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 pre-mult \(A + [(1-M) \times B]\)
- **Mix**: \(O = (MV \times A) + [(1-MV) \times B]\)
- **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.

Rotoscopying.

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 supression

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