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## Class

# BNNS.ReductionLayer **Deprecated**

A layer object that wraps a reduction filter and manages its deinitialization.

iOS 14.0+ | iPadOS 14.0+ | Mac Catalyst | macOS 11.0+ | tvOS 14.0+ | visionOS | watchOS 7.0+ |

```
class ReductionLayer
```

### Deprecated

Use the BNNSGraph API instead.

## Topics

### Creating a Reduction Layer

```
convenience init?(function: BNNS.ReductionFunction, input: BNNSNDArrayDescriptor, output: BNNSNDArrayDescriptor, weights: BNNSNDArrayDescriptor?, filterParameters: BNNSFilterParameters?)
```

Returns a new reduction layer.

### Specifying a Reduction Function

```
enum ReductionFunction
```

Constants that describe reduction functions.

### Applying a Reduction Layer

~~func applyBackward(batchSize: Int, input: BNNSNDArrayDescriptor, output: BNNSNDArrayDescriptor, outputGradient: BNNSNDArrayDescriptor, generatingInputGradient: BNNSNDArrayDescriptor, generatingWeightsGradient: BNNSNDArrayDescriptor?) throws~~

Applies the layer backward to generate input gradients.

## Directly Applying Reduction

```
static func applyReduction(BNNS.ReductionFunction, input: BNNSNDArrayDescriptor, output: BNNSNDArrayDescriptor, weights: BNNSNDArrayDescriptor?, filterParameters: BNNSFilterParameters?) throws
```

Applies the specified reduction function.

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## Relationships

### Inherits From

BNNS.UnaryLayer

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## See Also

### Reduction layers

```
static func applyReduction(BNNS.ReductionFunction, input: BNNSNDArrayDescriptor, output: BNNSNDArrayDescriptor, weights: BNNSNDArrayDescriptor?, filterParameters: BNNSFilterParameters?) throws
```

Applies the specified reduction function.

```
struct BNNSReduceFunction
```

Constants that describe reduction functions.

```
struct BNNSLayerParametersReduction
```

A set of parameters that define a reduction layer.

```
func BNNSFilterCreateLayerReduction(UnsafePointer<BNNSLayerParameters  
Reduction>, UnsafePointer<BNNSFilterParameters>?) -> BNNSFilter?
```

Returns a new reduction layer.

Deprecated

```
func BNNSDirectApplyReduction(UnsafePointer<BNNSLayerParameters  
Reduction>, UnsafePointer<BNNSFilterParameters>?) -> Int32
```

Applies a reduction operation directly to an input tensor.