# torch.nn

These are the basic building blocks for graphs:

**torch.nn**

- Containers
- Convolution Layers
- Pooling layers
- Padding Layers
- Non-linear Activations (weighted sum, nonlinearity)
- Non-linear Activations (other)
- Normalization Layers
- Recurrent Layers
- Transformer Layers
- Linear Layers
- Dropout Layers
- Sparse Layers
- Distance Functions
- Loss Functions
- Vision Layers
- Shuffle Layers
- DataParallel Layers (multi-GPU, distributed)
- Utilities
- Quantized Functions
- Lazy Modules Initialization

# Containers

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 32)**

Unknown directive type "autosummary".

```
.. autosummary::
    :toctree: generated
    :nosignatures:
    :template: classtemplate.rst

    Module
    Sequential
    ModuleList
    ModuleDict
    ParameterList
    ParameterDict
```

Global Hooks For Module

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 46)**

Unknown directive type "currentmodule".

```
.. currentmodule:: torch.nn.modules.module
```

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 47)**

Unknown directive type "autosummary".

```
.. autosummary::
    :toctree: generated
    :nosignatures:

    register_module_forward_pre_hook
    register_module_forward_hook
    register_module_backward_hook
    register_module_full_backward_hook
```

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 56)**

Unknown directive type "currentmodule".

```
.. currentmodule:: torch
```

# Convolution Layers

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 61)**

Unknown directive type "autosummary".

```
.. autosummary::
    :toctree: generated
    :nosignatures:
    :template: classtemplate.rst

    nn.Conv1d
    nn.Conv2d
    nn.Conv3d
    nn.ConvTranspose1d
    nn.ConvTranspose2d
    nn.ConvTranspose3d
    nn.LazyConv1d
    nn.LazyConv2d
    nn.LazyConv3d
    nn.LazyConvTranspose1d
    nn.LazyConvTranspose2d
    nn.LazyConvTranspose3d
```

```
    nn.Unfold
    nn.Fold
```

## Pooling layers

## Padding Layers

## Non-linear Activations (weighted sum, nonlinearity)

```
nn.Hardsigmoid
nn.Hardtanh
nn.Hardswish
nn.LeakyReLU
nn.LogSigmoid
nn.MultiheadAttention
nn.PReLU
nn.ReLU
nn.ReLU6
nn.RReLU
nn.SELU
nn.CELU
nn.GELU
nn.Sigmoid
nn.SiLU
nn.Mish
nn.Softplus
nn.Softshrink
nn.Softsign
nn.Tanh
nn.Tanhshrink
nn.Threshold
nn.GLU
```

## Non-linear Activations (other)

**System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`, line 165)**

Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:
   :template: classtemplate.rst

   nn.Softmin
   nn.Softmax
   nn.Softmax2d
   nn.LogSoftmax
   nn.AdaptiveLogSoftmaxWithLoss
```

## Normalization Layers

**System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`, line 179)**

Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:
   :template: classtemplate.rst

   nn.BatchNorm1d
   nn.BatchNorm2d
   nn.BatchNorm3d
   nn.LazyBatchNorm1d
   nn.LazyBatchNorm2d
   nn.LazyBatchNorm3d
   nn.GroupNorm
   nn.SyncBatchNorm
   nn.InstanceNorm1d
   nn.InstanceNorm2d
   nn.InstanceNorm3d
   nn.LazyInstanceNorm1d
   nn.LazyInstanceNorm2d
   nn.LazyInstanceNorm3d
   nn.LayerNorm
   nn.LocalResponseNorm
```

## Recurrent Layers

## Transformer Layers

## Linear Layers

## Dropout Layers

## Sparse Layers

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 261`)
>
> Unknown directive type "autosummary".
>
> ```
> .. autosummary::
>     :toctree: generated
>     :nosignatures:
>     :template: classtemplate.rst
>
>     nn.Embedding
>     nn.EmbeddingBag
> ```

## Distance Functions

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 272`)
>
> Unknown directive type "autosummary".
>
> ```
> .. autosummary::
>     :toctree: generated
>     :nosignatures:
>     :template: classtemplate.rst
>
>     nn.CosineSimilarity
>     nn.PairwiseDistance
> ```

## Loss Functions

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 283`)
>
> Unknown directive type "autosummary".
>
> ```
> .. autosummary::
>     :toctree: generated
>     :nosignatures:
>     :template: classtemplate.rst
>
>     nn.L1Loss
>     nn.MSELoss
>     nn.CrossEntropyLoss
>     nn.CTCLoss
>     nn.NLLLoss
>     nn.PoissonNLLLoss
>     nn.GaussianNLLLoss
>     nn.KLDivLoss
>     nn.BCELoss
>     nn.BCEWithLogitsLoss
>     nn.MarginRankingLoss
>     nn.HingeEmbeddingLoss
>     nn.MultiLabelMarginLoss
>     nn.HuberLoss
>     nn.SmoothL1Loss
>     nn.SoftMarginLoss
>     nn.MultiLabelSoftMarginLoss
>     nn.CosineEmbeddingLoss
>     nn.MultiMarginLoss
>     nn.TripletMarginLoss
>     nn.TripletMarginWithDistanceLoss
> ```

## Vision Layers

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 313`)
>
> Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:
   :template: classtemplate.rst

   nn.PixelShuffle
   nn.PixelUnshuffle
   nn.Upsample
   nn.UpsamplingNearest2d
   nn.UpsamplingBilinear2d
```

## Shuffle Layers

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 327**)**

Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:
   :template: classtemplate.rst

   nn.ChannelShuffle
```

## DataParallel Layers (multi-GPU, distributed)

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 336**)**

Unknown directive type "automodule".

```
.. automodule:: torch.nn.parallel
```

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 337**)**

Unknown directive type "currentmodule".

```
.. currentmodule:: torch
```

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 339**)**

Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:
   :template: classtemplate.rst

   nn.DataParallel
   nn.parallel.DistributedDataParallel
```

## Utilities

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst, line 349**)**

Unknown directive type "automodule".

```
.. automodule:: torch.nn.utils
```

From the `torch.nn.utils` module

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-

Unknown directive type "currentmodule".

```
.. currentmodule:: torch.nn.utils
```

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-**master\docs\source\[pytorch-master][docs][source]nn.rst, line 354)**

Unknown directive type "autosummary".

```
.. autosummary::
    :toctree: generated
    :nosignatures:

    clip_grad_norm_
    clip_grad_value_
    parameters_to_vector
    vector_to_parameters
    prune.BasePruningMethod
```

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-**master\docs\source\[pytorch-master][docs][source]nn.rst, line 364)**

Unknown directive type "autosummary".

```
.. autosummary::
    :toctree: generated
    :nosignatures:

    prune.PruningContainer
    prune.Identity
    prune.RandomUnstructured
    prune.L1Unstructured
    prune.RandomStructured
    prune.LnStructured
    prune.CustomFromMask
    prune.identity
    prune.random_unstructured
    prune.l1_unstructured
    prune.random_structured
    prune.ln_structured
    prune.global_unstructured
    prune.custom_from_mask
    prune.remove
    prune.is_pruned
    weight_norm
    remove_weight_norm
    spectral_norm
    remove_spectral_norm
    skip_init
```

Parametrizations implemented using the new parametrization functionality in
:func:`torch.nn.utils.parameterize.register_parametrization`.

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-**master\docs\source\[pytorch-master][docs][source]nn.rst, line 390); *backlink***

Unknown interpreted text role "func".

**System Message: ERROR/3 (**D:\onboarding-resources\sample-onboarding-resources\pytorch-**master\docs\source\[pytorch-master][docs][source]nn.rst, line 393)**

Unknown directive type "autosummary".

```
.. autosummary::
    :toctree: generated
    :nosignatures:

    parametrizations.orthogonal
    parametrizations.spectral_norm
```

Utility functions to parametrize Tensors on existing Modules. Note that these functions can be used to parametrize a given Parameter or Buffer given a specific function that maps from an input space to the parametrized space. They are not parameterizations that would transform an object into a parameter. See the Parametrizations tutorial for more information on how to implement your own parametrizations.

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 408)**

Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:

   parametrize.register_parametrization
   parametrize.remove_parametrizations
   parametrize.cached
   parametrize.is_parametrized
```

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 417)**

Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:
   :template: classtemplate.rst

   parametrize.ParametrizationList
```

Utility functions in other modules

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 426)**

Unknown directive type "currentmodule".

```
.. currentmodule:: torch
```

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 427)**

Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:

   nn.utils.rnn.PackedSequence
   nn.utils.rnn.pack_padded_sequence
   nn.utils.rnn.pad_packed_sequence
   nn.utils.rnn.pad_sequence
   nn.utils.rnn.pack_sequence
```

**System Message: ERROR/3 (**`D:\onboarding-resources\sample-onboarding-resources\pytorch-master\docs\source\[pytorch-master][docs][source]nn.rst`**, line 437)**

Unknown directive type "autosummary".

```
.. autosummary::
   :toctree: generated
   :nosignatures:
   :template: classtemplate.rst

   nn.Flatten
   nn.Unflatten
```

# Quantized Functions

Quantization refers to techniques for performing computations and storing tensors at lower bitwidths than floating point precision. PyTorch supports both per tensor and per channel asymmetric linear quantization. To learn more how to use quantized functions in PyTorch, please refer to the :ref:`quantization-doc` documentation.

## Lazy Modules Initialization