CS294-164 Report - Week 13

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1 Analysis of the retinex theory of color vision

This paper analyzes Land's retinex algorithm, which is a model of the human color constancy. Color constancy is the property by which color roughly remains the same with changing distance and changing spectral distribution of ambient light. This paper shows that that the algorithm is too sensitive to changes in the color of nearby objects to serve as an adequate model of human color constancy. This paper reduces the complex set of calculations in the retinex algorithm to a simple normalization. Extensions could include ways to fix the problems with retinex, using more standard assumptions which is independent of the surface of the objects. Is there a way to model color constancy using Oz?

2 Illuminant Spectra-based Source Separation Using Flash Photography

This work focuses on editing the different illuminants in an image by leveraging a flash/noflash image pair to analyze and edit scene illuminants based on their spectral differences. Their derive a novel physics based relationship between color variations in the observed flash/no-flash intensities and the spectra and surface shading corresponding to individual scene illuminants. Their technique uses this constraint to automatically separate an image into constituent images lit by each illuminant. One extension to this work could be training a deep network to do the same and comparing the results. They could also use some form of pre-processing to ensure their method doesn't fail when there are no shadows or when there are shiny objects in the image. (i.e insert artificial shadows or remove the shine).