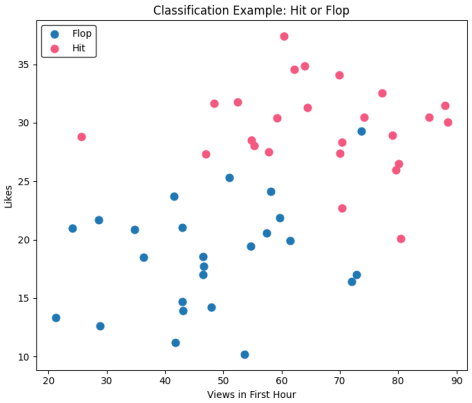
Red line = Linear regression fit for total views

Classification Example: Hit or Flop

Concept:

Predict whether a video will be a Hit or Flop using engagement features.

- **Inputs:** Views in first hour, Likes, Shares
- **Output:** Hit or Flop
- **Model:** k-Nearest Neighbors (kNN)
- **Goal:** Decide which category something belongs to



Blue points = Flop, Red points = Hit

Supervised Learning Recap

- **Supervised Learning:**

$$\text{Labeled Data} \Rightarrow \text{Predict Outcomes}$$

- **Regression:** Continuous numbers (e.g., total views)
- **Classification:** Categories (Hit or Flop)

Coming Up Next:

- Model training and evaluation

Thank You!

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