Machine Learning Exercise 3

Exercise 1

If we set $C = 0$ in the relaxed objective of slide 3.14, what would be the optimal solution for $\boldsymbol{w}$ and b, and what would be the resulting classification rule?

Exercise 2

Let t_1 be the "query" text

$$t_1 = \textit{computer science education aalborg university}$$

Let t_2 be the text content of `https://www.en.aau.dk/education/master/computer-science-it`. Assume that the vocabulary (or dictionary) with regard to which we contains just the terms

computer, education, science, university.

- What is the cosine similarity $\textit{cos-sim}(t_1, t_2)$?

If we use the slightly enlarged vocabulary

computer, education, knowledge, master, science, software, technology, university.

instead, what is $\textit{cos-sim}(t_1, t_2)$ then?

Exercise 3

Compute the kernel matrix for the 2-spectum kernel for the set of words $\{aaa, aba, baba\}$