Title: JAX (software)

URL: https://en.wikipedia.org/wiki/JAX_(software)

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JAX is a Python library for accelerator-oriented array computation and program transformation, designed for high-performance numerical computing and large-scale machine learning. It is developed by Google with contributions from Nvidia and other community contributors. [1] [2] [3]

It is described as bringing together a modified version of autograd (automatic obtaining of the gradient function through differentiation of a function) and OpenXLA's XLA (Accelerated Linear Algebra). It is designed to follow the structure and workflow of NumPy as closely as possible and works with various existing frameworks such as TensorFlow and PyTorch . [4] [5] The primary features of JAX are: [6]

Providing a unified NumPy -like interface to computations that run on CPU, GPU, or TPU, in local or distributed settings.

Built-in Just-In-Time (JIT) compilation via Open XLA, an open-source machine learning compiler ecosystem.

Efficient evaluation of gradients via its automatic differentiation transformations.

Automatic vectorization to efficiently map functions over arrays representing batches of inputs.

See also

NumPy

TensorFlow

PyTorch

CUDA

Accelerated Linear Algebra

External links

Documentation■ jax .readthedocs .io

Colab (Jupyter /iPython) Quickstart Guide■ colab .research .google .com /github /google /jax /blob /main /docs /notebooks /quickstart .ipynb

TensorFlow 's XLA■ www .tensorflow .org /xla (Accelerated Linear Algebra)

YouTube TensorFlow Channel "Intro to JAX: Accelerating Machine Learning research": www .youtube .com /watch?v=WdTeDXsOSj4

Original paper■ mlsys .org /Conferences /doc /2018 /146 .pdf

References

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Differentiable programming

Information geometry

Statistical manifold

Automatic differentiation

Neuromorphic computing

Pattern recognition

Ricci calculus

Computational learning theory

Inductive bias

IPU

TPU

VPU

Memristor

SpiNNaker

TensorFlow

PyTorch

Keras

scikit-learn

Theano

JAX

Flux.jl

MindSpore

Portals Computer programming Technology

Computer programming

Technology