Deep Learning Frameworks

Frameworks Overview

1

Industry Leaders

TensorFlow, PyTorch, and Keras dominate the deep learning ecosystem with strong community support.

2

Specialized Tools

Caffe focuses on computer vision while DL4J serves Java developers.

3

Enterprise Options

Microsoft's CNTK offers scalability for complex models like GANs.

Google-Backed

Developed by Google Brain team.

Open source framework for dataflow and differential programming.

Language Support

Compatible with Python, C++, and R.

One of the most preferred frameworks for deep learning.

Community

Excellent documentation and community support despite being known as complex.

Keras

User-Friendly Interface

Provides easy-to-use interfaces for deep learning layers, activation functions, loss function and optimizers.

Backend Flexibility

Uses TensorFlow or Theano as its backend engine.

Integration

Now fully integrated into TensorFlow V2 for seamless operation.

Torch / PyTorch

Scientific Computing

Offers robust support for machine learning algorithms and research applications.

Industry Adoption

Widely used among tech giants including Facebook, Twitter, and Google.

Python-Based

PyTorch provides Python access to the Torch framework.

Easier to learn than TensorFlow.

theano

Developed by the Université de Montréal in 2007.

Offers good integration with NumPy and SciPy but does not support execution in multiple GPUs.

No longer actively maintained.

Caffe2

Specialized for computer vision tasks. One of the fastest DL frameworks with support for multiple languages.

Caffe's big advantage is its Model Zoo with easy-to-use pre-trained models.

DL4J

Deep Learning for Java and JVM languages

Supports Keras models and distributed training via Apache Spark

One of the fastest, alongside with Caffe2

Microsoft Cognitive Toolkit

Supports Python, C#, and C++

Facilitates implementation of complex models like GANs

Good performance and Scalability

Why we chose PyTorch

Educational Value
Better understanding of forward/backward passes

Industry Adoption
Popular in both research and industry

Learning Curve
Easier to learn than TensorFlow

Python Integration
Seamless Python workflow

Thank you.