TPA 9: Motion compensation based automatic tracking of object silhouette, under camera movement

Problem Statement: Automatic tracking a single foreground object from a video shot having unconstrained camera movement. Camera movement types can be assumed to be pan, tilt, zoom and translatory along a linear/curvilinear path

Input:

- Moving camera video shots containing a single object.

Expected Output:

- The object in motion being tracked.

Hint for excellence: *Special Credit will be given if the designed system could able to (i) automatically track the silhouette without manual initialization and (ii) detect the object from a video shot having a combination of canonical camera movements (e.g. translation and zoom).*

References

1. Online Moving Camera Background Subtraction, Ali Elqursh, Ahmed Elgammal, ECCV 2012
2. Background Subtraction for Freely Moving Cameras, Yaser Sheikh, Omar Javed, Takeo Kanade, ICCV 2009
3. http://info.ee.surrey.ac.uk/Personal/Z.Kalal/tld.html
4. Shi, J. and Tomasi, C. "Good features to track". In IEEE Conference on Computer Vision and Pattern Recognition (CVPR). pp. 593600, 1994.
5. H. Uemura and S. Ishikawa K. Mikolajczyk, "Feature tracking and motion compensation for action recognition", British Machine Vision Conference (BMVC), 2008
6. Young-Kee Junga and Yo-Sung Hob, "Active Camera Tracking using Affine Motion Compensation", Visual Communications and Image Processing, 2003, 1966 - 1973
7. Montes, C. A., Wong, C., Ziegert, J. C., Mears, L. "Vision-based tracking of a dynamic target with application to multi-axis position control". Journal of Real-Time Image Processing, 2012 , 1-16

8. Kim, J., Wang, X., Wang, H., Zhu, C., Kim, D. Fast moving object detection with non-stationary background. Multimedia Tools and Applications, 2012, 1-25

9. Project Page: http://www.cs.rutgers.edu/ elqurush/projects/bsmc/