High-resolution, high-speed image capture for camera phones and other consumer electronics

Technology #m11-071

The increasing ubiquity of cameras and image-sharing technology has elevated demand for inexpensive, high quality cameras. While consumer electronics are generally able to achieve high definition image capture at conventional frame rates, image quality drops significantly as frame rate increases for high-speed photography. This technology captures many high-speed video images from a single exposure of the image detector, effectively multiplying the frame rate of the detector array without sacrificing image quality. This technology can provide high performance cameras for technical applications as well as for consumer electronics.

Smart software allows for intelligent image reconstruction

This technology achieves the difficult task of high-definition image capture at high frame rate using smart software to reconstruct frames as they are received. In parallel with image capture, the camera learns how aspects of images change throughout capture. A coded exposure sampling function is then applied to the image sequence, modeling any blurring effects and reducing the entire sequence to a single, representative image. The combination of these two processes places this technology in the vanguard of image reconstruction technologies and allows for high quality images.

A liquid crystal-on-silicon device has been made to successfully simulate these processes with actual video.

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Applications:

- Use in smartphones or camera phones
- Use by security and law enforcement professionals
- Video conferencing devices
- Extreme-action cameras
Advantages:

- Captures high frame rate video without image quality loss
- Predominantly utilizes advanced software
- Readily integrated with current consumer electronics

Patent Information:

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Related Publications:


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