Passive Multitarget Tracking with Cameras

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Abstract:

This paper considers large areas surveillance and 3D tracking with passive data, obtained here by geographically distributed cameras. The first step, at a camera level, is to detect moving objects in the video sequence and we propose a very simple, fast and efficient approach: a pixel level background subtraction technique to segment foreground pixels and a region level process where segmented pixels are connected into objects. Experiments on real costal environment videos of this method demonstrate similar results compare to more sophisticated approaches with a very low processing time, which allows processing high resolution images. The second step is then to obtain 3D tracks by merging the elementary detections issued by the cameras and we use a suitably modified Gaussian Mixture Probability Hypothesis Density (GM-PHD) filter approach in a centralized fusion scheme. We present some results with simulated data obtained on a realistic test scenario.