MLPR Assignment Feedback

Name	Ruslan Burakov
Matriculation number	S1569105
Overall mark	98 / 100 marks

1 The Next Pixel Prediction Task (50 / 50 marks)

1.1 Data preprocessing and visualisation (8 / 8 marks)

Comments

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1.2 Linear regression with adjacent pixels (10 / 10 marks)

Comments

1.3 RBF regression with adjacent pixels (8 / 8 marks)

Comments

1.4 Linear regression with all pixels (6 / 6 marks)

Comments

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1.5 Neural Network with all pixels (10 / 10 marks)

Comments

1.6 Discussion (8 / 8 marks)

Comments

Please note that you were also asked to perform a comparative analysis on the methods discussed in this assignment. As you gave all the relevant comments in the previous questions and given your superb effort in actually performing rather than simply suggesting further experiments, I will, of course, not deduct any marks. But note that you should always provide answers to all questions asked, independent from additional investigations. Another note that you might consider useful: when comparing models, differences in their computational complexity could be rigorously characterised using big O notation.

Part 1 general comments

Superb effort in presenting your results, plots, and code. Great care was taken to clearly express your thoughts and structure your answers. Impressive effort was made to provide additional, rigorous, and in-depth investigations. The script is a joy to mark!

2 Robust modelling (48 / 50 marks)

2.1 Fitting the baseline model (20 / 20 marks)

Comments

(b) All points covered correctly.

(c) Excellent responses to this part. Your investigations in to the linear separability of the first 100 training cases went far beyond what was expected here but were very interesting and a great idea.

2.2 Label noise model (15 / 15 marks)

Comments

(a) Again excellent here.

(b) Good again. As a small point, try to make use of your reported standard error values when comparing estimates - is the improvement in the test set accuracy here over the previous model from 1b significant here given the magnitude of the standard errors of the estimates?

2.3 Hierarchical model and MCMC (13 / 15 marks)

Comments

(a) Your responses for the first two sections of this part are correct but you needed to go further in your response to the last section - it was required to show that the specified parameters correspond to the *global* maximum of the log-posterior which requires showing not only do they maximise it but that no other parameter values achieve the same maximum log-posterior. Your statement that the posterior is bounded between 0 and 1 is incorrect - the posterior here is a probability density function on continuous valued parameters and so is only limited to being non-negative.

(b) Excellent again, particularly your discussion of rationale for choosing different slice sampler settings.

(c) Again great!

Part 2 general comments

This is an outstanding piece of work showing a very strong understanding of the topics covered and an ability to go beyond the scope of the questions and conduct novel and interesting independent investigations. Well done!