

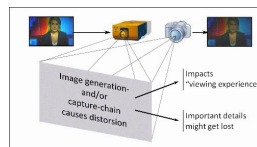


Abstract

A Flemish university developed a novel image quality management method and software based on a special matrix collection. The matrix technology provides an overall procedure to deal with the quality of colours in images. It combines excellent accuracy with low computational effort, enabling real time calculation. The university is looking for technical cooperation with industrial partners in the area of vision technology, both producers and users.

Description

The industrial vision lab of the university was the first to investigate a special matrix collection (Skr-matrices). An original image quality management method and software has been developed based on the interesting properties of these matrices.



The matrix technology provides an overall procedure to deal with the quality of colours and gray scales in images. The procedure encompasses the entire flow of image quality management, ranging from high quality colour input, colour transfer, colour measurements, colour interpretation to colour correction.

The image quality can be described, evaluated and tuned in a lot of practical applications. It can give expression to the real quality of colours seen by humans and by cameras, colours on screens, coloured reproductions, colour printing quality, colour extended bar coding. The Skr-matrix theory is a valuable candidate to become an industrial standard to measure image quality.

With this technology the accuracy and level of detail of inspection can easily be adapted. The quality of the colour is expressed in a simple signal to noise ratio. The properties of the used matrices are such that the software only uses simple calculations and has a low computational complexity. This efficiency is translated in a real time calculation of the colour quality, even for non linear effects like gamma, image blur, image contrast. Hence it is usable in online quality management systems for quality assessments during

continuous processing.

The second picture included in this profile is a typical icon used in the matrix principle. It represents specific numeric series. Colour deviations are also translated into numeric series. The ratio between the theoretical and actual series yields a signal to noise ratio that is an objective metric for the colour deviation.

Innovations and advantages of the offer

The new method for dealing with colour coherence in images is very accurate and its low computational complexity makes it very fast compared to other methods:

Relative benchmark 1

Lucy Richardson: Efficiency 18,75% / Time 0.022622s

Matrix: Efficiency 62,50% / Time 0.000955s

Relative benchmark 2

Regularisation: Efficiency 28% / Time 0.717s

Matrix: Efficiency 57% / Time 0.000955s

Relative benchmark 3

Wiener: Efficiency 17% / Time 0.0042s

Matrix: Efficiency 41,76% / Time 0.000955s

The combination of excellent accuracy and high speed enables real time calculation and can bring a competitive edge to companies who are dealing with image quality management.

Current and Potential Domain of Application

Measurement and expression of real quality of colours seen by human and by camera's, colours on screens, coloured reproduction, colour printing quality and related colour quality management software.

Characterisation and quality control of third-party supplied parts, quality control during and after production, calibration during and after production, vision systems, production controlled by vision system, calibration to correct image generation or capture equipment on site, as part of an off-line



ELECTRONICS, IT AND TELECOMMS, PHYSICAL AND EXACT SCIENCES

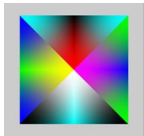
Technology Offer

Fast and accurate image quality management method and software

(09 BE 0427 3CLU)



calibration procedure, online in real time.



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