Reading: Assignment Overview: Comparative Analysis of Keras and PyTorch Models

Estimated reading time: 1 minute

Welcome to the "Comparative Analysis of Keras and PyTorch Models" lab.

In this lab, you will evaluate and compare two pre-trained deep learning models for land classification: one built with Keras/TensorFlow and another with PyTorch. This hands-on lab focuses on understanding and implementing model evaluation metrics and comparing performance across different frameworks.

By completing this lab, you will:

1. Load and evaluate both Keras and PyTorch models on the same dataset
2. Calculate comprehensive performance metrics including accuracy, precision, recall, F1-score, and receiver operating characteristic-area under curve (ROC-AUC)
3. Interpret confusion matrices and classification reports
4. Visualize and compare ROC curves between models
5. Make informed decisions about model selection based on evaluation metrics

You will complete the following tasks through the lab:

1. **PyTorch model evaluation:** Begin by completing the code to print performance metrics for the PyTorch model using the custom function created in the lab.
2. **Keras model evaluation:** Implement the performance metrics reporting for the Keras model.
3. **Understand prediction thresholding:** Answer the question about assignments of prediction probabilities into respective classes.
4. **Metrics significance:** Answer questions on the various metrics and their significance in model performance reporting.

By the end of this lab, you should be able to use customized pre-trained model for testing and evaluation, using both Keras and PyTorch frameworks. You will also gain hands-on experience on generating model performance evaluation metrics. This will enable you to understand the nuances of performance metrics in deep learning applications and their application in selecting the best model for your customized domain dataset.

You will need to download and save the finished lab on your computer for final evaluation at the end of this course. Good luck!