

THREE-DIMENSIONAL VIEWFINDER OF COLOUR SPACES OF PARTICULAR IMAGES

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In the project 'Development of machines, prototypes, and control systems for improving the ceramics manufacturing process' submitted to IMPIVA, in one of its sections, the colour space was determined that can be reproduced by different digital printing machines in the ceramic sector.

Once the colour space represented by the capabilities of a given printing system had been determined, an instrument was developed that allowed the colour space of any image to be represented.



Figure 1. Application interface.

This enabled the weight of an image in a target colour space (printing system) to be visually predicted, thus displaying possible incompatibilities between these colour spaces.

The instrument was developed using the Visual Studio 2005 programming environment and the C#.net language, while, in addition, the VTK graphics library was used, which allows objects to be represented in three dimensions, among other capabilities.

The program can open an image in jpg, gif, or bmp format, in RVA format (or in RGB format, which is the same) red, green, and blue.

The program then generates a dictionary type of table with the value of the RVA colours as inputs and the number of times that that colour is repeated in the image as content. This enables the colour space of the image to be represented by displaying each and every one of the different colours contained in the image three-dimensionally. Moreover, when it is known how many times a colour is re-

peated, its weight is also represented in the image, coded by colours, where white is equivalent to less weight and red to more weight.

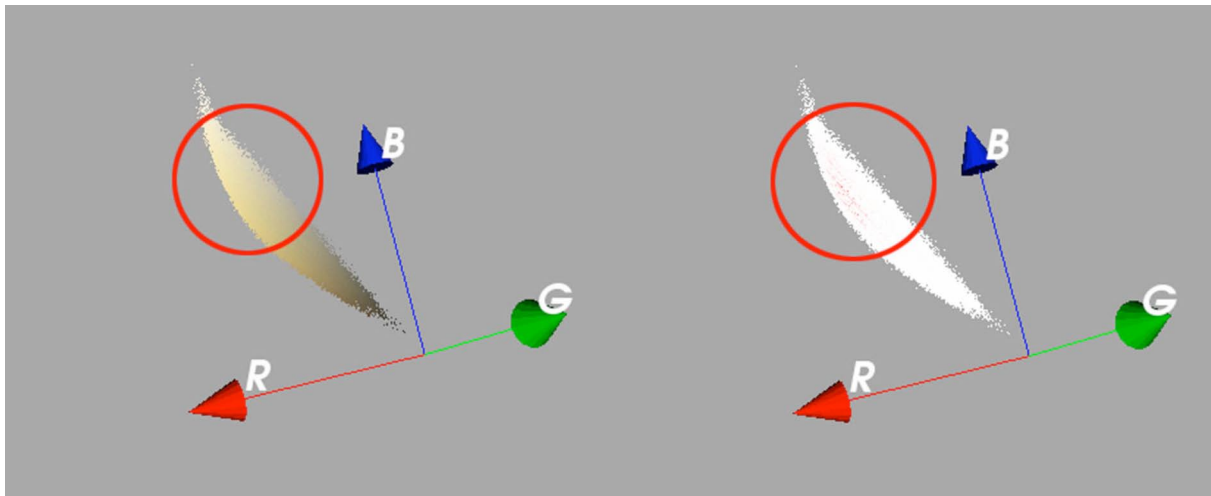


Figure 2. Real colours and their weights.

This application is the first step towards constructing a representative colour space for the ceramic sector, summing the colour spaces of particular images of the most representative designs. A customised colour space is thus constructed for the ceramic industry, which will be more effective than the colour spaces currently being used.

That new bespoke colour space would enhance the general-purpose areas, because in any single colour space there are only 256 levels of intensity on each of its axes (RVA), so that when the space is tighter, the designers can describe the colour in a much more precise way on screen and, hence, in the reproduction with digital printing machines.

In addition, the three-dimensional representation of the colours contained in an image can lead to further new designs, in which colour reproduction in different devices can be predicted by summing the vectors of their primary colours, enabling colour reproduction quality to be significantly enhanced at machine level or printing RIP.