Evaluation of the closeness of the two colors (images)

~Towards Consistent Color Appearance~

Yasuki Yamauchi
Yamagata University

Color appearance should be consistent
Our Approach

• Starting from color patch

• Extending to the image?
  - direct comparison of images
  - Accumulating color information of each pixels

Task: "Find the closest colour on a line (e.g. equal saturation)"

Selected colours are not always the colours of min. ΔE
When we would like to map a source color to a color in a given gamut, we need to find the "corresponding" color ( = perceptually equal).

After collecting several closest colours of different gamuts:

Trend of the colours selected as "closest" to the reference

Colours that give the similar impression

**Consistent Colors**
Concept of the color difference based on consistent color locus

Consistent color loci
(for CRPC7, CRPC5, and CRPC3)
Our Approach

• Starting from color patch

• Extending to the image
  - direct comparison of images
  - Accumulating color information of each pixels

Focal color (Mean color)
Rendering (n) + algebra shift
Trend-line like characteristics? a*
Image evaluations

- Original Image: AdobeRGB samples (SCID.....)
- Display D50
- Printer Gamut (3 different sizes: CRPC7, 5, 3)
- Paired comparison (Original + 3 different Gamut images)

- Several mapping method (Printer B2A)

- Color conversion
  - monitor calibration: AdobeRGB  D50
  - AdobeRGB original (D65)—XYZ/Lab(D50)
  - Printer B2A(Lab—CMYK): mentioned above
  - Printer A2B(CMYK—Lab)
  - Monitor B2A(D50): AdobeRGB(D50)
Sample Images

A paired comparison evaluation

Compared the results if there can be correlated with trend-line results
Summary

• We conduct a paired comparison for sets of different gamut size images.
• Compared with the results with those calculated with the trend-line based color difference
• If these two results can be well correlated, then we might be able to predict the color consistency using trend-line based approach.