# PyTorch support for GPU

# GPU

Graphics Processing Units (GPUs) are chips that contain hundreds of cores that offer massively parallel computations which accelerates deep learning training process by multiple orders

PyTorch tensors have been designed in a way to make optimal use of the available GPU for computations

This helps training neural network on GPU to be 20-30X faster than that of CPU

# CUDA

Parallel computing platform that works with NVidia GPUs

Provides API to interact with GPUs

Originally designed by NVidia to offer general purpose usage of GPU apart from graphics

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# CUDA Usage

NVidia GPU must be available in system

CUDA drivers must be installed

CUDA compliant version of PyTorch needs to be present

Tensors must be defined in GPU

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# PyTorch CUDA

torch.cuda contains GPU enabled operations

torch.cuda.device helps to select the appropriate GPU device

Device Context manager keeps track of the available selected GPU

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Cross-GPU operations aren't yet allowed

All tensors need to be defined in the same GPU

Use functions like cuda(), to() to copy tensors from one device to another

# PyTorch CUDA

Writing code that works for both CPUs and GPUs

Check if GPU is available and proceed as per that