

Homework 2 - Due Wed. Sep 19th

High-Dimensional Approximation, Probability, and Statistical Learning

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Homework Policies

As for the first homework set.

Assignment

Review: Study chapter 2 of *Foundations of Data Science*, reading through also the few sections that we skipped (e.g. on separating Gaussians).

Exercises: from Blum, Hopcroft, Kannan *Foundations of Data Science*: Comment and discuss your results from numerical simulations, explaining how they match the results in Lecture 2 in the lecture notes/class.

Exercise 1 (30pts). Exercise 2.20 from the lecture notes indicated above. Make your solution as rigorous as you can. Some of the ideas from Section 2.8 may be useful here, but not truly necessary.

Exercise 2 (30pts). Exercise 2.38 from the lecture notes indicated above. You may write the code yourself from scratch, and/or copy and paste some part of the code we used in lecture 1 (available on the course webpage), or even modify that code (it already contains the option of doing random projections to subspaces of dimension d).

Exercise 3 (40pts). Exercise 2.44 from the lecture notes indicated above; be as rigorous as possible.