Imaging Science and Technologies: Color Vision

Computer Science 203.4730
Semester B
Monday 12:00-15:00 rm 515

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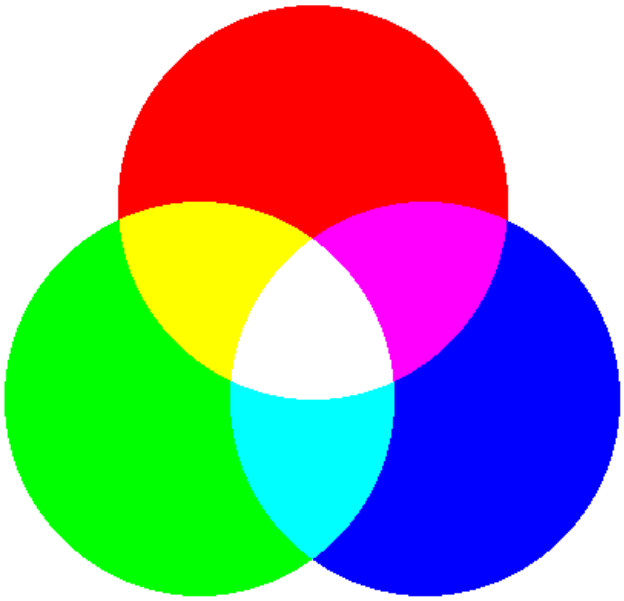
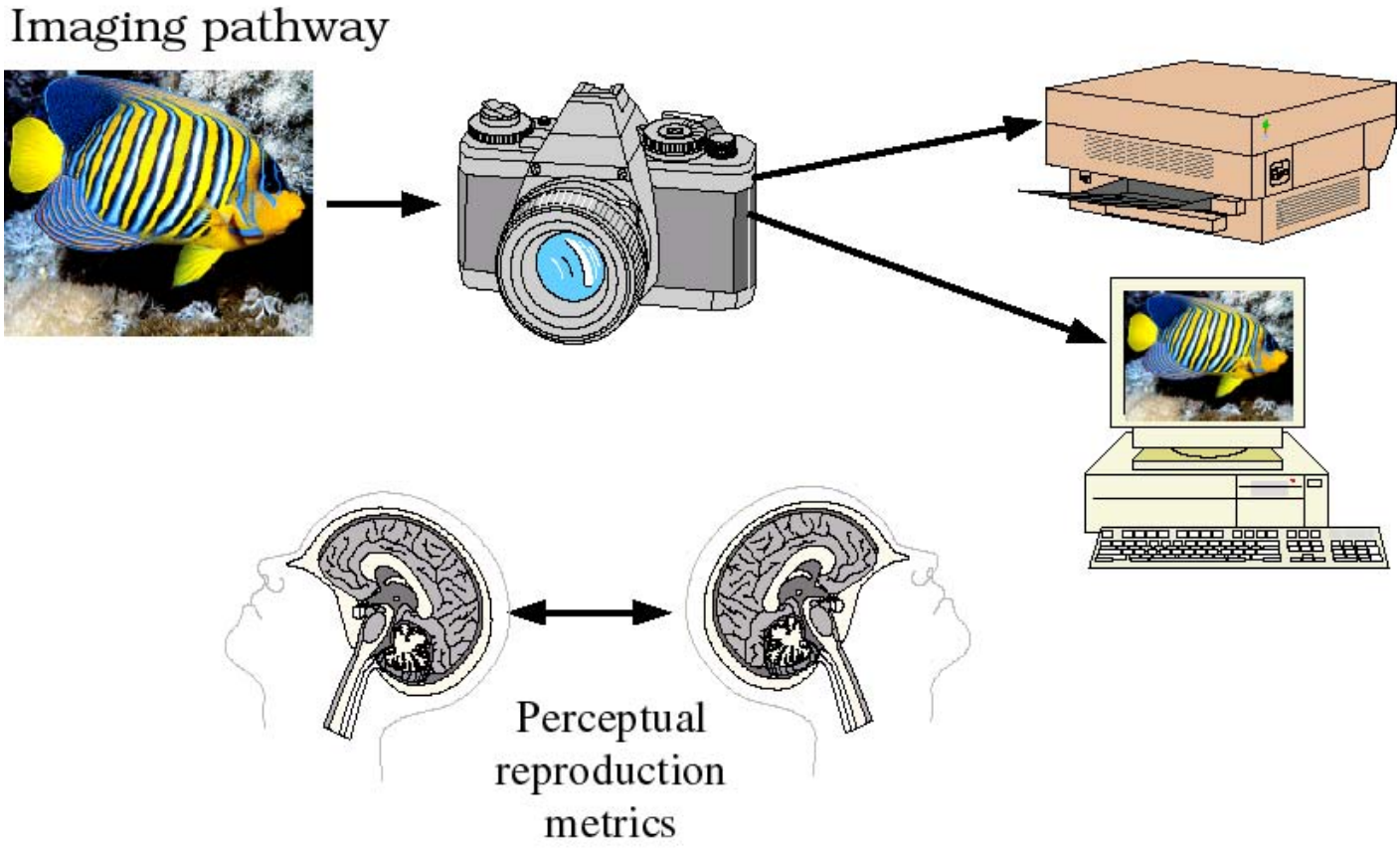
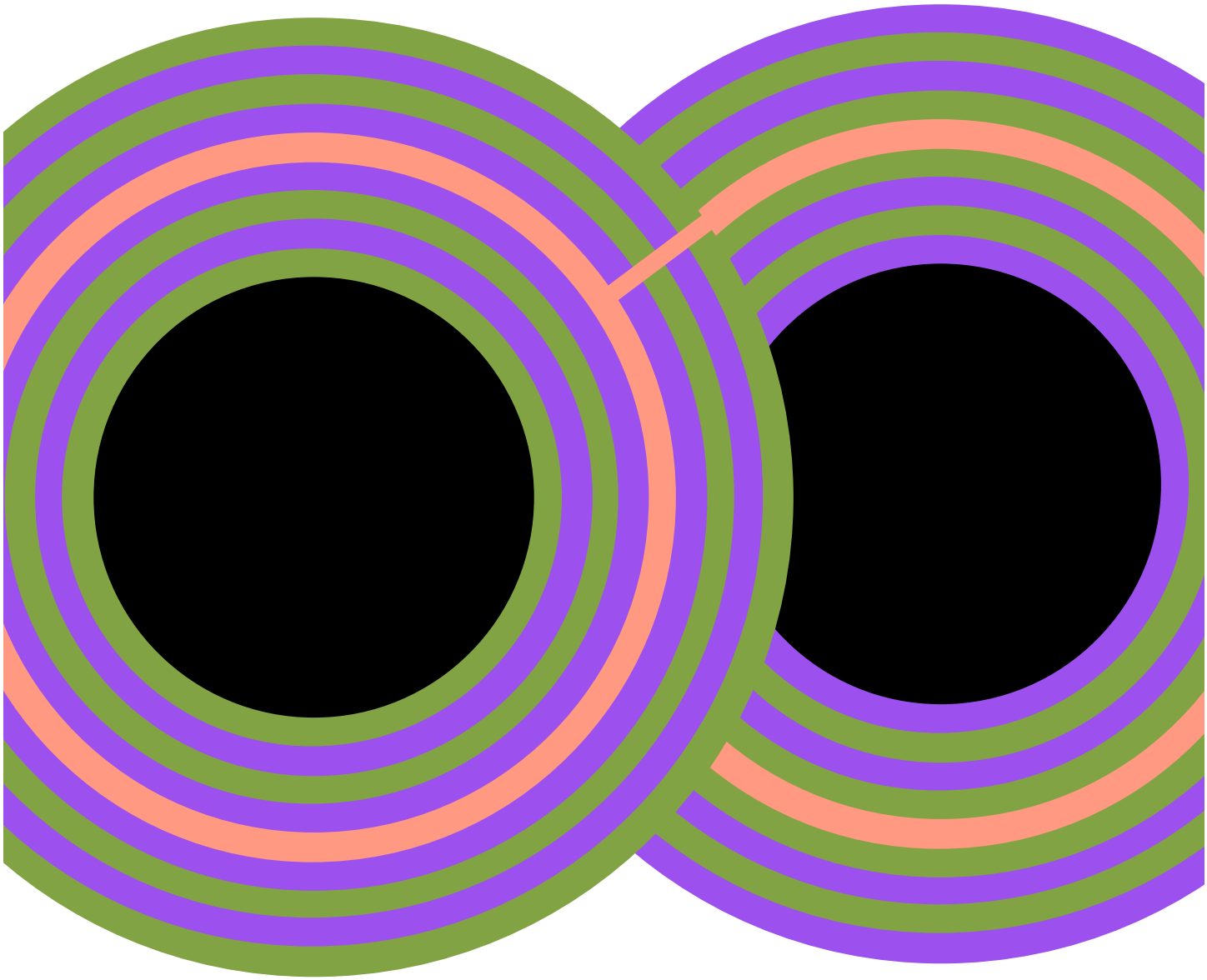
Course Internet Site:
http://cs.haifa.ac.il/~hagit/courses/ist/



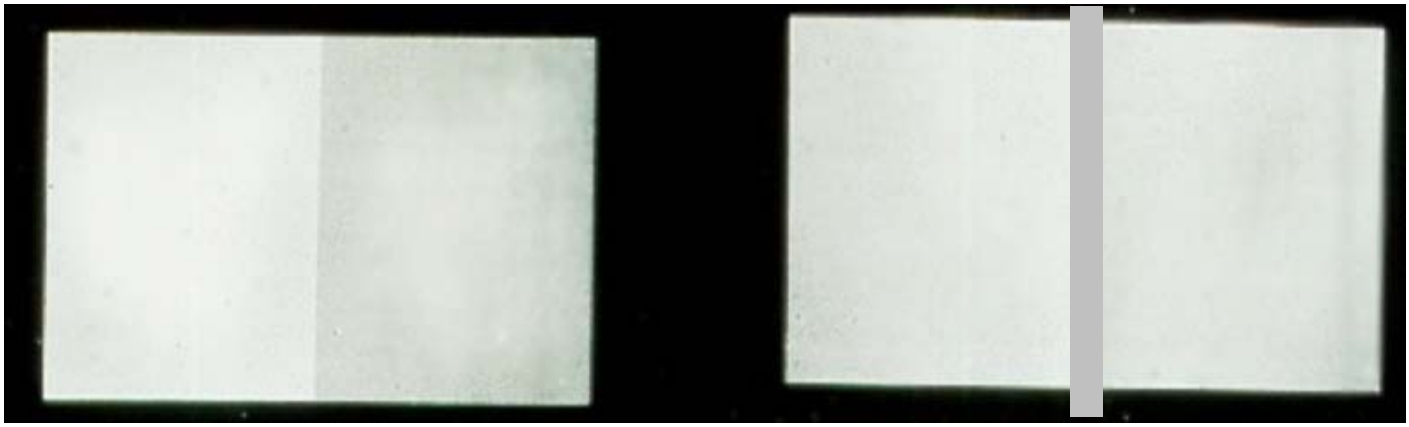
Imaging Science and Technologies



Color Appearance Depends On The Spatial Pattern Across The Cone Mosaic (Shevell and Monnier)

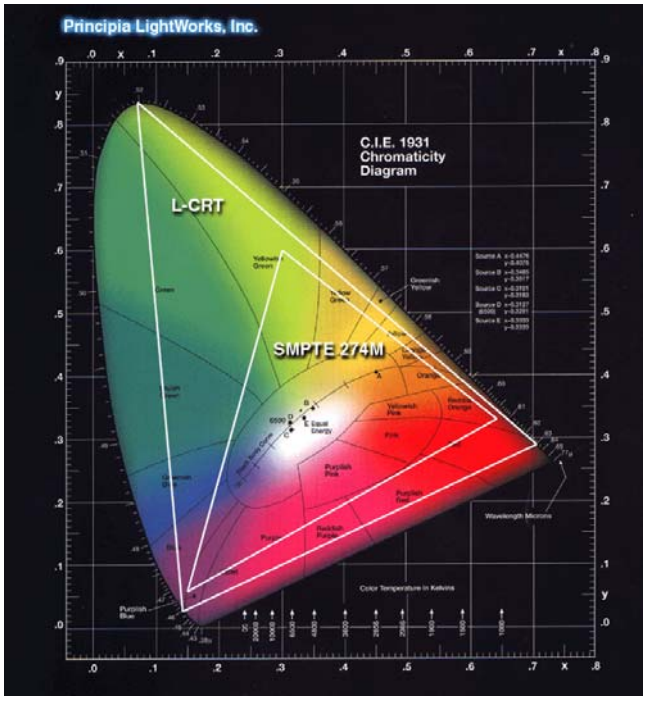


Craik-O’Brien-Cornsweet Effect



Color Science

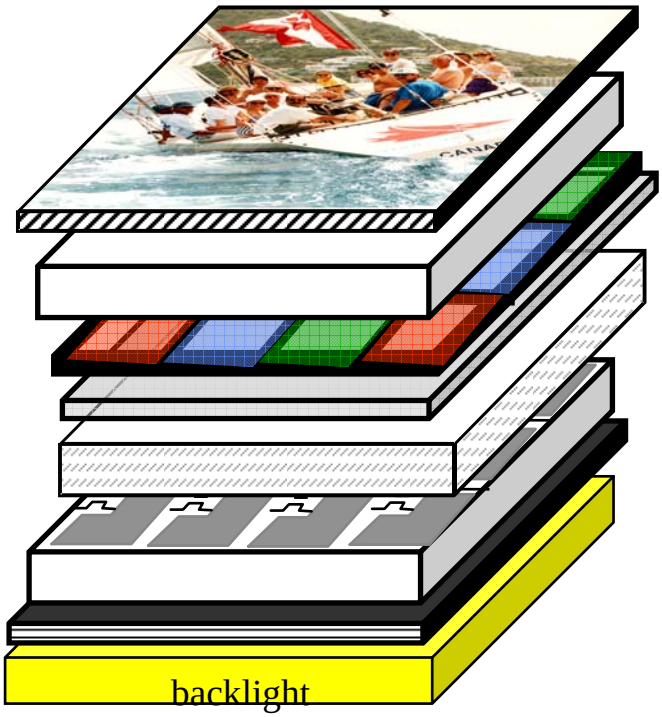
How do we measure signals used to create color?
How do we quantify these color signals?
What are CIE, xy, NTSC YIQ, YCbCr, CIELAB and CIELUV
What is color management?
What are color conversion and color balance?



Displays

Why do monitors have three display primaries (R,G,B)?
How do LCDs work?
What are OLEDs, PDPs?

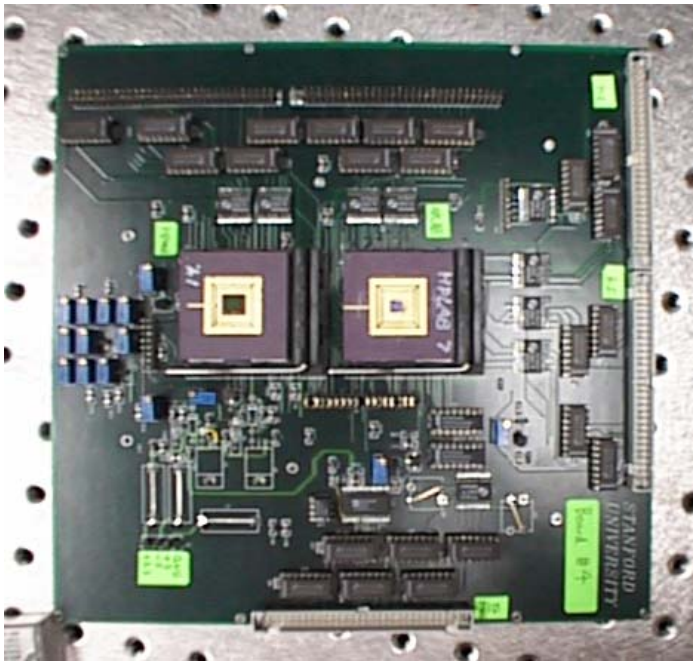
What is a display gamma?
What is a color look up table?
What is a monitor gamut?



LCD

Cameras

What are camera dark noise, quantum efficiency, fixed pattern noise?
What are the differences between a CCD and CMOS sensor?
What is a color filter array?
What is color demosaicing?
How are focus and exposure controlled



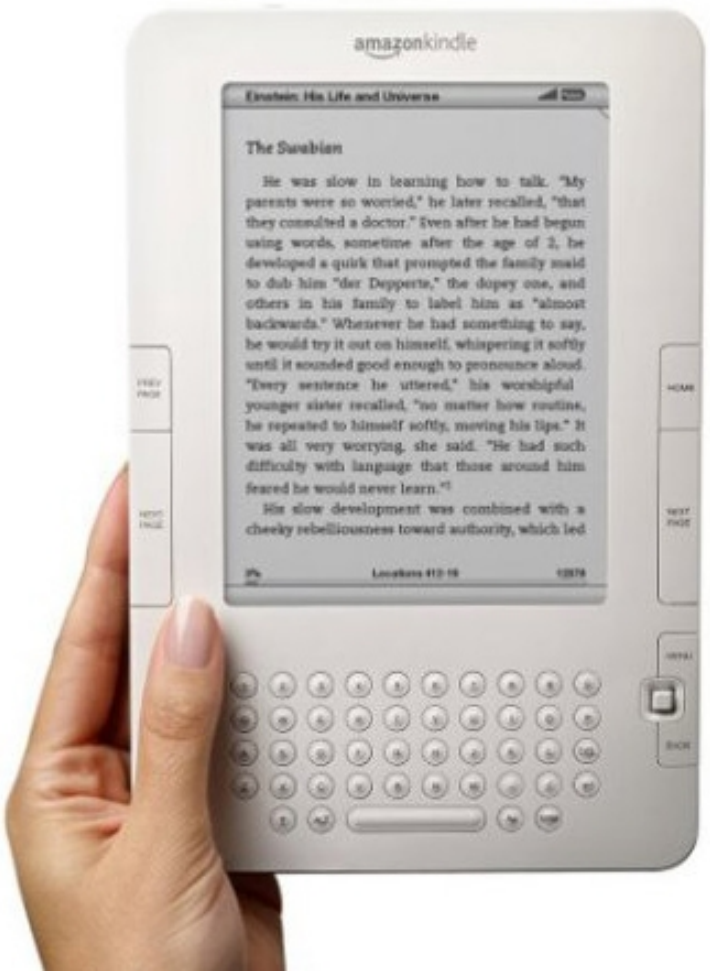
Printers

Why are there four printer primaries (C,M,Y,K)?
What is a tone reproduction curve?
What is a printer gamut?
What are color separations?
What is halftoning, error diffusion and dithering?
What is inkjet, continuous done and dye sublimation?

Image Compression

What are multresolution representations, image pyramids, and wavelets?
What are lossy and lossless compression, JPEG, quantization tables?
JPEG 2000?

Kindle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Einstein: His Life and Universe
The Swabian
He was slow in learning how to talk. "My parents were so worried," he later recalled, "that they consulted a doctor." Even after he had begun using words, sometime after the age of 2, he developed a quirk that prompted the family maid to dub him "der Depperte," the dopey one, and others in his family to label him as "almost backwards." Whenever he had something to say, he would try it out on himself, whispering it softly until it sounded good enough to pronounce aloud. "Every sentence he uttered," his worshipful younger sister recalled, "no matter how routine, he repeated to himself softly, moving his lips." It was all very worrying, she said. "He had such difficulty with language that those around him feared he would never learn."[1]
His slow development was combined with a cheeky rebelliousness toward authority, which led