

LCD MOTION BLUR REDUCTION USING DIGITAL FILTERS

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Abstract

Liquid crystal display (LCD) devices are well known for their slow responses due to the physical limitations of liquid crystals. Therefore, fast moving objects in a scene are often perceived as blurred. This effect is known as the LCD motion blur. In order to reduce LCD motion blur, an accurate LCD model and an efficient deblurring algorithm are needed. However, existing LCD motion blur models are insufficient to reflect the limitation of human eye tracking system. Also, the spatiotemporal equivalence in LCD motion blur models has not been proven directly in the discrete two-dimensional spatial domain, although it is widely used. LCD motion blur is an inherent property of the sample-and hold nature of LCD image formation when combined with the human visual system. To mitigate the motion blur phenomenon, we introduced an efficient filter bank based preprocessing approach which uses motion vector information extracted from the scene to form a simple non-iterative module. Subjective tests with human observers indicate that the presented approach is indeed effective at reducing the motion blur artifacts with significantly less computation than previous approaches. This algorithm can operate in conjunction with existing frame rate up conversion approaches to motion blur reduction.[3]This paper discusses about the filtering noise and LCD blur reduction using digital filter bank.

Keywords: LCD (Liquid Crystal Display), PSF, Lucy-Richardson Algorithm.