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Instruction for VmodCAM Demo on Genesys

1 Overview

The VmodCAM Bring-up Design is based on Genesys board and VmodCAM board Rev. C. In the pre-compiled bit file of demo, both sensors are configured as 640x480, so that we can see images from both cameras on the same screen (1280p60).

2 Device Connections

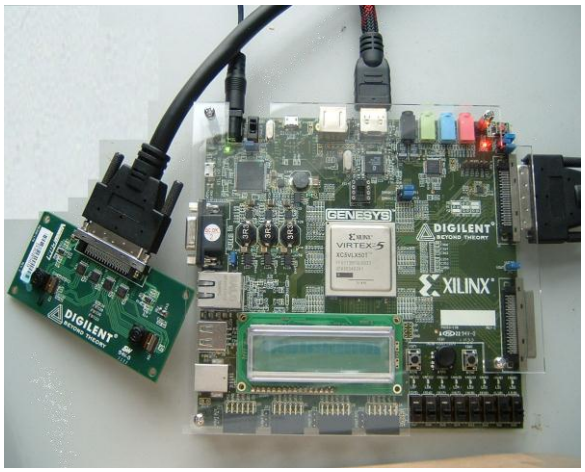

Fig. 1 Demo System Connections

Fig. 2 Board jumper position

- Connect a 5V wall power supply to J19.
- Connect HDMI Cable into J3 (HDMI OUT).
- Connect VmodCAM and Genesys via VHDCI Cable, and plug the cable into into J1.
- Make sure that JP1 is connected.
- Connect Micro USB Cable into PROG, if you want to configure FPGA via PC
- Connect RS232 cable to your PC if you want to read the info transmitted via RS232 port.
- Turn the power on now.

3 Demo Procedure

3.1 Board Connection

The connection of devices is illustrated in section 2. Here is something that needs to be careful with:

- Make sure JP1 is connected, otherwise VmodCAM board will not function properly.

3.2 Demo Procedure of VmodCAM

- If you want to monitor the startup process on RS232 console, you need to configure your terminal as follows:
  - Baud Rate: 115200
  - Data Bits: 8
  - Parity: None
  - Stop Bits: 1
  - Flow Control: None
- After power up the board, you will see a green startup screen.

- It takes less than a minute to get both cameras configured through Iic interface. After the configuration is done, you will see images from both sensors on your monitor (fig. 3).

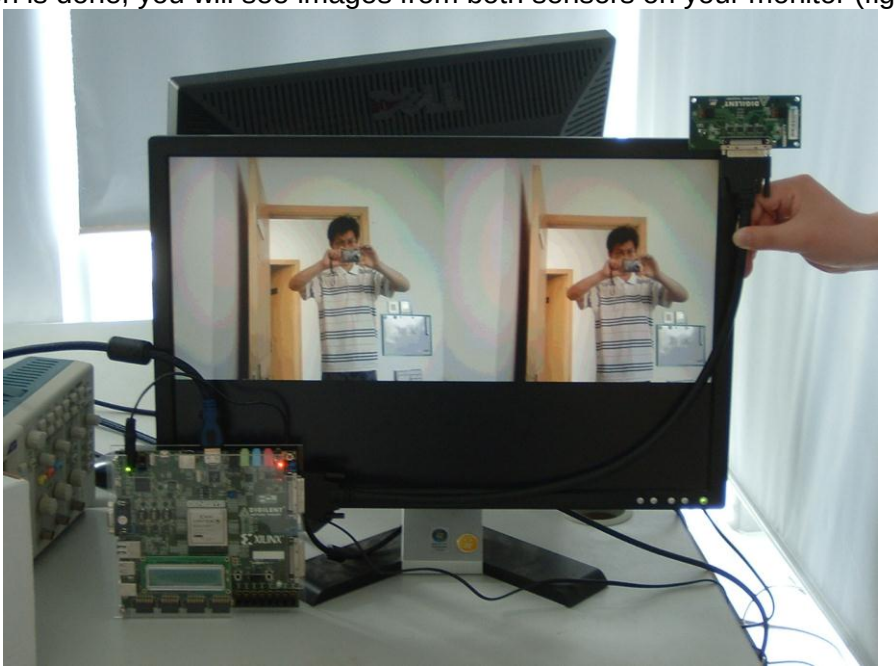

Fig. 3 Demo on Genesys with VmodCAM Rev C

4 Hardware Architecture

The demo system is designed with Xilinx EDK 12.4. The block diagram of the whole system is shown in Fig. 4.

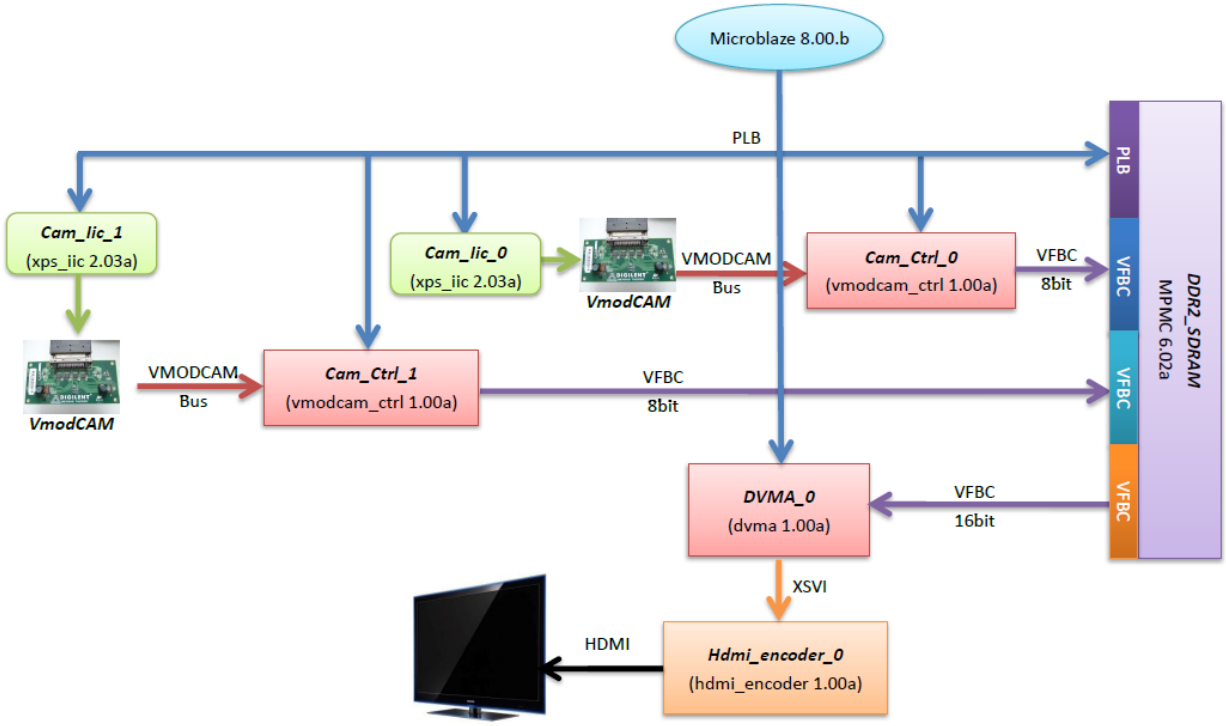

Fig. 4 Hardware Block Diagram

5 Software Codes

- TestApp_VmodCAM/src/vmodcam_header.h
  Parameters Definition and Function Prototypes for Iic configuration of VmodCAM.

- TestApp_VmodCAM/src/vmodcam_cfg.c
  Camera Iic configuration codes, tested on xps_Iic 2.03a. There are three sets of configurations in the codes:
  - CAM_CFG_1280x720P: 1280x720, RGB x444, Context B;
  - CAM_CFG_800x600: 800x600, RGB x444, Context A;
  - CAM_CFG_640x480P: 640x480, RGB x444, Context A;

- TestApp_VmodCAM/src/cam_ctrl_header.h
  Parameters Definition and Function Prototypes for configuration of cam_ctrl IP Core.

- TestApp_VmodCAM/src/cam_ctrl.c
  cam_ctrl IP Core configuration procedure. Three options are available for different video input format:
  - CAM_CFG_1280x720P: 1280x720, RGB x444, Context B;
  - CAM_CFG_800x600: 800x600, RGB x444, Context A;
  - CAM_CFG_640x480P: 640x480, RGB x444, Context A;

- TestApp_VmodCAM/src/main.c
  - Write Initial Green screen to DDR2
  - Initialize and start DVMA IP Core
  - Configure both camera sensors
  - Initialize and start cam_ctrl IP Cores
  - Clear Screen