

Image Based Recognition and Classification - DD2427

Exercise 8

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April 24, 2012

Exercise 1. Considering the XOR-problem

- i) Are the classes linearly separable?
- ii) Let the weak classifiers be defined by

$$h_v((x, y)) = \text{sgn}(a_v x + c_v) \quad h_h((x, y)) = \text{sgn}(a_h y + c_h) \quad (1)$$

Work through one iteration of the boosting algorithm. What is the problem? Can we use this set of weak classifiers to solve the XOR problem?

- iii) Let the weak classifiers be defined by

$$h_1(\bar{x}) = \text{sgn}(a_1 \bar{x} + c_1) \quad h_2(\bar{x}) = \text{sgn}(a_2 \bar{x} + c_2) \quad (2)$$

Solution.

- i) test
- ii) test2
- iii) test3

No, since no one line can classify all the points correctly.