SVM Multi-Classs Classification

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SVM Multi-Classs Classification

1. One v/s All

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$$\left.\begin{array}{l} \text{Blue } (+1) \text{ v/s All (-1)} : \overline{w} \cdot \overline{x}_{\text{test}} + b = 0.8 \\ \text{Yellow } (+1) \text{ v/s All (-1)} : \overline{w} \cdot \overline{x}_{\text{test}} + b = 0.6 \\ \text{Red } (+1) \text{ v/s All (-1)} : \overline{w} \cdot \overline{x}_{\text{test}} + b = -0.2 \end{array}\right\} \text{argmax} = \text{Blue}$$

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1. One v/s One
    1. Blue v/s Yellow $\rightarrow$ Blue
    2. Yellow v/s Red $\rightarrow$ Red
    3. Red v/s Blue $\rightarrow$ Blue

$$\text{Majority} = \text{Blue}$$

Support Vector Regression

Hard Margin or ϵ-SVR

$\hat{y}(x) = \overline{w}.\overline{x} + b$