Abnormal behavior detection using dominant sets

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Abstract-

Smart surveillance systems are increasingly being used to detect potentially dangerous situations. To do so, the common and easier way is to model normal human behaviors and consider as abnormal any new strange behavior in the scene. In this article, Dominant Sets is adapted to model most frequent behaviors and to detect any unknown event to trigger an alarm. It is proved that after an unsupervised training, Dominant Sets can robustly detect abnormal behaviors. The method is tested in several different cases and compared to other usual clusterization methods such as KNN, mixture of Gaussians or Fuzzy K -Means to confirm its robustness and performance. The overall performance of abnormal behavior detection based on Dominant Sets is better, being the error ratio at least 1.5 points lower than the others.

Index Terms- Dominant sets; Abnormal behavior; Behavior analysis; Computer vision;

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Citation:

Alvar, M.; Torsello, A.; Sánchez, A.; Armingol Moreno, J.M. "Abnormal behavior detection using dominant sets", Machine Vision and Applications, vol.25, no.5, pp.1351-1368, July, 2014.