DISTRIBUTION FIELDS FOR ROBUST OBJECT TRACKING

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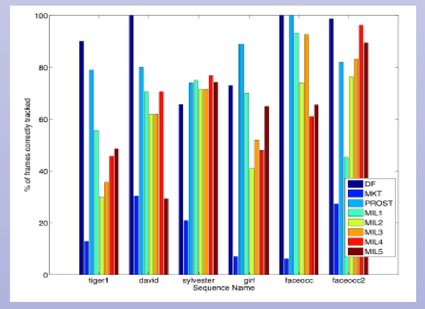
OBJECTIVE

Object tracking under

- Occlusion
- Illumination Changes
- Appearance Changes
- Complex Background

EARLIER WORK

- Template Matching
- Optical Flow
- Multiple Kernel Tracker
- MIL (Online Multiple Instance Learning)tracker -2009
- PROST (Parallel robust online simple tracking) tracker -2010



Comparison with current state of art **Longer the better**

Source [1]

REFERENCES

Our work is based on research of Eric learned Miller et.al [2011]

Distribution Fields –Laura Sevilla-Lara, Erik Learned-Miller 2011

Distribution Fields for Tracking Laura Sevilla-Lara and Erik Learned-Miller.

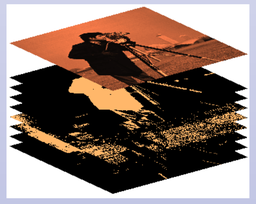
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2012.

DISTRIBUTION FIELDS

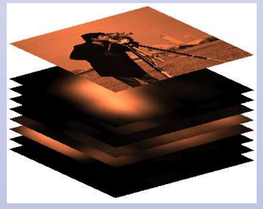
Distribution field is an elaborate data-structure to contain information of image features which is generated through a two step process

- Explosion
- Smoothing

Explosion -: A single image is split into n number of layers where each layer contains similar intensity pixels

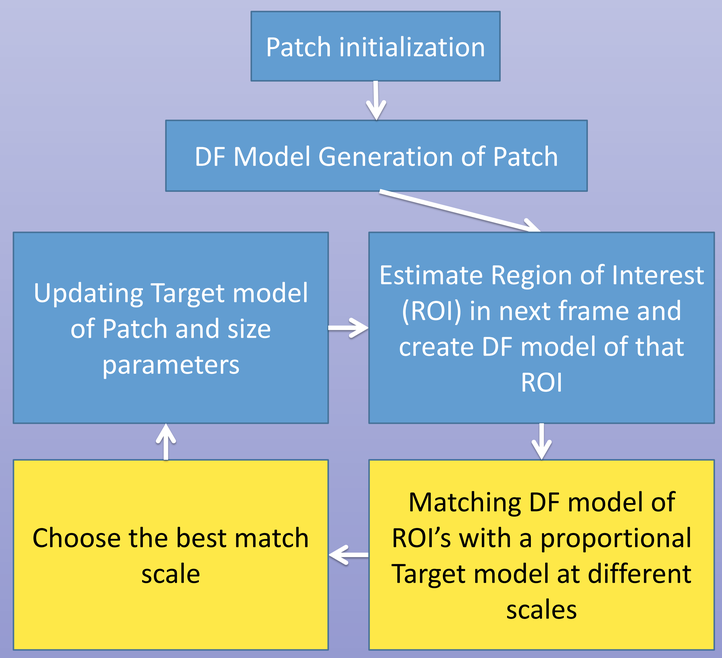


Smoothing : A Gaussian kernel is used to smooth in each layer while another kernel is used to smooth across layers.



Source [1]

OUR APPROACH



RESULTS

For the purpose of comparing the original algorithm with our modified version we created our own dataset to introduce change of scale.

Result of **tracking with original algorithm-**

Frame1 **Frame 100** **Frame 134**

Result of **tracking with modified algorithm-**

Frame1 **Frame 100** **Frame 134**

Scale invariance feature has been implemented over the original algorithm to extend the domain of this algorithm to include object with motion along orthogonal axis along image plane

Depth estimation of the target from the camera could be obtained at every frame.

FUTURE WORK

- Improve the stability of tracking by introducing other measure of matching than absolute difference .
- Comparing the percentage match by counting near zero coefficients in image difference

Source-

[1] Distribution Fields –Laura Sevilla-Lara, Erik Learned-Miller 2011