

event
video

*eVi Newsletters
#03 - September 2012*

TEC2011-25995 EventVideo (2012-2014)

Strategies for Object Segmentation, Detection and Tracking in Complex
Environments for Event Detection in Video Surveillance and Monitoring

<http://www-vpu.eps.uam.es/eventvideo/>

Third trimester progress report

During the third trimester, the project has been working on plan, including the summer holidays we wish everyone has enjoyed!

The “pure” algorithmic workpackages, namely WP2 “Video object segmentation”, WP3 “People modeling and detection” and WP4 “Video object tracking”, have finished the fine tuning the algorithms designed and developed by the Video Processing and Understanding Lab (VPULab) and selected other State of the Art algorithms. Tests of these algorithms over the video sequences content sets (test sequences and associated ground-truths) defined in WP5 have started early September.

Third trimester results

Publications

Álvaro García-Martín, Andrea Cavallaro, José M. Martínez, “**People-background segmentation with unequal error cost**”, Proc of IEEE International Conference on Image Processing (ICIP 2012), pp. 157-160, Orlando (FL, USA), October 2012.

Abstract: We address the problem of segmenting a video in two classes of different semantic value, namely background and people, with the goal of guaranteeing that no people (or body parts) are classified as background. Body parts classified as background are given a higher classification error cost (segmentation with bias on background), as opposed to traditional approaches focused on people detection. To generate the people-background segmentation mask, the proposed approach first combines detection confidence maps of body parts and then extends them in order to derive a background mask, which is finally post-processed using morphological

operators. Experiments validate the performance of our algorithm in different complex indoor and outdoor scenes with both static and moving cameras.



Juan Carlos San Miguel, Andrea Cavallaro, José M. Martínez, “**Standalone evaluation of deterministic video tracking**”, Proc of IEEE International Conference on Image Processing (ICIP 2012), pp. 1353–1356, Orlando (FL, USA), October 2012.

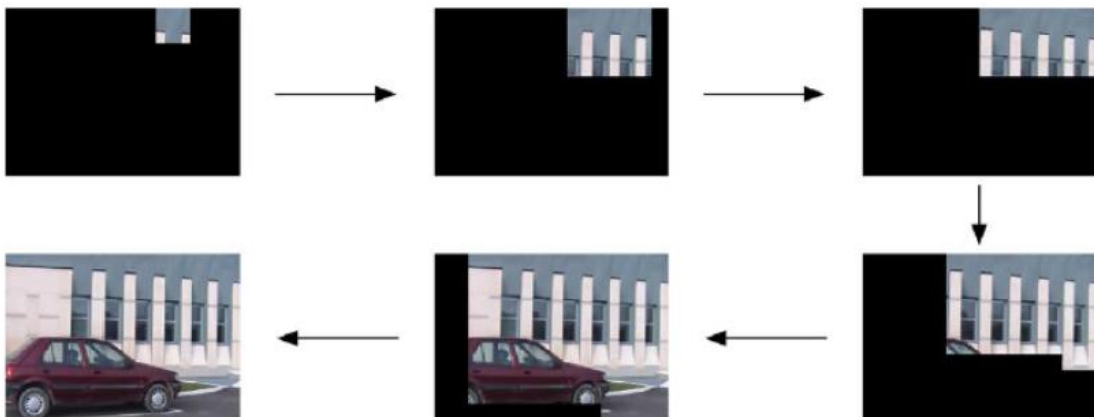
Abstract: We present an approach for performance evaluation of deterministic video trackers without ground-truth data. The proposed approach detects if a tracker is correctly operating over time using two main steps. First, it transforms the output of the localization step into a distribution of the target state, which emulates a multi-hypothesis tracker. Then, the uncertainty of such distribution is estimated to determine the time instants when the tracker is stable. A time-reversed analysis is used to identify tracker recovery after unsuccessful operation. The proposed approach is demonstrated on the well-known MeanShift tracker. The results over a heterogeneous dataset show that the proposed approach outperforms the related state-of-the-art methods in presence of tracking challenges such as occlusions, illumination and scale changes, and clutter.



Master Thesis

Alberto Muñoz García, “Generación de fondo de escena en secuencias de video–seguridad (*Background generation in video–surveillance sequences*)”, Proyecto Fin de Carrera (*Master Thesis*), Ing. Telecomunicación, Escuela Politécnica Superior, Universidad Autónoma de Madrid, September 2012.

Abstract: The main objective of this master thesis is the implementation of a new background initialization approach for video surveillance using static cameras, which improves the related state-of-the-art without using thresholds. It obtains an image that represents the background by using a training sequence. We propose a region–based approach for robust background initialization that exploits both spatial and temporal consistency of the static background. First, the sequence is subdivided in regions that are clustered along the time–line in order to reduce the number of background candidates. Then, the background is generated by growing the current background with the best spatial continuation. Our algorithm supports heavily cluttered video sequences allowing more than 50 per cent of foreground in the training video sequence and the effect of stationary objects that do not move for a long time (even being more visible than the background).



The EventVideo (TEC2011–25995) project is supported by

