

High definition wide dynamic video surveillance system based on FPGA

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Abstract A high definition(HD) wide dynamic video surveillance system is designed and implemented based on Field Programmable Gate Array(FPGA). This system is composed of three subsystems, which are video capture, video wide dynamic processing and video display subsystem. The images in the video are captured directly through the camera that is configured in a pattern have long exposure in odd frames and short exposure in even frames. The video data stream is buffered in DDR2 SDRAM to obtain two adjacent frames. Later, the image data fusion is completed by fusing the long exposure image with the short exposure image (pixel by pixel). The video image display subsystem can display the image through a HDMI interface. The system is designed on the platform of Lattice ECP3-70EA FPGA, and camera is the Panasonic MN34229 sensor. The experimental result shows that this system can expand dynamic range of the HD video with 30 frames per second and a resolution equal to 1920*1080 pixels by real-time wide dynamic range (WDR) video processing, and has a high practical value.

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