IntroductionAll the computer vision algorithms that perform image analysis and processing  
require high-quality images [1], but the conventional cameras available nowadays have  
fixed hardware i.e. their internal architecture is not programmable, so they cannot be  
exploited to their full extent.  
When faced with real-time applications that need to process the data as fast as  
possible, the images need to be pre-processed as well before they can be used. Using an  
embedded approach at the point of video capture to perform the pre-processing will cut  
down a significant amount of overwork. [2][3]. For this purpose, existing image  
enhancement algorithms can be converted into a synthesizable design on the FPGA  
board. [4]  
Moreover, these cameras are also not aware of their environment and are not  
adaptive. As a result, acquired images need to be processed before further use.  
This leads to the need for a software-defined smart camera, which can enhance  
images using images pre-processing algorithms along with the ability to set itself  
according to the environment at the time of the video capture.