

EEL 5722C - FPGA Design
fall 2013
University of Central Florida
Lab Assignment #5

Display an image on a VGA monitor

Objective: Throughout the lab #5, you will learn general principles behind storing and retrieving image data and processing them using an FPGA device.

The raw image format is used for this lab – an image in which data is stored without any compression. Each pixel in the provided gray-scale image is represented by one byte. Thus, the value of a pixel in the image varies from 0 (0000_0000) through 255 (1111_1111).

First, attach the keyboard to the FPGA board. If key “0” is pressed, the image has to be run through a Low Pass Filter (LPF) and displayed on the screen. Use the following coefficients to filter the image:

LPF: $\frac{1}{9}$ [1 1 1; 1 1 1; 1 1 1];

Remember that the operation is repeated whenever the key is pressed by the user. And more and more blurred image will be displayed on the monitor when the LPF operations are repeated.