

Ch. 2 (review) Digital Representation of Visual Information

Digital compositing is working with images.

Review these:

pixels, components (such as R, G, B), channels (such as Red, Green, Alpha)

resolution, bit depth, normalized values

RGB, HSV

file formats (bit depth, resolution, compression, metadata, image channels)

Ch. 3: Basic Image Manipulation

Histogram (levels)

Graphing output pixel values versus input pixel values for Images to manipulate (levels).

RGB Multiply

Add

Gamma Correction

Invert

Contrast

Expression Language

“Filters” or Spatial Filters

Convolve

Blurring

Sharpen

Median Filter

Geometric Transformations

Pan (translate), Rotate, Scale

3D Transforms

Warping and Morphing

Ch. 4 Basic Image Compositing

Matte Image

Integrated Matte Channel

(premultiplication)

Multisource Operators

Over $O = (A \times M) + [(1 - M) \times B]$ or if pre-mult $A + [(1-M) \times B]$

Mix $O = (MV * A) + [(1- MV) \times B]$

Subtract $O = A - B$

In $O = A \times B_a$

Out $O = A \times (1 - B_a)$

Atop $O = (A \text{ in } B) \text{ over } B$

Masks versus Mattes

Compositing with pre-multiplied images!

Color-correcting and combining pre-multiplied images.

Importance of operations and calculations (akin to shooting with VistaVision)

Ch. 5 Matte Creation and Manipulation

Creating digital traveling mattes.

Rotoscoping.

Procedural Matte Extraction (luma-keying, chroma-keying, difference matting)

Color Difference Method (Petro Vlahos in 1950s)

for each pixel, if $b > g$, then new $b = \text{new } g$, else new $b = b$

Replaces blue with black (because green channel should be 0 with pure blue)

Also helps do spill suppression

Garbage Mattes

Ch. 8 & 9, Interface, Image Viewing and Analysis

Output = Over(

Brightness(

Foreground,

1.2),

Brightness(

Blur(

Background,

4.0),

0.8))

)

Scripts

Node/Tree/Graph Representation (like in Shake)

Timeline/Layers Representation (like in After Effects)

Curve Editors

Flipbooks

Histograms

Ch. 11 Quality and Efficiency

compression, numeric representation, numeric accuracy, consolidating operators