

ISCAS Special Session Demo:

Wireless Video Sensor for Ad-hoc Networks

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Abstract:

An ultra low power, low bandwidth wireless video sensor network is presented. Each wireless node includes a 90 by 90 CMOS image sensor node with focal plane temporal intensity change detection. As output, the camera provides not only the image intensity, but a digital flag indicating the presence and direction of change, thereby resulting in significant reductions in the amount of external memory and processing power necessary required for operation. Several compression schemes have been developed that take advantage of the change difference signaling from a pixel update wake up mode to a full motion DCT macroblock based scheme. Under typical surveillance scenarios, the temporal change encoding provides up to a twenty fold compression. The sensors have been successfully integrated with a ad-hoc wireless networking system.

Description:

We demonstrate a compact wireless video sensor network. The demo consists of one or more battery powered camera modules. The sensors will be operating on an ultra low bandwidth ad-hoc wireless network with a PC base station that displays the status and images from each camera.

Visitors will be able to handle compact, portable and battery powered sensor module. Several modes of operation will be shown. In one scenario, a visitor can place a camera in a fixed location. Upon motion, the sensor will alert the user at the PC and automatically send an image. If desired, the user may also have the camera acquire a live video stream at a reduced image quality.