

event
video

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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/>

Ninth trimester progress report

The work during this trimester has evolved on plan. Several outcomes of the project have been published and the work in the area of demonstrators has provided several beta versions to be completed in the next months.

eventVideo Workshop – Friday 23rd May 2014

The eventVideo Workshop will be held at the Escuela Politécnica Superior of the Universidad Autónoma de Madrid on the 23rd May 2014. In the next weeks we will provide further details and open the registration (assistance is free, but we need to organize logistics).

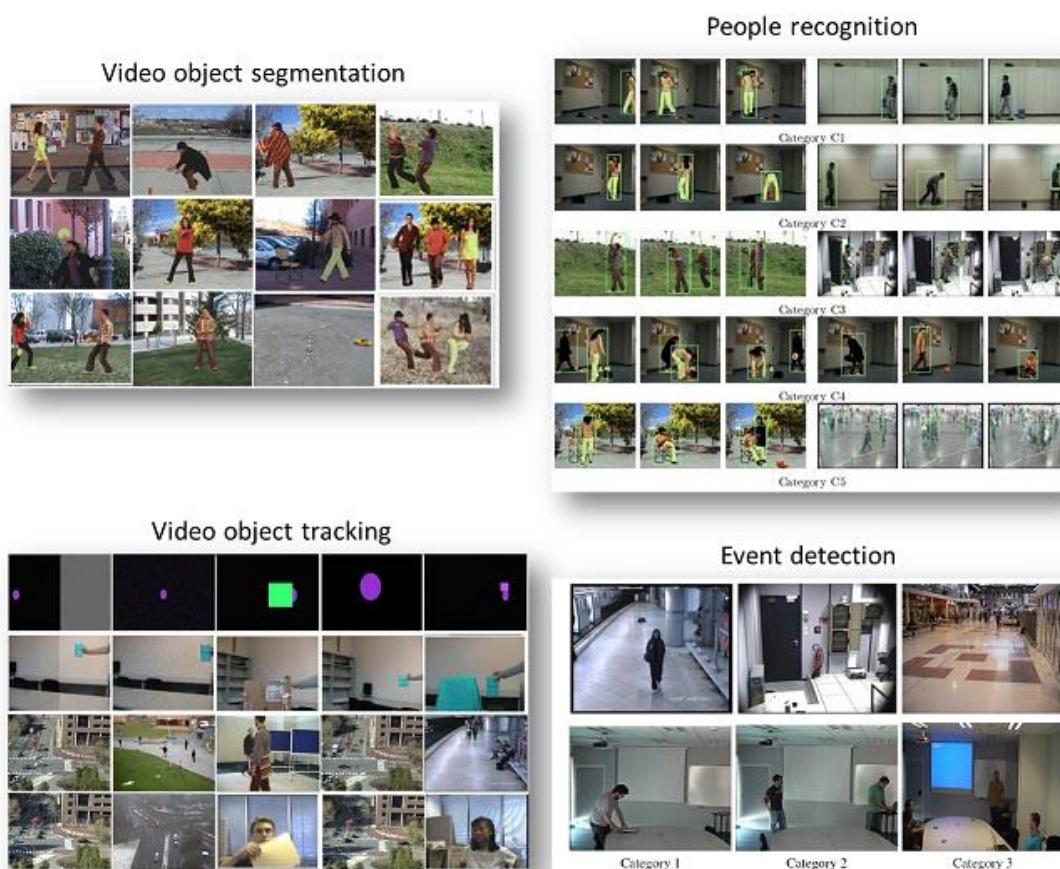
Ninth trimester results

Publications

Juan Carlos San Miguel, Álvaro García-Martín, José M. Martínez, “**Performance evaluation in video-surveillance systems: the EventVideo Project evaluation protocols**”, ch. 9, pp. 171-192, Intelligent Multimedia Surveillance: Current Trends and Research, Pradeep K. Atrey, Mohan S. Kankanhalli, Andrea A. Cavallaro (eds.), 2013, Springer (ISBN 978-3-642-41511-1 - Print; 978-3-642-41512-8 - Online)(DOI 10.1007/978-3-642-41512-8_9).

Abstract: During recent years, automatic video-surveillance systems have experienced a great development driven by the growing need for security. Many approaches exist whose performance is not clear for a large variety of available scenarios. To precisely identify which ones operate better for each scenario, empirical performance evaluation has been widely used for determining their strengths and weaknesses through their

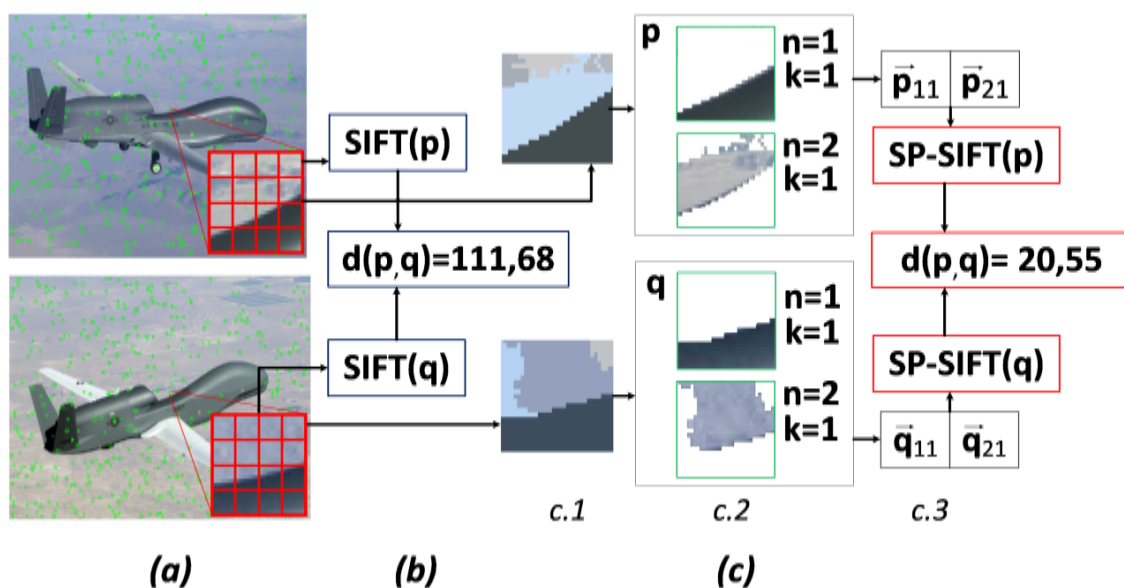
results. This approach requires defining two aspects (usually named as the evaluation protocol): the dataset (representative sequences) and the metrics (performance estimators). Common empirical approaches use metrics based on ground-truth data that define an ideal result, but there are also some novel approaches that do not require such data. Furthermore, the existence of several metrics and the growing availability of video data increase the complexity of the protocol design as well as require us to automate the whole evaluation process. In this chapter, considering the main analysis stages of a typical video-surveillance system (video object segmentation, people detection, video object tracking and event recognition), we introduce their evaluation protocols within the scope of the EventVideo project.



Fulgencio Navarro, Marcos Escudero-Viñolo, Jesús Bescós, "SP-SIFT: Enhancing SIFT discrimination via super-pixel based foreground-background segregation", IET Electronic Letters, 50(4):272-274, Feb. 2014, IET, ISSN 0013-5194 (Print), 1350-911X (Online) (DOI: 10.1049/el.2013.3949).

Abstract: Existing point-of-interest (POI) descriptions are biased by the information surrounding the point. Whereas in self-contained images this information is useful to enhance the repeatability of the description, its use is inadequate for the description of objects that might be surrounded by variable backgrounds. In order to tackle these situations, in this paper we propose a new POI descriptor: super-pixel-based isolation

of scale invariant feature transform (SP-SIFT). The classical scale invariant feature transform (SIFT) descriptor is here modified by isolating the information of the flat areas that compose it. To this aim, we propose to include super-pixel information in the description stage of SIFT. Obtained results suggest that a so-built descriptor increases the repeatability of SIFT points in these scenarios while keeping its robustness to global transformations of the image: blurring, changes in viewpoint, scale and lighting. The method is presented here as an extension of SIFT. However, the idea behind it may be easily exported to most of the existing POI-descriptors in the State-of-the-Art.



Rafael Martín, José M. Martínez, "Correlation study of video object trackers evaluation metrics", IET Electronic Letters, 50(5):361-363, Feb. 2014, IET, ISSN 0013-5194 (Print), 1350-911X (Online) (DOI: 10.1049/el.2013.3209)

Abstract: A correlation study of a set of video object trackers evaluation metrics is presented. There are multiple metrics in the state-of-the-art, and the main differences between them are based on the penalties that are attributed to the errors (false positives, false negatives, target loss, etc.). After defining each one of the considered metrics, a correlation study is presented showing the redundancy between all the metrics. This reported study was performed using multiple tracking algorithms, and an extensive set of video sequences that attempt to cover many different situations.

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