Machine Learning Laboratory

Session 2 – Loss and Metric

Preparation

In this session you will implement your own versions of various loss functions and evaluation metrics and then call these from PyTorch or torchmetrics for verification. In order to prepare for the session you should:

1. Work through and understand the loss functions in PyTorch , e.g., L1Loss, MSELoss, CrossEntropyLoss, NLLLoss, BCELoss, BCEWithLogitsLoss, HuberLoss, CosineEmbeddingLoss.
2. Work through and understand the activation functions in PyTorch, e.g., ReLU, Sigmoid, Tanh, Softmax, LogSoftmax, and understand how to implement the combination of the loss functions with appropriate activations.
3. Understand True Positive, False Positive, True Negative, False Negative, Sensitivity (Recall), Specificity (wiki).
4. Work through and understand the evaluation metrics in torchmetrics, e.g., Accuracy, ROC, AUROC, Dice, F-1 Score, IoU, Cosine Similarity, PSNR, SSIM.

Further Reading

Other loss functions, activation functions and evaluation metrics in PyTorch and torchmetrics.