

[Metal](#) / MTLTensor

Protocol

MTLTensor

A resource representing a multi-dimensional array that you can use with machine learning workloads.

iOS 26.0+ | iPadOS 26.0+ | Mac Catalyst 26.0+ | macOS 26.0+ | tvOS 26.0+ | visionOS 26.0+

```
protocol MTLTensor : MTLResource
```

Topics

Instance Properties

`var buffer: (any MTLBuffer)?`

A buffer instance this tensor shares its storage with or nil if this tensor does not wrap an underlying buffer.

Required

`var bufferSize: Int`

An offset, in bytes, into the buffer instance this tensor shares its storage with, or zero if this tensor does not wrap an underlying buffer.

Required

`var dataType: MTLTensorDataType`

An underlying data format of this tensor.

Required

`var dimensions: MTLTensorExtents`

An array of sizes, in elements, one for each dimension of this tensor.

Required

`var gpuResourceID: MTLResourceID`

A handle that represents the GPU resource, which you can store in an argument buffer.

Required

`var strides: MTLTensorExtents?`

An array of strides, in elements, one for each dimension of this tensor.

Required

`var usage: MTLTensorUsage`

A set of contexts in which you can use this tensor.

Required

Instance Methods

`func getBytes(UnsafeMutableRawPointer, strides: MTLTensorExtents, sliceOrigin: MTLTensorExtents, sliceDimensions: MTLTensorExtents)`

Copies the data corresponding to a slice of this tensor into a pointer you provide.

Required

`func replace(sliceOrigin: MTLTensorExtents, sliceDimensions: MTLTensorExtents, withBytes: UnsafeRawPointer, strides: MTLTensorExtents)`

Replaces the contents of a slice of this tensor with data you provide.

Required

Relationships

Inherits From

MTLAllocation, MTLResource, NSObjectProtocol

See Also

Tensors

`class MTLTensorDescriptor`

A configuration type for creating new tensor instances.

`class MTLTensorExtents`

An array of length matching the rank, holding the dimensions of a tensor.

`class MTLTensorReferenceType`

An object that represents a tensor in the shading language in a struct or array.

`struct MTLTensorUsage`

The type that represents the different contexts for a tensor.

`let MTLTensorDomain: String`

An error domain for errors that pertain to creating a tensor.

`protocol MTLTensorBinding`

An object that represents a tensor bound to a graphics or compute function or a machine learning function.

`struct MTLTensorError`

`enum Code`

The error codes that Metal can raise when you create a tensor.

`enum MTLTensorDataType`

The possible data types for the elements of a tensor.

`let MTLTensorDomain: String`

An error domain for errors that pertain to creating a tensor.

`var MTL_TENSOR_MAX_RANK: Int32`