DD2434 - Machine Learning, Advanced Course
Assignment 2B

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Contents

1 Multidimensional Scaling (MDS) and Isomap

1.1 Question 1

The intuitive reason that the "double centering" trick works is that, as for the PCA, we want to center and then here we want to center by subtracting the overall mean and therefore the mean for the columns and the rows. This is why subtracting the mean twice works.

1.2 Question 2

While the double centering method center the data around the origin, the "first point" trick center the data around the first point of the dataset. Therefore the solution will be different but in MDS we are only interested in the relative position of the points and not their absolute position. Therefore the solution will be the same up to a translation.

1.3 Question 3

TODO

1.4 Question 4

TODO

1.5 Question 5

TODO

2 Success probability in the Johnson-Lindenstrauss lemma

2.1 Question 6

TODO

3 Node similarity for representation learning

3.1 Question 7

TODO

3.2 Question 8

TODO

4 Spectral graph analysis

4.1 Question 9

TODO

4.2 Question 10

TODO

4.3 Question 11

TODO

5 Programming task

5.1 Question 12

TODO

A Appendix