**CHAPTER IV**

**RESULTS AND DISCUSSIONS**

This chapter evaluates and describes the results and tests conducted by the researchers after the completion of the Face Detection System.

**4.1 OpenCV Face Detection**

Using the modified face detect example program and the standard Lena.jpg (See APPENDIX K) Image, the detection time is recorded and compared to a CISC based system (See APPENDIX G for Specs). For test results of Cyclone V, see APPENDIX J. For the Intel Core i7 Test Results, See APPENDIX L.

**Table 1** Comparrison of CISC based and Cyclon V SoC.

|  |  |  |
| --- | --- | --- |
| Intel Core i7 CISC Based | Cyclone V | % Difference |
| 1687.06 | 954.156 | 43.44268 |

**4.2 System Bugs**

During the development phase despite the researchers careful deliberations in choosing the system components, sources code libraries, and algorithms used it is unavoidable that there may have been system bugs, in fact a few of them show and influence greatly the operation and performance of the face detection system being developed.

**4.2.1 USB UVC Bandwidth Issues with USB OTG**

Though the exact cause of the system can’t be determined there seems to be an issue with bandwidth issues with the USB OTG. This issue becomes manifests itself with the USB based WebCam Logitech C525 not working when the Keyboard and Mouse or other USB peripheral are inserted to the USB Port of an off-the-shelf USB HUB. Only when the USB Webcam is acting alone and on the USB Controller will UVC V4L2 detect the Web Cam.

The temporary solution for this problem was to incorporate the Opensource KVM Emulation Software called Synergy. Essentially the Mouse and Keyboard support is done from another computer. Mouse and Keyboard are both installed on a different computer. Synergy Client listening on the SoCKit board is listening to commands of the Synergy Server running on the computer where the Mouse and Keyboard are. In turn, the Synergy Server is listening to the Mouse and Keyboard Movements of the user and sending it to the client.

Both Synergy Client and Server communicate VIA Ethernet and that is why it is essential among many other reasons that the Development Board must be connected to the network where the Synergy Server is in order to operate it properly.

**4.2.2 USB UVC has some issues FFMPEG**

The researcher also observed that there are some errors in long term operation of the face detection system. This could be in line with the previous case stated on 4.2.1. The Kernel Panic logs are documented on Appendix H.