

SVM Multi-Classs Classification

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1. One v/s All

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

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- 1 Blue v/s Yellow \rightarrow Blue
- 2 Yellow v/s Red \rightarrow Red
- 3 Red v/s Blue \rightarrow Blue

Majority = Blue

Support Vector Regression

Hard Margin or ϵ -SVR

$$\hat{y}(x) = \bar{w} \cdot \bar{x} + b$$