
Overview

Contents

Features of OpenEXR

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Definitions and Terminology

Flat and Deep Images

flat image

sample

deep image

Parts, Images, Single-Part and Multi-Part Files

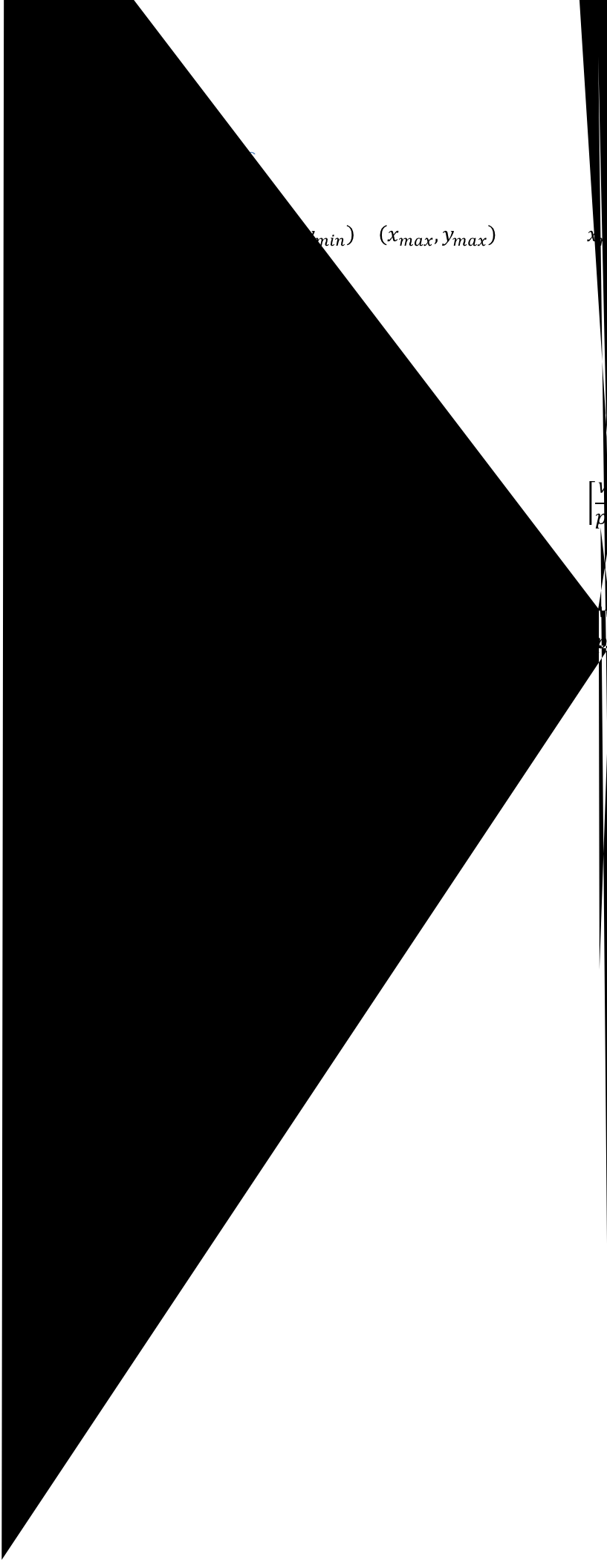
file

part

multi-part file

single-part

image



(x_{min}, y_{min}) (x_{max}, y_{max})

$$x_{max} - x_{min} + 1$$

scan lines

(x_{min}, y_{min}) (x_{max}, y_{max})

tiles

$$\begin{bmatrix} w \\ h \end{bmatrix}$$

Levels and Level Modes

level mode

level

Level Numbers, Level Sizes and Rounding Mode

level numbers

w h

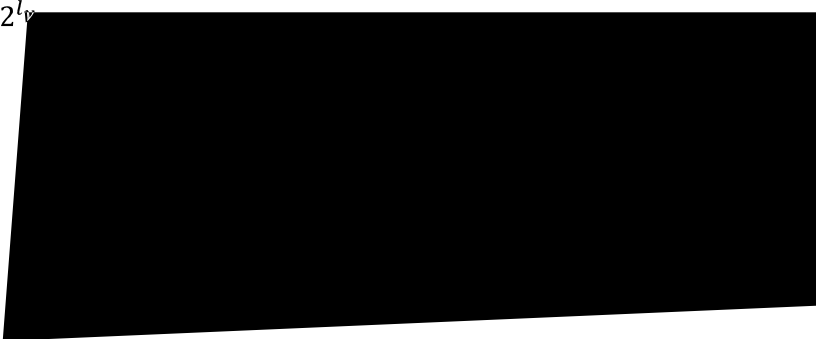
(l_x, l_y)

(l_x, l_y)

$(0, 0)$

$rf\left(\frac{w}{2^{l_x}}\right)$

$rf\left(\frac{h}{2^{l_y}}\right)$



$\lfloor x \rfloor$
 $\lfloor x \rfloor$

x

x
 x

$(0, 0)$.

$$l_x = l_y$$

$(0,0)$ $(1,0)$ $(2,0)$
 $(0,1)$ $(1,1)$ $(2,1)$
 $(0,2)$ $(1,2)$ $(2,2)$

$(0,0)$ $(1,1)$ $(2,2)$

Tile Coordinates

coordinates

tile
 $(0,0)$

Views

view

OpenEXR File Structure

Header

Constraints on Attribute Values


Scan Lines

Tiles

$$\begin{array}{cccc} (0, 0) & (1, 0) & \cdots & (n_x - 1, 0) \\ (0, 1) & (1, 1) & \cdots & (n_x - 1, 1) \\ \cdots & & & \\ (0, n_y - 1) & (1, n_y - 1) & \cdots & (n_x - 1, n_y - 1), \end{array}$$


$(0, t_y - 1) (1, t_y - 1) \cdots (t_x - 1, t_y - 1),$

\cdots

$(0, 1) (1, 1) \cdots$ 

$$3 \times 10^{-5}$$

Luminance/Chroma Images

$$Y = R \cdot w_R + G \cdot w_G + B \cdot w_B,$$

$$w_R \quad w_G \quad w_B$$

$$R_Y = \frac{R - Y}{Y}$$

$$B_Y = \frac{B - Y}{Y}$$

The HALF Data Type

half

half *half*

Recommendations

Scene-Referred Images

CIE XYZ Color

Channel Names

Layers

L

$L.C$

C

$L_1.L_2.L_3 \dots L_n.C$
 L_3

L_n

L_1

L_2

Color, Alpha and Compositing of Flat Images

$$\text{composite} = \text{foreground} + (1 - \text{alpha}) \cdot \text{background}$$

composite = alpha · foreground + (1 - alpha) · background.

h

$\max(h, \alpha)$

h

Credits