

A
MAJOR PROJECT-II REPORT
On
**ROBUST TRACKING USING MULTIPLE
FEATURES**

Submitted in the partial fulfillment of the award of the degree of
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DECLARATION BY THE CANDIDATE

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I hereby declare that the work presented in this dissertation entitled “**Robust tracking using multiple features**” has been carried out by me under the guidance of **Mr. Rajesh Rohilla**, Associate Professor, Department of Electronics & Communication Engineering, Delhi Technological University, Delhi.

I further undertake that the work embodied in this major project has not been submitted for the award of any other degree to the best of my knowledge.

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It is to certify that the above statement made by the candidate is true to the best of my knowledge and belief.

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Abstract

Mean shift is a kernel based widely used algorithm for tracking the location of object robustly. Classical mean shift uses color histogram to represent the object. However, the use of only color restricts the algorithm to track the object only in simple cases and it fails in complex situations like illumination changes, occlusion, and abrupt changes in the location of object. To improve the performance of mean shift, some authors have added some features to basic mean shift. As color based target representation is combined with texture-based target representation, based on spatial dependencies and co-occurrence distribution within interest target region for invariant target description, which is computed through so-scaled Haralick texture features, is an efficient mean shift for target tracking in some real world complex conditions. But it still fails, if there are some abrupt changes in the location of object. So a novel algorithm is presented in this thesis work, which is robust to track the object in above mentioned complex situations. It is the combination of color and gray level co-occurrence matrix based texture features along with the use of frame differencing for abrupt motion changing target detection.

Many experimental results demonstrate the successful of target tracking using the proposed algorithm in many complex situations, where the basic mean shift tracker obviously fails. The performance of the proposed adaptive mean shift tracker is evaluated using the VISOR video Dataset, creative common dataset and also some proprietary videos.

Keywords Visual tracking, Mean shift tracker, Color histogram, Haralick texture features, Co-occurrence matrix, Frame differencing, Abrupt motion changing object extraction.

Contents

Acknowledgement	iii
Abstract	iv
1. Introduction	1
2. Related work ..	4
3. The basic mean shift tracker	9
3.1 Target representation using histogram	9
3.2 Target localization: tracking procedure	10
3.3 Limitations of the basic mean shift tracker.....	11
4. Target representation using texture	12
4.1 Texture analysis	12
4.1.1 Statistical methods	13
4.1.1.1 First Order Histogram Based Features	13
4.1.1.2 Second Order Grey Level Co-occurrence Matrix Features	14
4.1.1.3 Gray Level Run Length Matrix Features.....	16
4.1.1.4 Local Binary Pattern (LBP) Features	17
4.1.1.5 Autocorrelation Features	17
4.1.2 Filter based methods	18
4.1.2.1 Law’s Texture Energy Features	18
4.1.2.2 Gabor Filter-based Texture Features	19
4.1.2.3 Wavelet-based Feature	19
4.1.3 Model based methods	20
4.1.3.1 Random Field Feature	20
4.1.3.2 Fractal Feature	21
4.2 Target representation	21
4.3 Similarity measurement for texture properties	22
4.3.1 Mahalanobis Distance	22

4.3.2 Similarity measurement	23
5. Frame differencing and target extraction	25
5.1 Algorithm for moving objects detection	26
5.2 Morphology filtering	28
6. Proposed mean shift algorithm integrating color, texture and frame differencing.....	31
6.1 Algorithm for abrupt motion changing target detection	33
7. Experiments results	35
8. Conclusion	42
References	43