Structure

vImage_YpCbCrPixelRange

The description of range and clamping information for YpCbCr pixel formats.

iOS | iPadOS | Mac Catalyst | macOS | tvOS | visionOS | watchOS

```
struct vImage_YpCbCrPixelRange
```

Overview

Y′CbCr formats frequently don't use the entire representable range available to them to represent image data. While a *full range* video format does use the entire range, a *video range* format often leaves the extrema unused, except perhaps to represent values outside of the standard `Y'=[0,1]` `CbCr = [-0.5,0.5]` range. For example, an 8-bit video range format typically uses the range `[16,235]` for Y′ and `[16,240]` for Cb and Cr.

The following code shows examples of typical Y′CbCr pixel ranges:

```
// The 8-bit pixel range that's unclamped.
let pixelRange = vImage_YpCbCrPixelRange(Yp_bias: 16,
                                         CbCr_bias: 128,
                                         YpRangeMax: 235,
                                         CbCrRangeMax: 240,
                                         YpMax: 255,
                                         YpMin: 0,
                                         CbCrMax: 255,
                                         CbCrMin: 1)

 // The 8-bit pixel range that's clamped to video range.
let pixelRange = vImage_YpCbCrPixelRange(Yp_bias: 16,
                                         CbCr_bias: 128,
```

```
                                                YpRangeMax: 265,
                                                CbCrRangeMax: 240,
                                                YpMax: 235,
                                                YpMin: 16,
                                                CbCrMax: 240,
                                                CbCrMin: 16)

// The 8-bit pixel range that's clamped to full range.
let pixelRange = vImage_YpCbCrPixelRange(Yp_bias: 0,
                                                CbCr_bias: 128,
                                                YpRangeMax: 255,
                                                CbCrRangeMax: 255,
                                                YpMax: 255,
                                                YpMin: 1,
                                                CbCrMax: 255,
                                                CbCrMin: 0)
```

The bias is the prebias for YUV to RGB and the postbias for RGB to YUV.

Topics

Creating a Pixel Range

`init(Yp_bias: Int32, CbCr_bias: Int32, YpRangeMax: Int32, CbCrRangeMax: Int32, YpMax: Int32, YpMin: Int32, CbCrMax: Int32, CbCrMin: Int32)`

Returns a structure describing range and clamping information for Y′CbCr pixel formats.

`init()`

Pixel Range Properties

`var Yp_bias: Int32`

The encoding for `Y' = 0.0` for this video format (varies by bit depth).

`var CbCr_bias: Int32`

The encoding for `{Cb, Cr} = 0.0` for this video format.

`var YpRangeMax: Int32`

The encoding for `Y' = 1.0` for this video format.

`var CbCrRangeMax: Int32`

The encoding for `{Cb, Cr} = 0.5` for this video format.

`var YpMax: Int32`

The encoding for the maximum allowed Y′ value.

`var YpMin: Int32`

The encoding of the minimum allowed Y′ value.

`var CbCrMax: Int32`

The encoding of the maximum allowed `{Cb, Cr}` value.

`var CbCrMin: Int32`

The encoding of the minimum allowed `{Cb, Cr}` value.

Relationships

Conforms To

`BitwiseCopyable`, `Sendable`

See Also

Generating conversion information

`func vImageConvert_ARGBToYpCbCr_GenerateConversion(UnsafePointer<vImage_ARGBToYpCbCrMatrix>, UnsafePointer<vImage_YpCbCrPixelRange>, UnsafeMutablePointer<vImage_ARGBToYpCbCr>, vImageARGBType, vImageYpCbCrType, vImage_Flags) -> vImage_Error`

Generates the information that describes the conversion from ARGB to YpCbCr.

`struct vImageYpCbCrType`

Constants that describe the encoding of a YpCbCr image for conversions between RGB and YpCbCr.

`struct vImageARGBType`

Constants that describe the encoding of an ARGB image for conversions between RGB and YpCbCr.

`struct vImage_ARGBToYpCbCrMatrix`

The 3 x 3 matrix that the vImage library uses to convert from RGB to YpCbCr.

`struct vImage_ARGBToYpCbCr`

The information that describes the conversion from ARGB to YpCbCr.