

光电信息获取与处理

基于双TMS320DM642处理器的实时红外多目标图像处理系统

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摘要:

按照模块化设计理念, 提出以TMS320DM642芯片为核心器件的实时红外多目标图像处理系统的设计方案, 结合现场可编程门阵列FPGA完成对红外焦平面探测器输出图像数据流的实时采集、处理和输出。采用两级级联方式对多目标图像并行处理, 提高图像处理的实时性。实验表明该系统处理一帧320×240分辨率的图像平均需要耗时15ms, 保证了对多目标跟踪的实时性。

关键词: 数字信号处理器(DSP) TMS320DM642 图像采集 多目标图像处理

Real-time multi-target infrared image processing system based on double TMS320DM642 processors

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Abstract:

Based on modular design concept, a real-time multi-target infrared image processing system with two TMS320DM642 chip as its core components is proposed. Combing with the field programmable gate array, the real-time acquiring, processing and outputting of the image data stream from the infrared focal plane detector were accomplished. In order to increase the data processing speed, the system adopted a two-stage cascaded model and employed parallel pipelining processing and multi-target image concurrent processing, which improved the real-time performance of image processing. Experiment indicates that the system needs 15ms to process each image with a resolution of 320×240 to enable multi-target tracking in real-time.

Keywords: digital signal processor TMS320DM642 image acquisition multi-target image processing

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