Methods and Applications for Printer Color Gamut Visualization

J. A. Stephen Viggiano and Deepthi Sid
RIT Research Corporation
Rochester, New York

Abstract

The range of colors within a device-independent color space, such as CIELAB, which are producible on a color output device or system is referred to as its gamut. While it is popular to show two-dimensional projections (e.g., onto the a*, b* plane), color gamuts are actually three-dimensional, and contain much more information and features than can be shown in such a projection. In order to show these features, more elaborate techniques must be used. These include three dimensional modeling and shading, production of different cross sections, and projections to supplement the (a*, b*) projection.

Applications for printer color gamuts include:
- General Gamut Visualization
- Comparison to two device gamuts
- Gamut Volume computation and comparison
- Investigation of the effect of change of illuminant
- Investigation of the effect of change in colorant set, substrate, halftoning method, or other conditions
- Colorant Set Optimization
- Inclusion of a specific color

The presentation will discuss several visualization techniques, and compare their utility for these applications. Practical examples will be presented for each of these applications.

Biography

J A Stephen Viggiano is Senior Imaging Scientist at RIT Research Corporation, and is on the RIT faculty. Professor Viggiano holds degrees in Mathematics, Printing Technology and Mathematical Statistics.

Deepthi Sid has an MS in Color Science and an MS in Graphic Arts System from RIT. She works as Associate Imaging Scientist in color science and digital imaging.