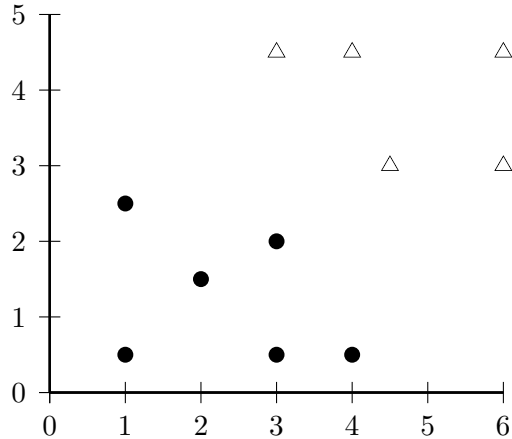


Information Retrieval: Assignment 5

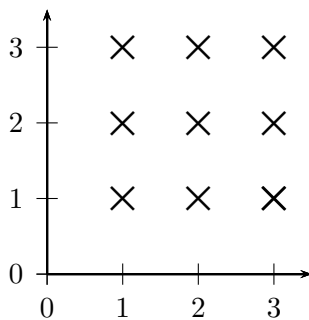
Problem 1. (20 points)

Indicate in the figure below what the linear maximum margin (SVM) classifier for the binary problem triangle vs dot is. Draw three lines: the two boundaries of the maximum margin and the maximum margin hyperplane. Which of the vectors are support vectors? You can solve this problem “visually” by drawing your solution into the figure.

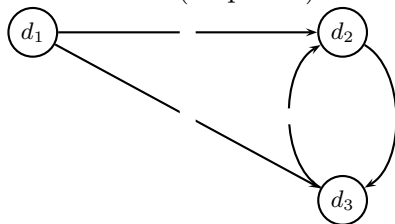


Problem 2. (10 points)

(i) Perform a 3-means clustering for the points below. Draw a different diagram for each iteration to show the assignments and the centroids. If a tie occurs during an assignment step, you can freely choose any of the possible assignments. (ii) There are several clusterings that 3-means can converge to in this case. Give an example of such a clustering that is different from the one in (i).



Problem 3. (10 points)



For this web graph, compute PageRank for each of the three pages. Assume that the PageRank teleport probability is 0.1. Hint: Using symmetries to simplify and solving with linear equations might be easier than using iterative methods.

Due date: Monday, June 23, 2014, 12:15

Send your assignment to irss14@cis.lmu.de or turn it in in class.