

Skin Colour Reproduction on LCDs

Aim:

- To investigate the accuracy of reproduction of skin colours including skin affected by medical conditions on displays used in medical imaging.
- To apply the findings in recommending optimal workflow and viewing conditions for dermatology images viewed on LCDs.

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Proposed stages

- Determination of the colour gamut of healthy skin and skin conditions.

- Literature search for prior work on definition and modelling of skin colour gamut for applications in dermatology.

- Colour measurements of skin with medical conditions to determine changes in colour compared to healthy skin.

The main interest is in the gamut boundaries rather than specific skin colours.

Work on a skin database is currently being carried out by Kaida Xiao (University of Liverpool) and CIE (TC 1-92 Skin Color Database).

Proposed stages

- Objective measurements of colour differences and subjective measurements of colour discrimination within the specific skin colour gamut, using colour patches displayed on LCDs.
- To explore the possibility of conducting subjective tests using real medical images.
- Recommendations for optimal workflow and viewing conditions for dermatology images.

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Additional comments

- What is the problem that you are trying to solve?
 - Determining whether the accuracy of reproduced colour in the region of skin tones using a colour managed image capture and display system can be improved and if such an improvement is possible, to determine if this will assist in diagnosing skin related problems
 - Conduct a survey with clinicians to determine whether they currently experience problems in accurately diagnosing skin problems from images displayed on calibrated monitors.
- Can you explain why is the gamut important?
 - I agree that skin colours are expected to be within the display gamut
 - By defining the region of the CIELAB colour space where skin colours are located, I would be able to do a more in depth investigation on viewers' perceptibility of skin colour differences.
- Uniform colour patches may be a poor simulation for skin
 - I agree that it may be a poor simulation from the perspective of texture
 - I have also been considering the use of patches which are actual photographs of skin areas, with as uniform colour as possible