

CV Assignment 3 : Checklist

The description given below outlines the expectation for each task in the assignment. They serve as a guide on how you answer each task.

Task 1:

- **1.1** : Correct implementation of the learning algorithm, as it will be needed in the follow up tasks.
- **1.2** : A discussion of why the estimated line is different from the ground-truth line and demonstrate an understanding of how this affects the network's performance.
- **1.3**: Updating the original algorithm plus a discussion in the report about why it happens in the first place (generic reasoning or evidence based reasoning from implemented algorithms is both acceptable).
- **1.4** : Comparison of the original and modified algorithm with different sample sizes. Reporting any pattern discovered. (For instances that do not converge, you count the `max_iterations` as the number of iterations taken to converge, or report the mean an infinite (`inf`)).

Task 2:

- **2.1** A coherent discussion of what changes were made from the 2 class case to extend it to the three class case. This can include mathematical justifications or verbal reasoning.
- **2.2** Including a plot in the report that shows that the implementation is correct and the accuracy does go up with the number of epochs.
- **2.3** Including a plot in the report that draws the three boundaries.

Task 3:

- **3.1** Successful implementation of the network by implementing the correct gradients. You can include the derivation of the gradients in the report. However, more important is to include the loss over time when training the network as that verifies the correctness of the implemented gradients.
- **3.2** (postgrads) Comparison of various scenarios and answering the required questions in the report.

Task 4

- **4.1** Discussion that compares and contrasts the advantages of increased depth vs increased width of the network. Comparison can include convergence and test accuracy.
- **4.2** Training the network with ReLU and reporting resulting performance as well as network convergence (if any).
- **4.3** Systematic study of different learning rates and their effect on the base network performance.
- **4.4** Discussion about stopping strategies for the maximum epochs.