



D6.6 Personalisation considering illuminant colour in viewing environment



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1 EXECUTIVE SUMMARY

Chromatic adaptation considering competing influences from emissive displays and ambient illumination is a little studied topic in the context of color management in proportion to its influence on displayed image appearance. An experiment was conducted identifying the degree to which observers adapt to the white point of natural images on an emissive display versus the color of ambient illumination in the room. To investigate this, a series of images were first displayed under a reference condition, where observers were instructed to take notice of the quality of their achromatic and memory color regions. Then, the observers were asked to adjust them back to this color balance from memory as they were displayed again under varying environmental conditions. This was done using a one-dimensional white balance control, interpolating between the two achromatic reference points (ambient color and display white point).

The responses of observers were found to be general for the natural images tested and had no significant difference from those of a previous experiment which was conducted with roughly the same procedure and conditions on a drastically reduced viewing angle. A possible explanation for this could be that our adaptive processes maintain some consideration for the current environmental illumination (if any exists) whenever we view emissive displays, with little regard to the amount that the surround conditions intrude upon our field of view. Using these data and those of the previous experiment, a model is proposed to predict the degree of adaptation values reported by observers. This model has a form such that it could be re-optimized to fit additional data sets for different viewing scenarios and can be used in conjunction with a number of chromatic adaptation transforms.