

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Image Recognition using Low-Cost Spatial Light Modulators**

CHRIS SWEET, ROMULO OCHOA, The College of New Jersey — We have built a 4f Fourier optics setup, using two spatial light modulators, to study image recognition. The LCD spatial light modulators (SLMs) were adapted from two overhead projectors. One of the SLMs is used to project an image of an object of interest. The second SLM, used to project an aperture, is located at the Fourier transform plane. The aperture's most common application is to filter high or low frequency components of the Fourier transform of the projected object. The result, as viewed by a camera, is the loss of some details of the object. Using the second SLM allows us to computer generate any type of aperture. By generating an aperture that specifically blocks the Fourier transform details of an object, we can eliminate the image of the object as detected by the camera. Extending the approach to various objects and their respective Fourier transforms we have been able to distinguish between objects and achieve simple image recognition.

Romulo Ochoa  
The College of New Jersey

Date submitted: 13 Nov 2016

Electronic form version 1.4