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Title: *Oh, what a difference **color imaging** can make.*

Abstract: Traditionally, color scientists studied the phenomenon and the appearance of color. The study of how pixels interact with each other was a task left to the researchers focused on image processing. Surprisingly, the genuine study of “color imaging”—or the study of interactions between pixels and colors—is a surprisingly underappreciated area in research, only coming into light in recent years owing to the ubiquity of digital cameras and smart phone screens. This marriage of color science and image processing is ripe with interesting discoveries that are simple yet critical to the way imaging devices are designed.

In this presentation, I will draw examples from my research to illustrate how simple color imaging tricks can greatly enhance the capabilities of imaging hardware. The first example is of a new LCD display design, where I show how a display resolution can be increased without additional pixels, if the color elements in a display were allowed to be rearranged. The second example is a technique where the dynamic range of the image sensor can be increased by placing a simple color film over the camera lens. The third example is a demonstration that multiple cameras can overcome the limitation of a single camera-based color processing.