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Proceedings Paper:
Westland, S, Pan, Q, Li, Y et al. (1 more author) (2015) Development of a Wide-Gamut Digital Image Set. In: Yaguchi, H, Okajima, K, Ishida, T, Araki, K, Doi, M and Manabe, Y, (eds.) AIC2015 TOKYO: Color and Image. Book of Abstracts. AIC2015 TOKYO: Color and Image: Midterm Meeting of the International Colour Association, 19-22 May 2015, Tokyo, Japan. Color Science Association of Japan (CSAJ) , pp. 93-94.

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Development of a Wide-Gamut Digital Image Set

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ABSTRACT

A great many imaging devices are consistent with the sRGB colour space. However, wide-gamut display devices exist that conform to colour spaces that have wider gamuts such as Adobe (1998) RGB. This colour space encompasses about 50% of the colours in CIELAB and improves on 94 AIC2015 TOKYO - Color and Image the gamut of sRGB in the green-cyan colours in [particular but also in the yellow region. There is a shortage of standard image sets that contain colours that are outside of the sRGB gamut. Such images could be useful, for example, for testing various performance metrics in wide-gamut display systems. The purpose of this work is to develop a wide-gamut image set and make it widely available on the internet for the imaging community.

Three digital SLR cameras were used to capture a large number of images that contained saturated colours. The colour space of the cameras was set to Adobe RGB and the file format was set to record raw. The images were transferred to Adobe Photoshop and converted to 48-bit TIFF images in the Adobe colour space. MATLAB was used to process the images and to ascertain the proportion of pixels that were outside of the sRGB gamut in each case. Image that contained less than 15% of pixels that were outside of the sRGB gamut were rejected. Images were also rejected if they were blurred or if the out-of-gamut pixels were not associated with particular objects in the scene. Images have been made available on a website – in both raw and tiff formats – and are categorised according to their colour and also according to the description of the objects for which the pixels are out of gamut. Example, object classifications include textiles, jewellery, arts, plants, foodstuffs and electronics. A total of 100 wide-gamut images were selected and have been made available to the community.