Homework 2

Your name and email

February 9, 2024

1 Design an ERM algorithm to learn $\mathcal{H}_{\textbf{Singleton}}$ in Question 2 of Section 3.5 of UML (4 points)

Let $\mathcal{X}$ be a discrete domain ...

Proof. Write your answer here. □

2 Design an ERM algorithm to learn $\mathcal{H}$ in Question 3 of Section 3.5 of UML (4 points)

Let $\mathcal{X} \doteq \mathbb{R}^2$ ...

Proof. Write your answer here. □

3 Question 6 of Section 3.5 of UML (4 points)

Let $\mathcal{H}$ be a hypothesis class of binary classifiers ...

Proof. Write your answer here. □

4 Remarks

For the first two tasks, you only need to design an ERM algorithm and do not need to prove PAC learnability, though you do need to explain why they are ERM. You can assume realizability in both.

The LaTeX file for generating this PDF is provided in the same folder. Please use it for this homework.

Focus on the rigor of math and explain each equation you write if it is not as clear as $1 + 1 = 2$. Since this is the first homework, we will be relatively generous in grading.