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General Purpose Graphic Processing Units Based Real Time Video Tracking System

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Abstract : Real Time Video Tracking is a challenging task for computing professionals. The performance of video tracking techniques is greatly affected by background detection and elimination process. Local regions of the image frame contain vital information of background and foreground. However, pixel-level processing of local regions consumes a good amount of computational time and memory space by traditional approaches. In our approach we have explored the concurrent computational ability of General Purpose Graphic Processing Units (GPGPU) to address this problem. The Gaussian Mixture Model (GMM) with adaptive weighted kernels is used for detecting the background. The weights of the kernel are influenced by local regions and are updated by inter-frame variations of these corresponding regions. The proposed system has been tested with GPU devices such as GeForce GTX 280, GeForce GTX 280 and Quadro K2000. The results are encouraging with maximum speed up 10X compared to sequential approach.

Keywords : connected components, embrace threads, local weighted kernel, structuring elements
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