Figure3. The comparison between the proposed MS and the original
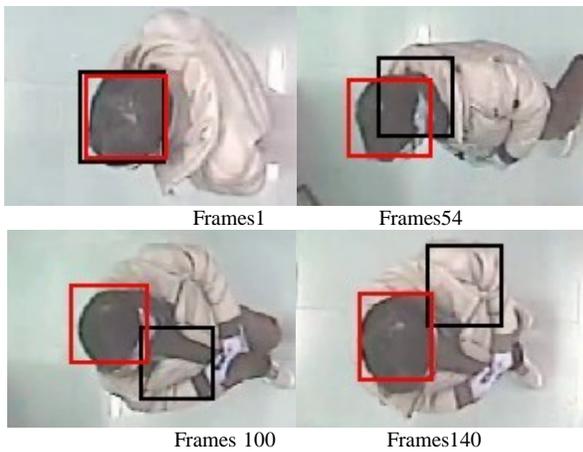

Figure4. The comparison between our algorithm and the original

The second experiment proved that our algorithm is robust for the rapid movement of object. Both choose the color-texture features. Select a video sequence of a pedestrian head tracking. The pedestrian moves fast and speed changes suddenly at the frames 100. Figure.4 shows the results and the black rectangle for tracking results without the Kalman filter, the red for our algorithm. It can be seen that the speed of pedestrain changes and become faster at the frames 100, our algorithm shows the effective.

V.   CONCLUSIONS

In this paper we propose an effective algorithm of object tracking which uses color-texture histogram features and applying it to the MS framework, then Kalman is used to predict the object's location of the next frame and the center of object in each frame as the initial iteration of MS. Experimental results indicate that the proposed MS with the Kalman filter performs much better than the original algorithm, especially in tracking objects that have similar color appearance to the background or the object moves fast.

REFERENCES

[1] D.Comaniciu,V.Ramesh and P.Meer. Kernel-Based ObjectTracking[J]. IEEE Trans. on Pattern Analysis and Machine Intellengece, vol.25(5), pp.564-577, 2003.

[2] Fukunaga F, Hostetler L D. The estimation of the gradient of a density function with application in pattern recongnition[J]. IEEE Transactions on information Theory, 1975, 21(1):32-40

[3] Kirsch A.An introduction to the mathematical theory of inverse problems[M].New York: Springer-Verlag, 1999.

[4] Guo wu. Yuan, Dan. Xu. A combination of texture and color of the moving object tracking algorithm[J]. Computer application and software, 2011.28(11)

[5] Guan Bin. Li, He Feng. Wu. an object tracking algorithm based on color texture histogram with the right to block average drift[J]. Jounal of Computer-Aided Design & Computer Graphics, 2011.23（12）

[6] Kennedy J, Eberhart R C. Particle swarm optimization[C]. Proceedings of the IEEE International Conference on Neural Networks. Piscataway,NJ,Perth: IEEE Server Center,1995:1942-1948.

[7] T.Ojala, M.Pietikäinen and T.Mäenpää. Multiresolution gray scale and rotation invariant texture analysis with local binary patterns. In PAMI, 2002

[8] Ojala T. Valkealahti K. Oja E. et al. Texture discrimination with multi-dimensional of signed gray level differences[J]. Pattern Recognition. 2001, 34(3):727-739

[9] Ning J, Zhang D, et al. Robust object tracking using joint color-texture histogram[J]. International Journal of Pattern Recognition and Artificial Intelligence, 2009, 23(7):1245-1263