Instructions

You will work with CIFAR-100 data. It can be downloaded from Alex Krizhevsky's page. Comment the code (except self-explanatory assignments e.g. MEAN=SUM/SIZE ☺). All codes, saved models and the report must be handed in 2 days before your exam. The latest due date is Tuesday 8th February, 2022. Zip all your materials and submit to Moodle.

Problem description

In the final project you will analyze data from the image classification domain. Pick two superclasses from the CIFAR-100 data.

Work with TRAIN data

Task 1 Binary classification into two chosen superclasses.

Task 2 Multiclass classification into the fine classes of one superclass.

In both tasks analyze the features. Lower the dimensionality of the data if necessary. Be careful if you choose to apply a transformation to training, validation and test data. Pick three (3) distinct supervised classification methods (MLP, CNN and DCNN are not considered distinct, but transfer learning or DCNN feature extraction and then a classical ML method, yes). Use cross-validation to set the parameters of the models. Then train the classifiers on the full dataset with the chosen parameters. Save the trained models.

Switch to TEST data

Use the preprocessing and the models trained in Task 1 and Task 2 to classify the test data. Report the results in form of the confusion matrix and the macro-averaged precision and recall values. Plot the results into a precision-recall space.

Write a report (in pdf format) where you

- describe what you did in each of the previous tasks,
- justify the selection of the methods,
- report the parameters and results and
- put down your comments (e.g. what went wrong, whether the classifiers behaved as expected, etc.).

You can format the report as a conference paper.

 Good luck!