Worksheet 1

Deep Learning
CMPE 460

November 3, 2022
Deadline: November 10, 2022

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1 Exercise

1. Implement `ReLU` and `LeakyReLU` classes defined in the `activations.py` file.
2. **Optional:** Try to implement a `ParametrizedReLU` activation layer where the parameter of ReLU can be learned with backpropogation. [1]
3. Try different activation and loss function combinations (for at least 5 trials), compare all models and choose the best model on the test set. Your best model should have at least **%85 accuracy**. You may increase the number of layers and dimensions if needed and experiment with epochs and learning rate, but don't change random seed or split sizes.
4. Implement `my_accuracy`, `my_precision`, `my_recall` and `my_confusion_matrix` functions in the notebook. Validate that their results are equal to Sci-kit's version. [2]
5. **Optional:** Implement the architecture of your best model in `PyTorch` and train. Find out how the performance differs.
6. **Optional:** Submit your results to Titanic competition[3] in Kaggle.

[1] https://medium.com/@shauryagoel/prelu-activation-e294bb21fefa
[2] https://scikit-learn.org/stable/modules/model$_evaluation.html classification - metrics$
[3] https://www.kaggle.com/c/titanic