

Experiment - 1

Exploring Deep Learning Platform

Aim:

The aim is to explore deep learning platform

Description:

1) What is A.I? (Artificial Intelligence)

The science of making machines think and act like human

2) What is ML? (Machine Learning)

A Subset of AI where machines learn from data without being explicitly programmed.

3) What is DL? (Deep Learning)

A Subset of ML that uses neural network with many layers to learn complex patterns

Procedure:

i) Tensorflow + keras

Tensorflow: A powerful open-source library by Google for building and running machine learning models.

Keras: A user-friendly, high-level API that runs on top of Tensorflow to make building deep learning models easier and faster.

Advantages

- * Easy to build and experiment with neural network
- * Supports running on cpu's, GPU's and even mobile devices.
- * Huge community and lots of tutorials
- * Scalable from small projects to big production systems.

Disadvantages

- * Can be complex for absolute beginners if you dive deep into Tensorflow's low-level API.
- * Sometimes slower compared to specialized frameworks
- * Debugging complex models can be challenging.

ii.) PyTorch:

It's a tool to help computers learn from data by building smart models. PyTorch is popular because it's like writing normal Python code - very flexible and easy to change while running.

Advantages:

- * Easy to use: feels natural
- * Flexible: can change the model anytime during training
- * Good for research
- * Lots of help: tutorials and community support.

Disadvantages:

- * Smaller number of extra tools and extensions
- * Can use more computer memory when training
- * Not as ready for big real-world apps compared to Tensorflow.

Description

This experiment aims to compare the performance of two deep learning frameworks, TensorFlow and PyTorch, on a well-known open source dataset. The study is divided into three phases: training, validation, and testing. The results are evaluated using a confusion matrix.

Procedure

1. Import the dataset and preprocess it.
2. Split the dataset into training and testing sets.
3. Train the model on the training data.
4. Evaluate the model on the testing data.

Result:

Explored Deep learning platform. Deep learning models successfully learned from data. Pytorch was easier for experiments. Tensorflow + keras was better for deployment.