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# Fast background subtraction using static and dynamic gates

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**Abstract— Background subtraction is usually one of the first steps carried out in motion detection using static video cameras. This paper presents a new fast model for background subtraction that processes only some pixels of each image. This model achieves a significant reduction in computation time that can be used for subsequent image analysis. Some regions of interest (ROI) are located where movement can start. If no movement is present in the image, only pixels of these ROIs are processed. Once a moving object is detected, a new ROI that follows it is created. Thus, motion detection and parameter updates are executed only in the relevant areas instead of in the whole image. The proposed model has three main advantages: the computational time can be reduced drastically, motion detection performance is improved, and it can be combined with most of the existing background subtraction techniques. These features make it specially suitable for security applications.**

**Index Terms— Mixture of Gaussians; motion detection; background subtraction; computer vision; ROI;**



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