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Ordinal pairwise method for natural images comparison.

by

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We developed a new psychophysical method to compare different colour appearance models when applied to natural scenes. The method was as follows: two images (processed by different algorithms) were displayed on a CRT monitor and observers were asked to select the most natural of them. The original images were gathered by means of a calibrated trichromatic digital camera and presented one on top of the other on a calibrated screen. The selection was made by pressing on a 6-button IR box, which allowed observers to consider not only the most natural but to rate their selection. The rating system allowed observers to register how much more natural was their chosen image (e.g., much more, definitely more, slightly more), which gave us considerably extra information on the selection process. The results were analysed both, considering the selection as a binary choice (using Thurstone's law of comparative judgement) and using Bradley-Terry method for ordinal comparison. Our results show a significative difference in the rating scales obtained. Although this method has been tried in colour constancy algorithm comparisons, its uses are much wider, e.g. to compare image compression algorithms, rendering algorithms, recolouring algorithms, etc. [Supported by projects TIN2007-64577, CSD2007-00018 and RYC-2007-00484 of the Spanish Ministry of Science]