

Automatically Evaluating The Impact Of Colour Blindness On Information Visualisations



1

Motivation

Colour blindness affects approximately 8% of males and 0.4% of females.

Colour is often used to convey meaning in information visualisations & interfaces.

Inappropriate colour usage can make it impossible for individuals with colour blindness to correctly “read” & interact with visualisations.



2

Problems

How can visualisations be evaluated to detect inappropriate colour usage?

What are the criteria for inappropriate colour usage?

3

Approach

Simulate Colour Blindness
Transform the visualisation into that which an individual with colour blindness would perceive.

Classify Pixels By Colour Category
Classify pixels in the visualisation by colour category.

Count Pixel Shifts
Compare the original and transformed visualisations checking whether each pixel has switched colour category.

Generate Change Indicators

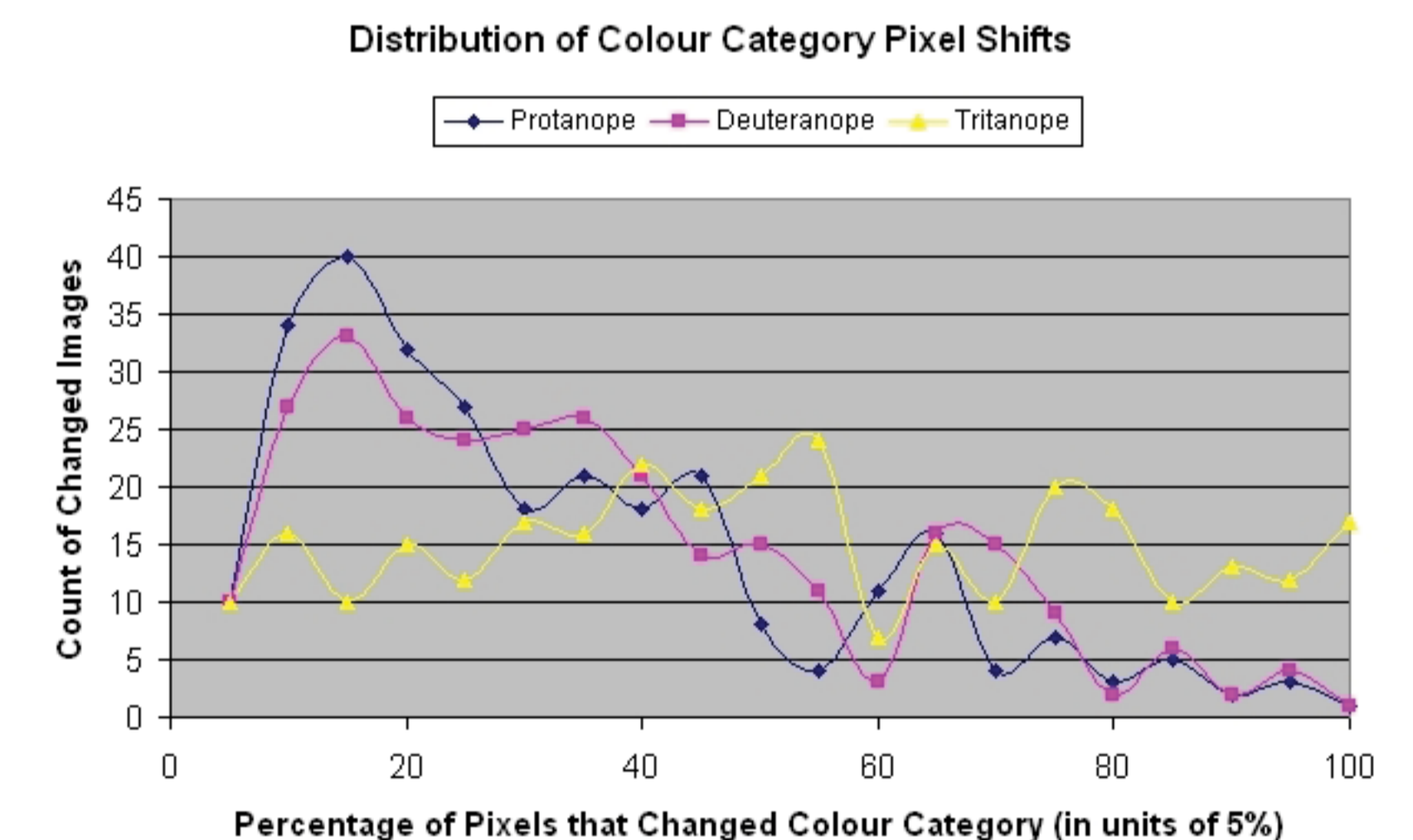
- *Colour Category Pixel Shifts (CCPS) = Total Percentage of Pixels Which Changed.*
- *Refined CCPS (RCCPS) = CCPS For Each Colour Category.*

4

Evaluation



Calculated CCPS & RCCPS for 300 images from the Berkeley Segmentation Data Set.

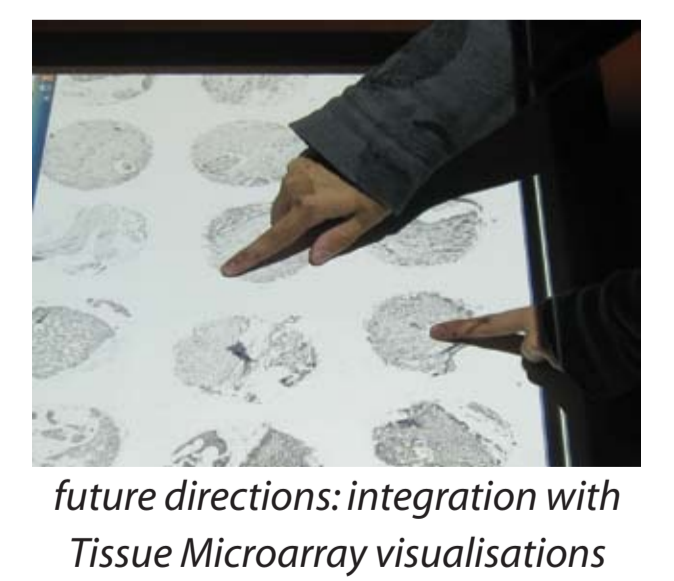


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More Information

Paper @ ISVC 2006
- "A Method for the Automatic Analysis of Colour Category Pixel Shifts During Dichromatic Vision"

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future directions: integration with Tissue Microarray visualisations