Available online at www.scientiaresearchlibrary.com

Scientia Research Library

ISSN 2348-0424
USA CODEN: JETRB4

Journal of Engineering And Technology Research, 2015, 3 (2):65-71
(*http://www.scientiaresearchlibrary.com/arhcive.php*)

VIDEO STABILIZATION AND STEGANOGRAPHY

Himanshu Katara [1*], Anil Kumar Sharma[2]
[1]*M. Tech student, ECE department ,Mangalayatan University, Aligarh U.P, India*
[2] *Assistant professor, ECE department, Mangalayatan University, Aligarh U.P, India*
Corresponding Author : *cool.katara91@gmail.com*

ABSTRACT

This study proposed a method of stabilizing and secure transmission of a video. A stable yield feature will be achieved without the impact of nervous that brought about by shaking the handheld cam feature recording. Firstly, notable focuses from every edge from the information feature is distinguished and transformed took after by enhancing and settle the feature. Enhancement incorporates the nature of the feature adjustment and less unallied range after the methodology of adjustment [1]. The yield of utilizing such technique demonstrates great result regarding adjustment and disposed of contortion from the yield features recorded in distinctive circumstances [4]. Beginning results demonstrates that the proposed method is suitable to be utilized and give extraordinary arrangement of adjustment.While steganography is characterized as the investigation of undetectable correspondence [7]. It keeps up mystery between two conveying gatherings. In picture steganography, mystery is accomplished by installing information into spread picture and creating a stego-picture.

Keywords: image processing, video stabilization, point feature matching, salient points, image quality measurement, Steganography, Cryptography.

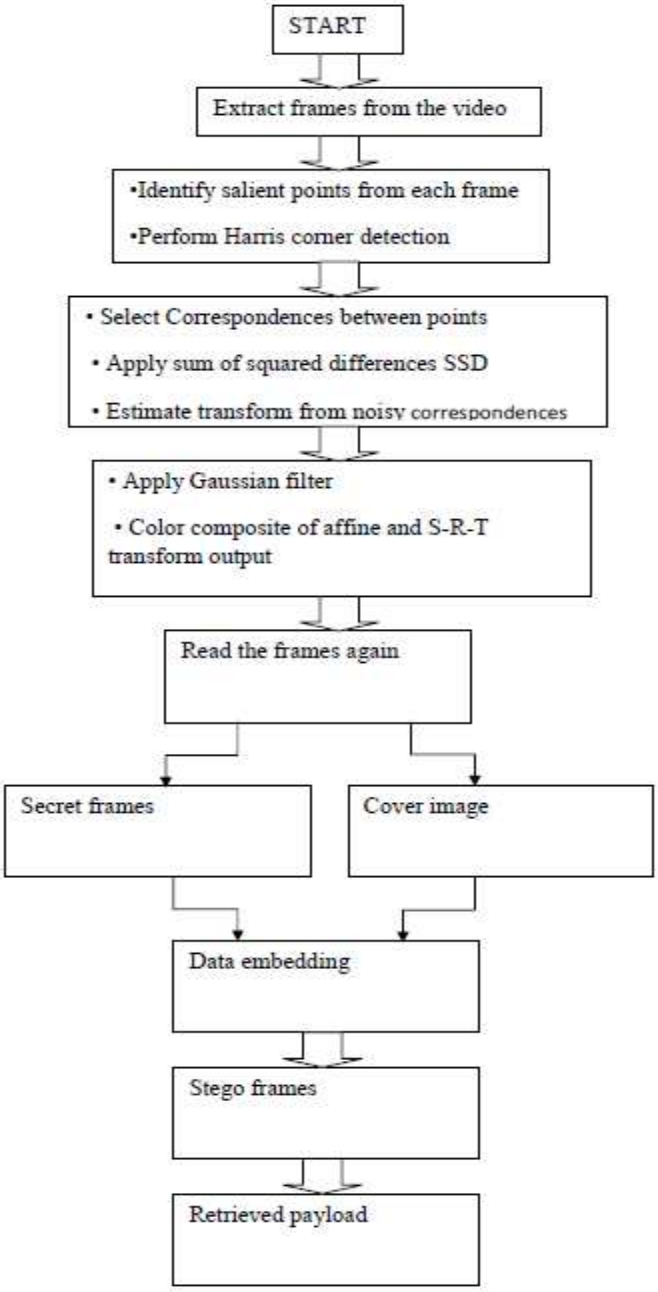
INTRODUCTION

As of late, the business sector of handheld cam has developed quickly. Feature catching by non-proficient client typically will prompt unanticipated impacts. Thus, numerous analysts study such downsides to improve the nature of easygoing features [2][3][4]. Right now, equipment stabilizers are connected to the cams as powerful arrangement. On one hand, pre-processing systems, for example, nonlinear channels are connected to dispose of the undesirable effects. Then again, utilizing multi-stages for pre and post transforming could irritate the current issues as indicated by slips aggregate. On the other hand, there are inadequacies identified with procedure the features with entangled movement, for example, different moving closer view object.
Generally the process of stabilization have to go through three phases namely motion estimation, motion smoothing and image composition [1][5][6]. For the first phase the purpose is to estimate

the motion between frames. After that, the parameters of estimated motion which is obtained from the first phase will be sent to motion compensation, where removing the high frequency distortion and calculating the global transformation, which is very important to stabilize the current frame [3].

When we talk about steganography, everybody needs the mystery and security of their imparting information [8]. In our every-day life, we utilize numerous protected pathways like web or phone for exchanging and imparting data, however it is not protected at a certain level. To impart the data in a disguised way two procedures could be utilized. These procedures are cryptography and steganography [7][9].

MATERIALS AND METHOD



RESULTS AND DISCUSSION

In this section, the results attained based on the proposed methodology will be discussed.

A-Identification of salient points from each frame & Harris Corner Detection

The necessity of this step is to correct the distortion between two frames and find transformation between them . Firstly, the needed points from the two picked frames must be distinguished trailed by selecting the basic correspondence between the edges. Right now, the points for every edge are recognized however to verify that these points will have comparing points in the second frame, it is important to discover points around striking picture highlights, similar to corners. Along these lines, Corner Detector System Object is utilized to discover corner qualities utilizing Harris Corner Detection which is one of the speediest calculations to discover corner qualities.

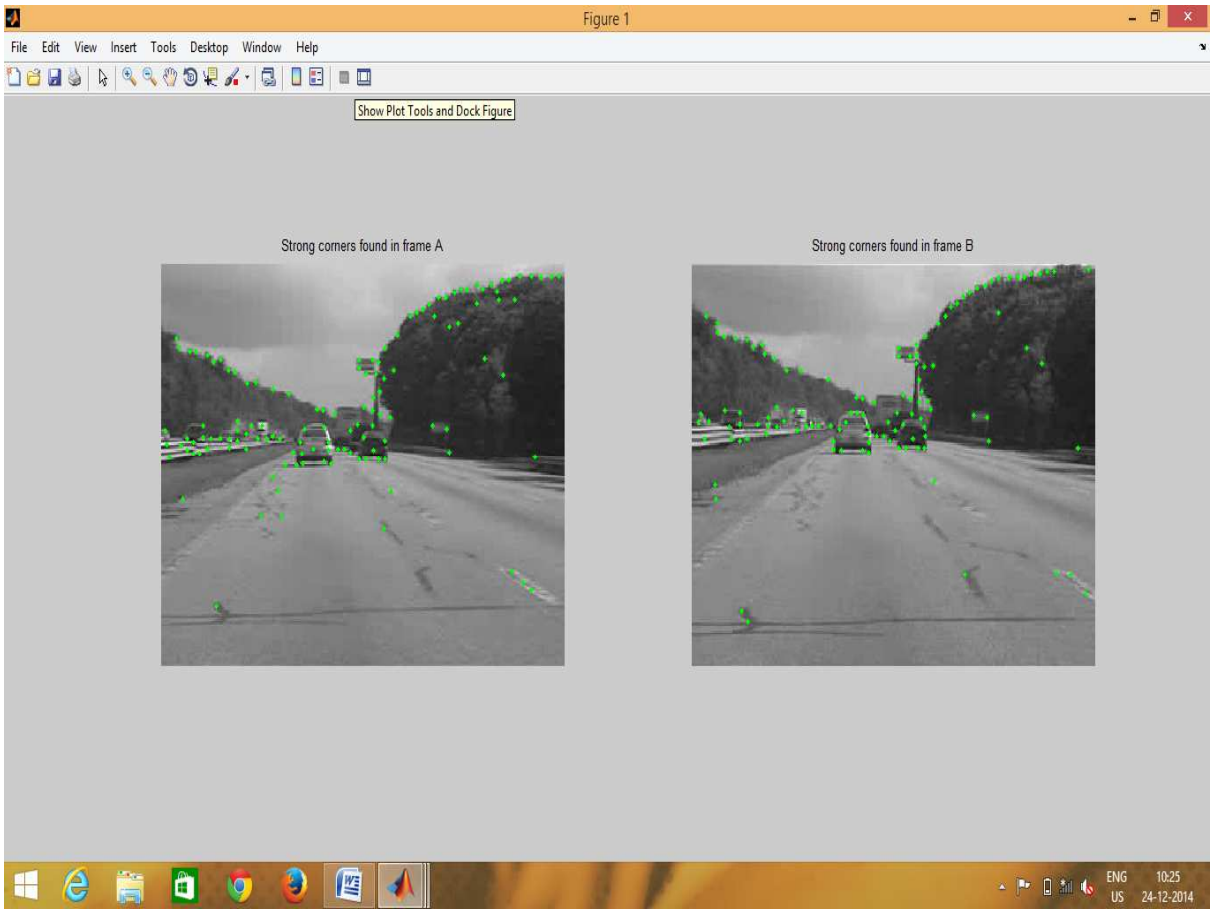


Fig-1- The detected strong corners from both frames where they marked with green dots.

B- Corresponding points

The introductory correspondences between the points that is distinguished from the past step will be conjured. Correspondences between the summoned points must be picked for every point, for that reason a lattice of 9 x 9 pieces will be separated around every point from its continuous picture outlines. The most vital here is coordinating the expense between points by discovering the Sum of Squared Differences (SSD) between the sequential picture areas of casings. Along these lines we need to locate the most reduced expenses to consider them in the arrangement. Figure 2

demonstrated the same positions for the green shading purposes of the introductory comparing points existed in both edges.

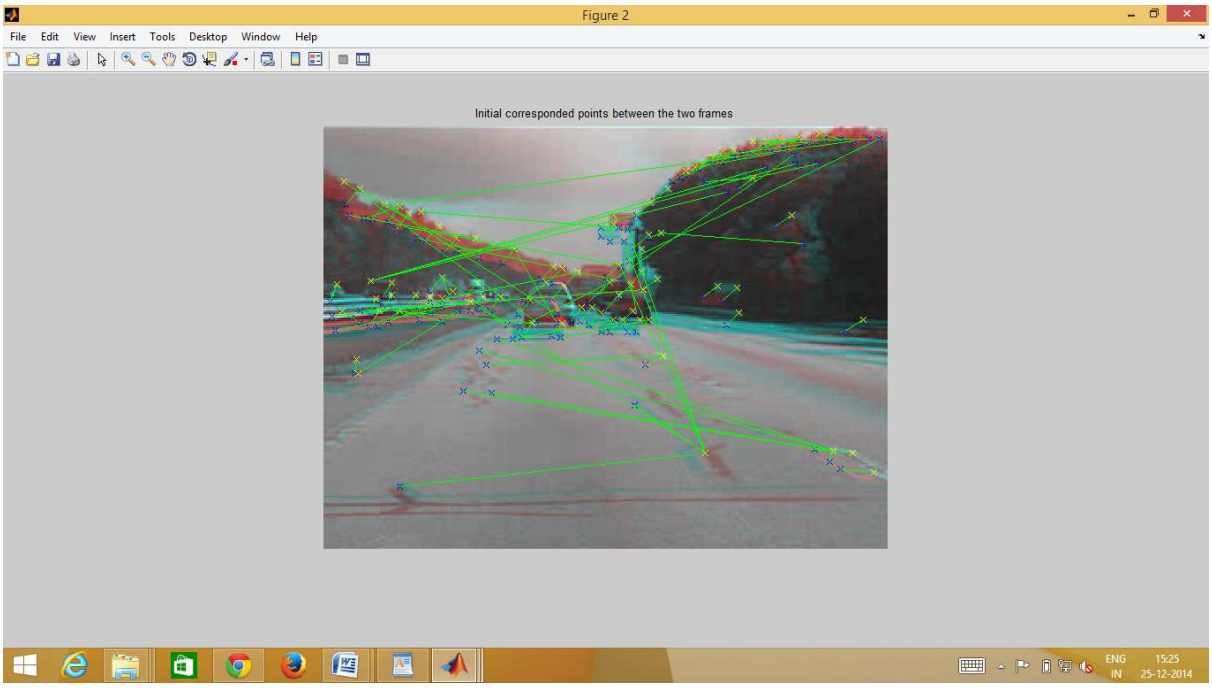


Figure 2: Corresponding points

Not all the correspondence points are correct but most of them are outlier points. So the SSD in the coming step is performed to ensure to find out the minimum cost matching points.

C. Estimation of geometric transform

There are several incorrect point correspondences but strong estimation of geometric transform between the two frames can be determined using the random sample consensus algorithm (RANSAC) as in Figure 3

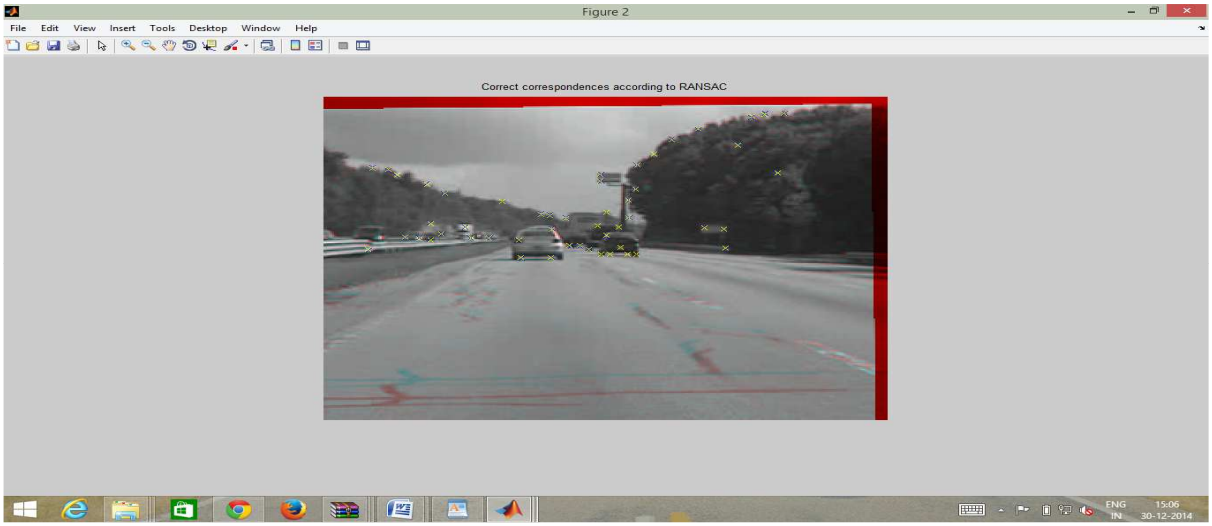


Figure 3: Correct correspondences by using RANSAC algorithm.

From Figure 3, the inliers correspondences lies in the image background. The reason stand behind this is the background features are far enough that act as if they were on an infinitely distant plane. We can assume that background plane is static and will not change more between the first and second frame, instead, this transform is capturing the motion of the camera. Thus correcting process will stabilized the video.

D. Frames Correction

Further, the raw mean video frames and the mean of corrected frame are computed as in Figure 4.

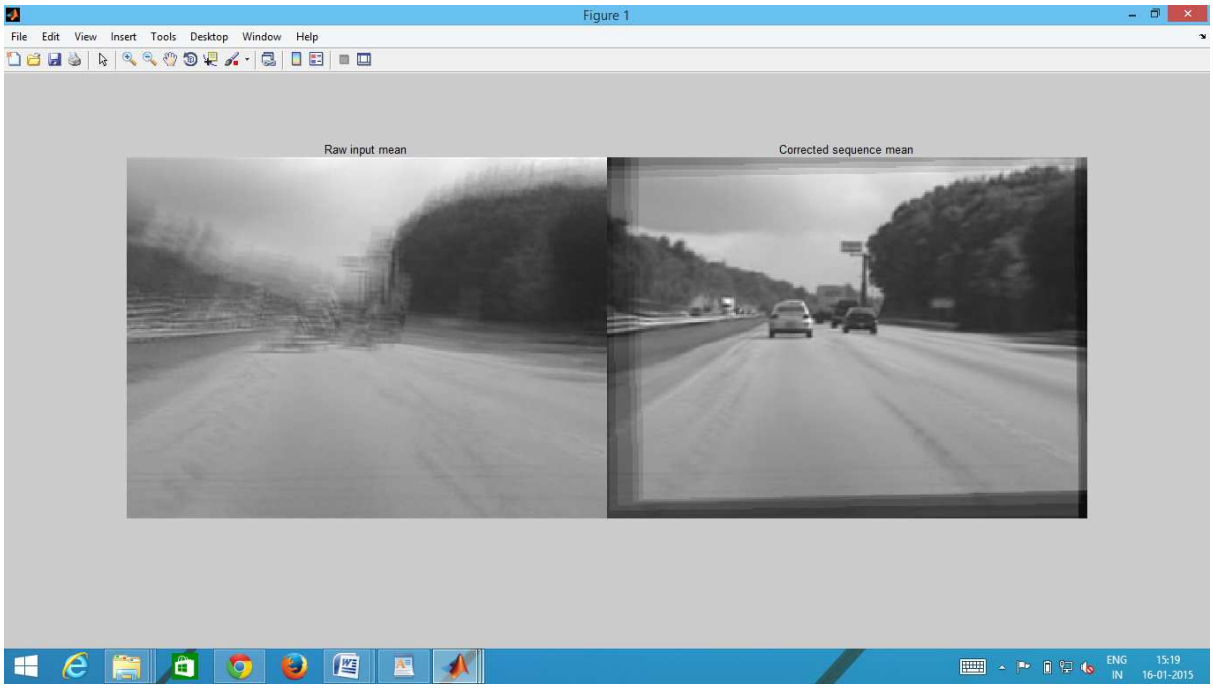


Figure 4: Corrected frames

The left image shows the mean of the raw input frames that resembled the distorted original video frame due to extreme jittery plateform. On the right side is the mean of the corrected frames with less distortion. This proven that the stabilization algorithm worked well.

E. Read the frames again

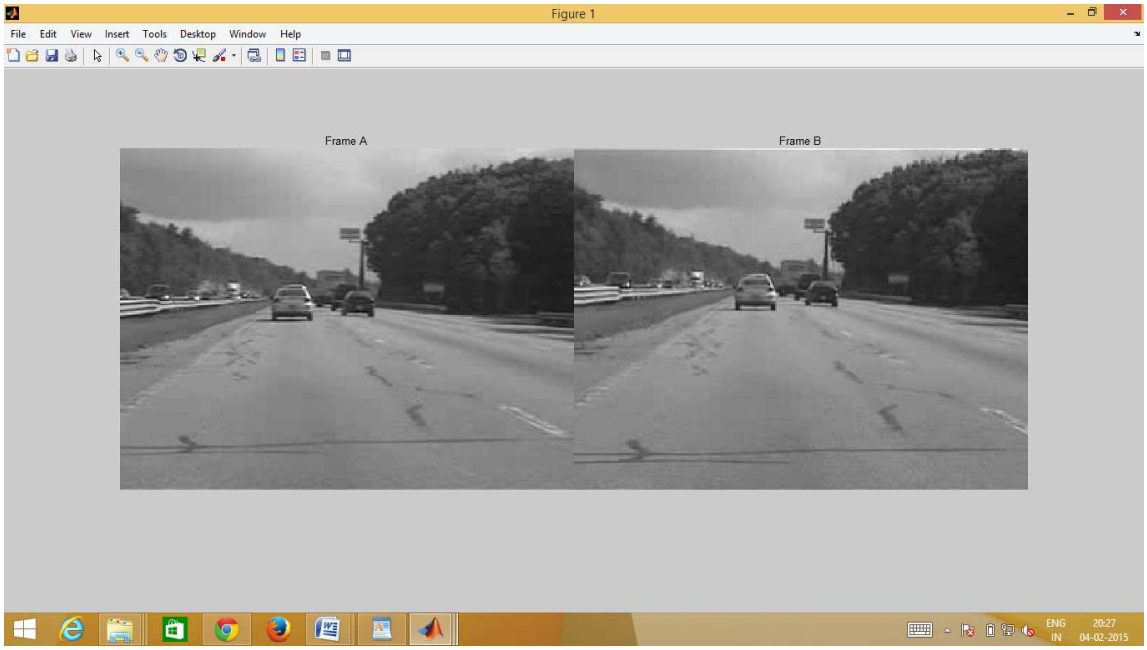


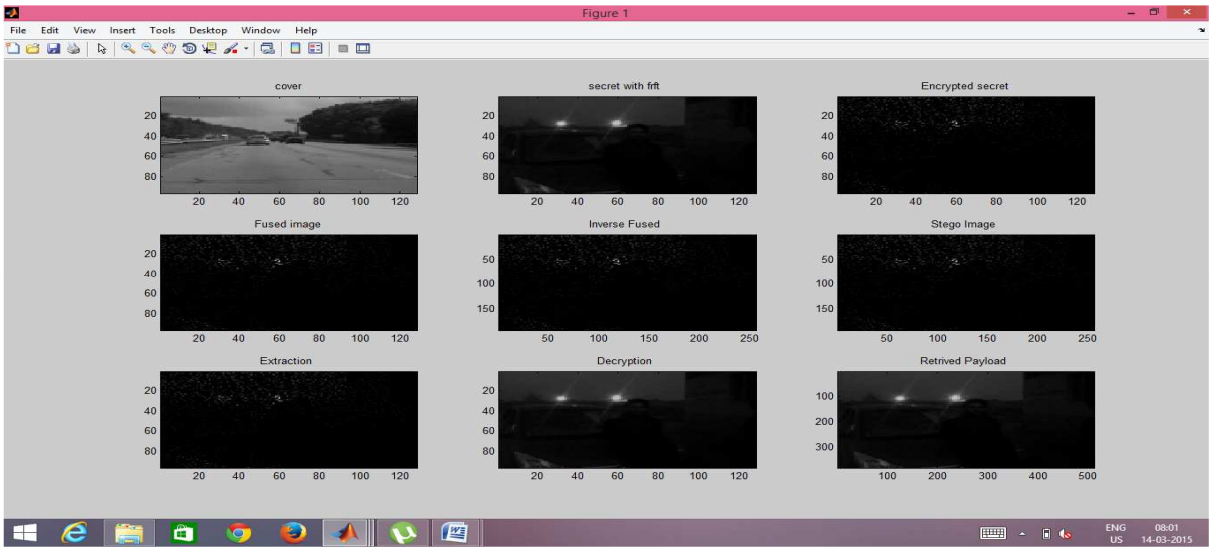
Fig-5, Read the frames

F- DATA EMBEDDING

For data embedding we use different techniques like spatial domain method, statistical technique, spread spectrum technique. Here we used two level DWT (discrete wavelet transform) technique. In this technique the secret message is embedded in the transform or frequency domain of the cover image.

Here we first apply the two level DWT to the image and then generate the phase mask. After that we fused the images and inverse also done by applying inverse DWT.

G- ENCRYPTED, DECRYPTED AND STEGO IMAGE



Frame 6- Encrypted and decrypted image with a frame as a cover image..

CONCLUSION

To stimulate the results we have used MATLAB @r2010a. In this paper we have seen that the proposed stabilization method has worked well and we can apply it to the videos took on jittery platforms with an ease and we can further improve this methodology by using some other methods in future. Now a day's LSB substitution technique is used widely because of its ease implementation but it is not secured enough as DWT technique. So we can transmit our data securely by the help of DWT technique.

REFERENCES

[1]. Labeeb Mohsin Abdullah[1], Nooritawati Md Tahir[2] & Mustaffa Samad[3] '*Video Stabilization based on Point Feature Matching Technique'* 978-1-4673-2036-8/12/$31.00 ©**2012** IEEE.

[2]. Anu Suneja '*An Experimental Study of Edge Detection Methods in Digital Image'* Global Journal of Computer Science and Technology Vol. 10 Issue 2 (Ver 1.0), April **2010**

[3]. Seung-Kyun Kim[1], Seok-Jae Kang[2], Tae-Shick Wang[3], and Sung-Jea Ko[4] fellow IEEE '*Feature Point Classification Based Global Motion Estimation for Video Stabilization'* Contributed Paper Manuscript received 01/01/13 Current version published 03/25/13 Electronic version published 03/25/**13**.

[4]. Hung-Chang Chang[1], Shang-Hong Lai[2], and Kuang-Rong Lu[3] '*A Robust and Efficient Video Stabilization Algorithm*' 0-7803-8603-5/04/$20.00 ©**2004** IEEE

[5]. Maurizio Pilu '*Video stabilization as a variational problem and numerical solution with the Viterbi method*' 1063-6919/04 $20.00 © **2004** IEEE.

[6]. Marco Zuliani *'RANSAC for Dummies With examples using the RANSAC toolbox for Matlab™ & Octave*' vision.ece.ucsb.edu/~zuliani ©2008–2010 July 4, **2014**

[7]. Hayder Raheem Hashima[1], Irtifaa Abdalkadum Neamaa[2] '*Image Encryption and Decryption in A Modification of ElGamal Cryptosystem in MATLAB*' International Journal of Sciences: Basic and Applied Research (IJSBAR) ISSN 2307-453

[8]. Kaladharan N '*Unique Key Using Encryption and Decryption of Image'* International Journal of Advanced Research in Computer and Communication Engineering Vol. 3, Issue 10, October **2014**.

[9]. Harpreet Singh[1], Dr.Naveen Dhillon[2], Sukhpreet Singh Bains[3] '*A New Approach For Image Cryptography Techniques*' International Journal of Computer & Organization Trends –Volume 3 Issue 9 – Oct **2013**.