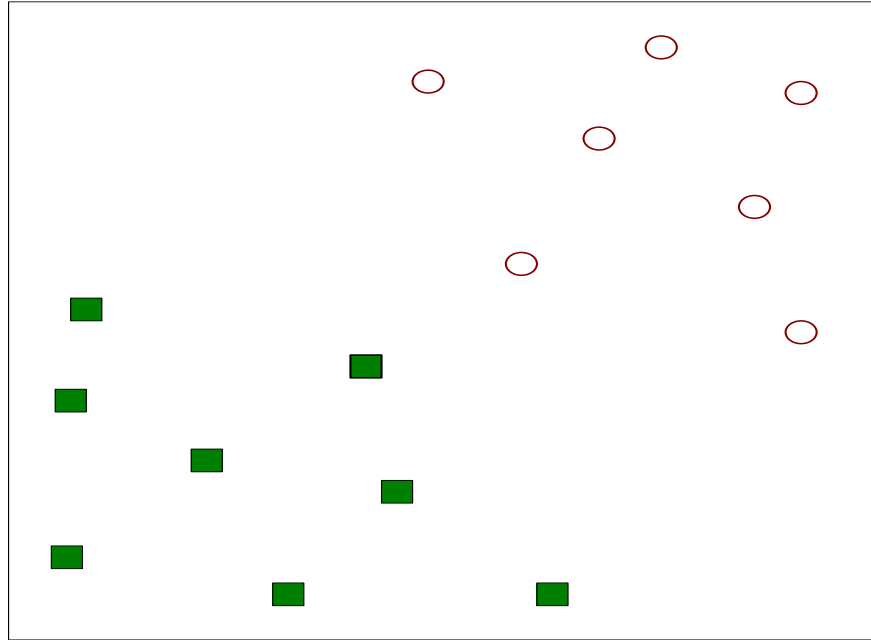




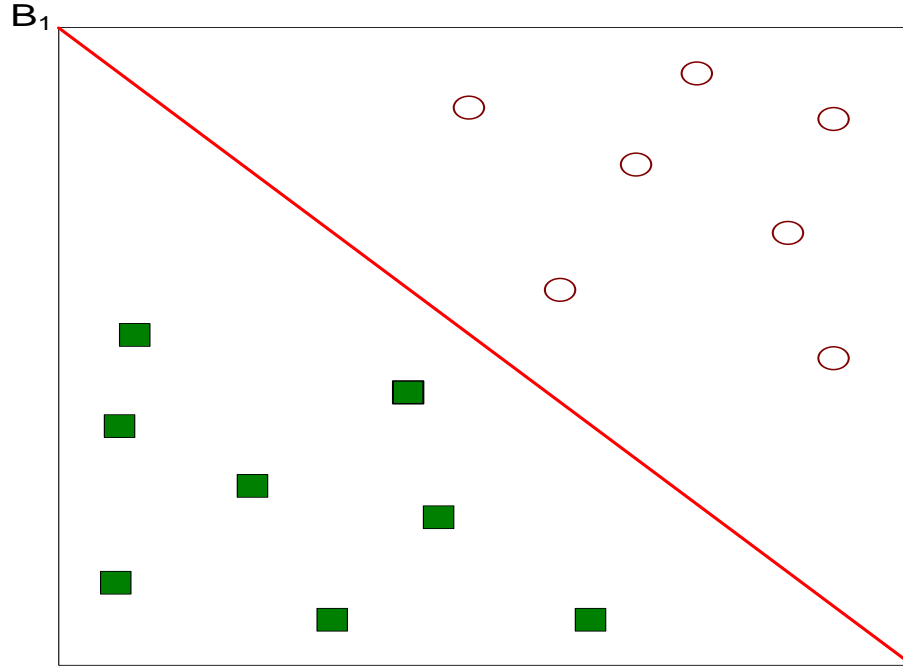
SUPPORT VECTOR MACHINES

Support Vector Machines



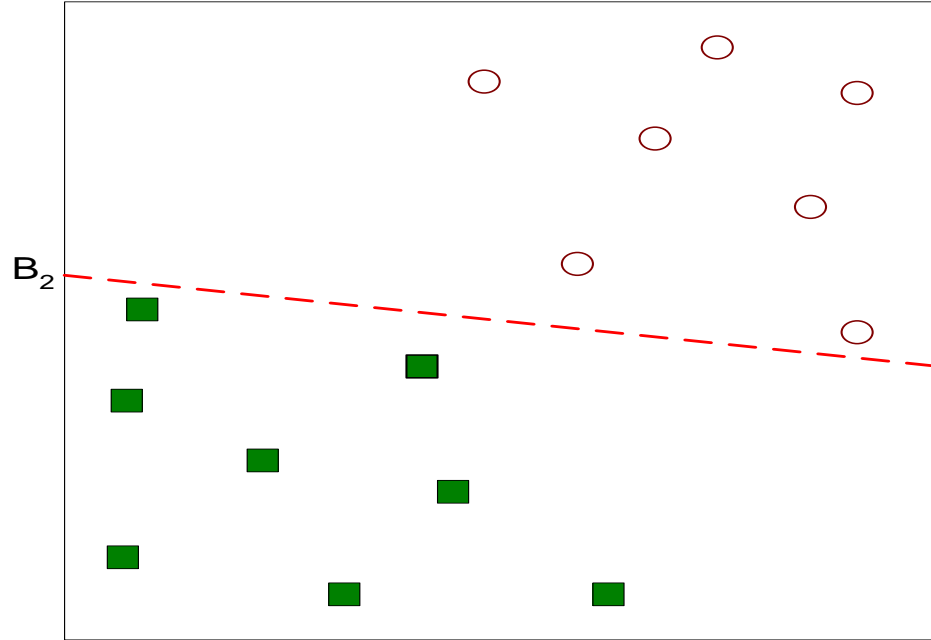
- Find a hyperplane that will separate the data

Support Vector Machines



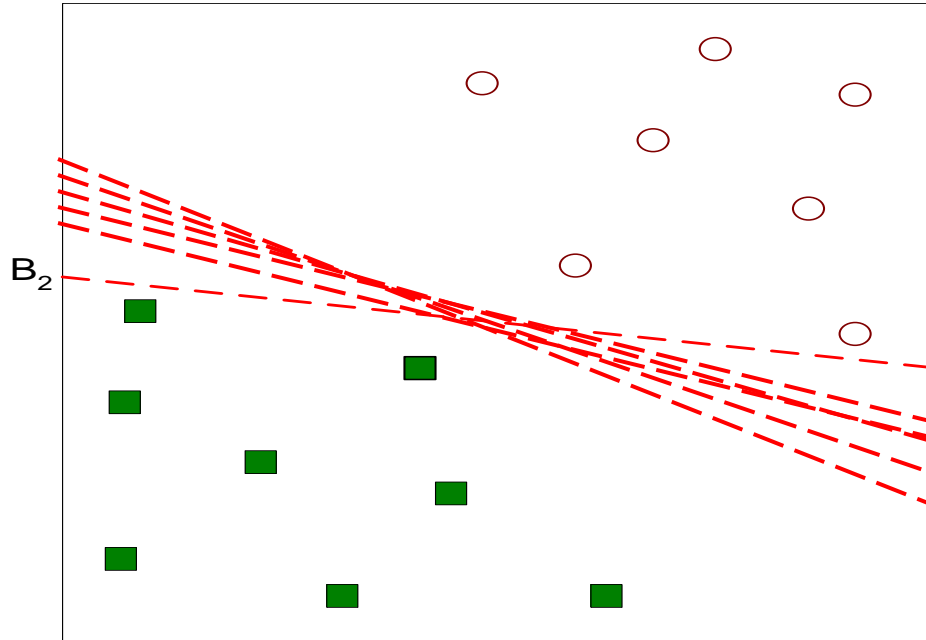
- One of possible solution.

Support Vector Machines



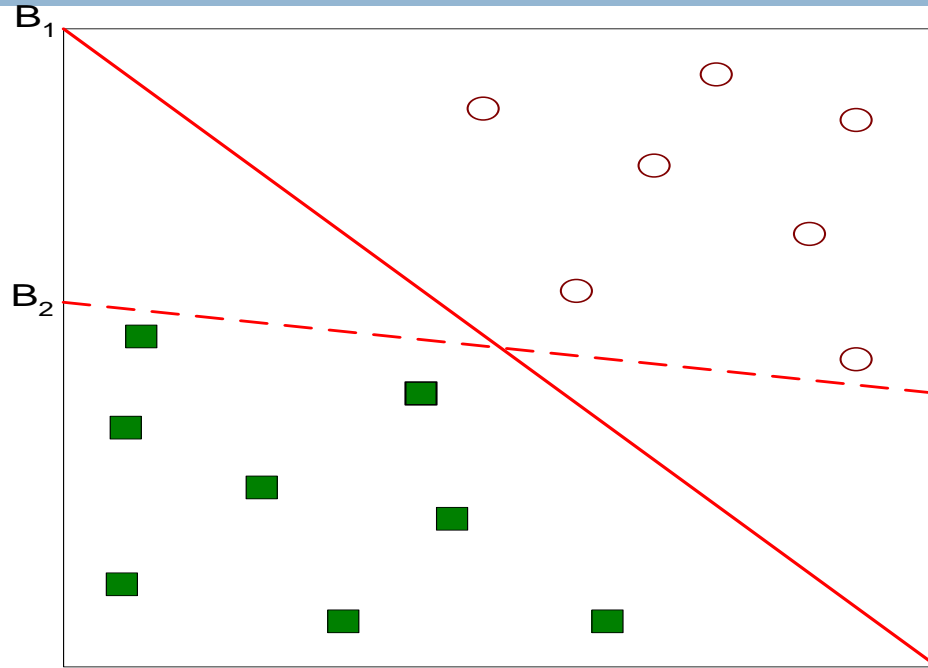
□ Another possible solution.

Support Vector Machines



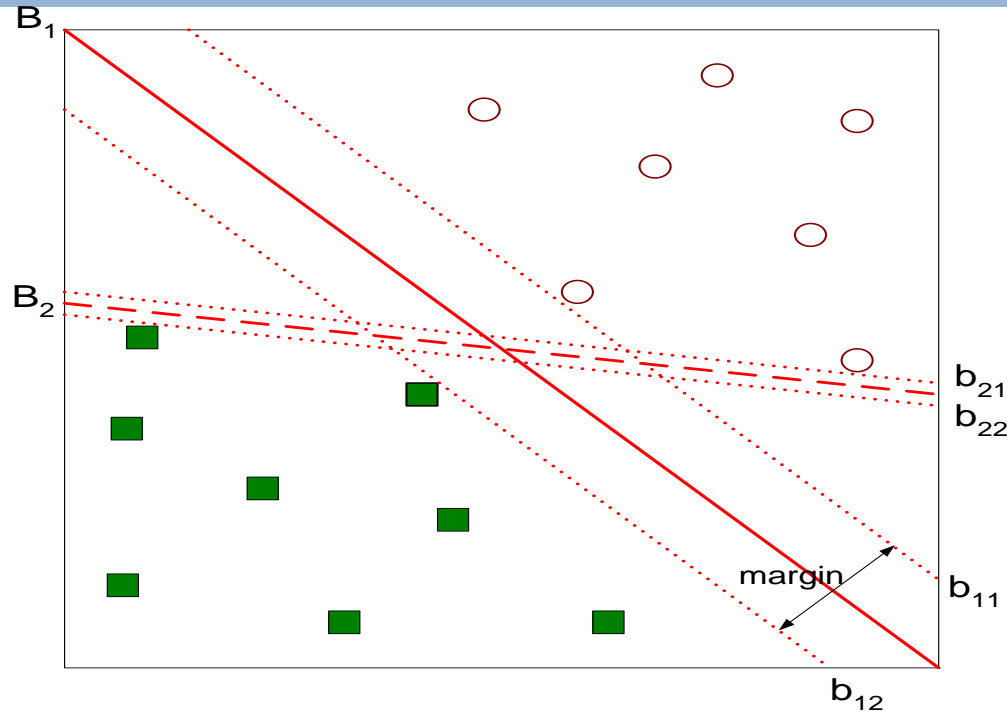
□ Other possible solutions

Support Vector Machines



- Which of the separators is the better ? B_1 or B_2 ?
- How do you define better?

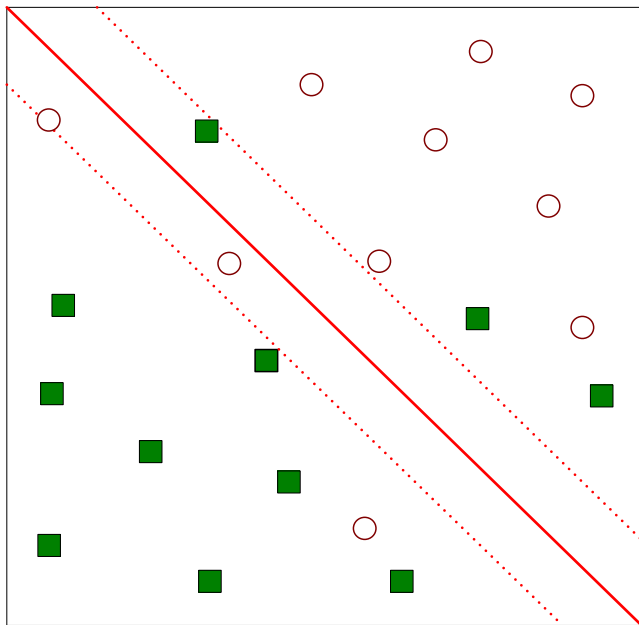
Support Vector Machines



- Find hyperplane **maximizes** the margin $\Rightarrow B_1$ is better than B_2

Support Vector Machines

- What if the problem is not linearly separable?



Solutions

- Still classify with a hyper plane by allowing for some misclassification.
 - ▣ There will be some constraints on the missclassifications.
- Map to a higher dimensions
 - ▣ Kernel trick

Non-Separable Case



Mapping to a Higher Dimension

