TP # 02
Imagerie Couleur

Océ

05/06/2019

Today's Schedule

- How to use the Spectrophotometers

- About your 3-minute presentation

- Tour around the facilities

- Measuring Color with Spectrophotometers

- Measuring Color with Cameras

Devices

- Ci62

https://www.youtube.com/watch?v=IBZH8IRwfmA

- i1iO

https://www.youtube.com/watch?v=FZgIQVkxHmA

- i1 profiler

https://www.youtube.com/watch?v=UhEyqwBkdnA

3-minute presentation

- We will have a Doodle on which only 3(4) persons will be able to select the same paper

- Need to be inspired?
  - https://threeminutethesis.uq.edu.au/
  - Google: 3 minute presentation

Colour Vision: Understanding #TheDress

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A widely-viewed image of a dress elicits striking individual variation in colour perception. Experiments with multiple variants of the image suggest that the individual differences may arise through the action of visual mechanisms that normally stabilise object colour.

The effects of color on brightness

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Observation of human subjects shows that the spectral returns of equiluminant colored surrounds govern the apparent brightness of achromatic test targets. The influence of color on brightness provides further evidence that perceptions of luminance are generated according to the empirical frequency of the possible sources of visual stimuli, and suggests a novel way of understanding color contrast and constancy.

A Survey on Pixel-Based Skin Color Detection Techniques

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Abstract

Skin color has proven to be a useful and robust cue for face detection, localization and tracking. Image content filtering, content-aware video compression and image color balancing applications can also benefit from automatic detection of skin in images. Numerous techniques for skin color modelling and recognition have been proposed during several past years. A few papers comparing different approaches have been published [Zarit et al. 1999], [Terrillon et al. 2000], [Brand and Mason 2000]. However, a comprehensive survey on the topic is still missing. We try to fill this vacuum by reviewing most widely used methods and techniques and collecting their numerical evaluation results.

mixture of Gaussians models). [Brand and Mason 2000] have evaluated three different skin color modelling strategies. [Lee and Yoo 2002] also have compared two most popular parametric skin models in different chrominance spaces and have proposed a model of their own.

Our goal, in this paper, is to gather as much published techniques as we could find, describe their key ideas and try to find out and summarize their advantages, disadvantages and characteristic features. The paper is organized as follows. Section 2 is devoted to description of different colorspaces used for skin detection. Section 3 covers the existing skin color modelling methods. In section 4 numerical evaluation of some of the described methods is provided. In Sections 5 and 6 we discuss and compare the colorspaces and modelling methods. In Section 7 the conclusion are drawn.

Color Management with ICC Profiles: Can't Live without It so Learn to Live with It

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Abstract

Managing and controlling color, from scanner to monitor to output devices, are serious issues for the printing and imaging industries. Accurate color control is vital for predictable quality of final product, whether printed or displayed. Costs of controlling color are significant. Printing has become much more science than art and any company, especially those involved in printing and other media, must have a presence on the World Wide Web. Thus, controlling color between input,

Segmentation of color images by clustering 2D histogram and merging regions

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Résumé

Une méthode hybride de segmentation d'images couleur est présentée dans cet article. Dans une première étape plusieurs histogrammes 2D sont partionnés et les cartes de régions correspondantes sont fusionnées. Ceci permet d'obtenir un premier partionnement grossier de l'image par rapport à ses couleurs dominantes. L'information couleur attachée à chacune des régions est ensuite utilisée dans une deuxième étape. Une nouvelle technique de simplification du Graphe d'Adjacence des Régions est proposée en procédant par la fusion de régions deux à deux jusqu'à la stabilisation d'un critère définissant la pertinence de la segmentation. Les régions finales obtenues après fusion sont ensuite affinées au niveau de leurs contours par l'utilisation d'une ligne de partage des eaux utilisant les propriétés locales et globales de l'image. La robustesse de la méthode est expérimentalement éprouvée sur une base d'images et l'influence des différents paramètres étudiée.

Life of a Color – The Management of a Color

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Abstract

Color management is the process by which colors are described, communicated, transformed and reproduced using a device independent color representation. Traditional color management has used only CIEXYZ colorimetry based on a single observer (the 1931 Standard 2° observer) and single illuminant (D50). A new color management system is described (iccMAX) that accounts for a complete color process from light sources onto objects captured through color matching, and provides the means to add perceptual aspects of color..

There are several questions that can be asked related to this basic color management task, but one of the most direct questions would be:

- *What amount of Cyan, Magenta, Yellow, and blacK (CMYK) ink is needed to match the Red, Green, and Blue (RGB) pixels on the display?*

By asking and answering this question for each RGB pixel on the display one can determine the proper amount of ink to get a matching reproduction on the printer.

Image analysis of changes in surface color of chocolate

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Abstract

Blooming or the migration of fat to the surface of chocolate results in color changes and development of non-uniform color patterns. These phenomena were assessed during storage of milk chocolate tablets (cycling temp. between 16 and 28 °C for 52 days) by a computer vision system and image analysis. Eight features were extracted from images (L^*, a^* and b^* values, whiteness index, chroma, hue, % bloom and energy of Fourier). Major changes occurred after day 36 of storage, coincidental with visual perception. Initially, white specks emerged on the brown background but were superseded by the development of a whitish color extending over most of the surface. L^*, whiteness index, a^* and chroma correlated well with values taken with a commercial colorimeter ($R^2 > 0.70$). Changes in image texture (energy of Fourier) followed a similar trend as color changes. The sequential forward selection strategy allowed correct classification of 97.8% of samples into four classes with only five features. The computer vision system has the capability to quantify overall changes as well as particular features over the whole chocolate surface thus enabling customization and standardization for quality assessment.

Clothes Matching for Blind and Color Blind People

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Abstract. Matching clothes is a challenging task for blind people. In this paper, we propose a new computer vision-based technology of clothes matching to help blind or color blind people by using a pair of images from two different clothes captured by a camera. A mini-laptop or a PDA can be used to perform the texture and color matching process. The proposed method can handle clothes in uniform color without any texture, as well as clothes with multiple colors and complex textures patterns. Furthermore, our method is robust to variations of illumination, clothes rotation, and clothes wrinkles. The proposed method is evaluated on a challenging database of clothes. The matching results are displayed as audio outputs (sound or speech) to the users for "match (for both color and texture)", "color match, texture not match", "texture match, color not match", or "not match (for both color and texture)".