Support Vector Machine

Margin: Distance between the extreme point and the decision boundary.

Maximum Margin Outlier: Super sensitive to outliers in the training data. Therefore, not a good algorithm in ML.

Soft Margin: When we allow misclassifications. But how to determine the best soft margin? Using cross validation.

Support vector classifier (SVC) uses soft margins.

SVCs

1. For one predictor: A point. (flat affine 0 dimensional subspace)
2. For two predictors (think 2-axes graph): Line. (flat affine 1 dimensional subspace)
3. For three predictors: A plane ((flat affine 2 dimensional subspace)
4. For four and more dimensions: The human mind cannot conceive the graph. A hyperplane. (flat affine subspace)
5. asdkjahdkj [^1]
6. [^1]: This is the first footnote.

Extra notes: Technically speaking, all flat affine subspaces are known as hyperplanes. But the term "hyperplane" is mainly used when we cannot draw the figure on paper.