ABSTRACT

## Image registration and fusion are of great importance in defence and civilian sector, e.g., recognizing a ground/air force vehicle and medical imaging. Image fusion refers to the technique that integrates relevant information from multiple images such that the new image is more suitable for the purpose of human visual perception and machine processing. In simple words, it is the combination of relevant information from two or more images into a single image .Hence the resulting image will be more informative than any of the input images. The related fields of Image Fusion are Computer Vision, Automatic object detection, Robotics and Remote sensing.

## Wavelets are mathematical functions that cut up data into different frequency components, and then study each component with a resolution matched to its scale. They have advantages over traditional Fourier methods in analyzing physical situations where the signal contains discontinuities and sharp spikes (non stationary signals). Wavelets were developed independently in the fields of mathematics, quantum physics, electrical engineering, and seismic geology. Interchanges between these fields during the last ten years have led to many new wave let applications such as image compression, image fusion, turbulence, human vision, radar, and earth quake prediction.

## There were many primitive attempts made for the fusion of source images which led to serious side-effects like reduction in contrast. Then new techniques were introduced which developed image fusion. There are different techniques to perform image fusion. Some of them are High pass filtering techniques, Laplacian pyramid, curvelet transformation, wavelet transformation, etc. The basic method of image fusion is high High pass filtering techniques. Each method has its own advantages and disadvantages. In this project we are trying to fuse images of the same scene which are rich in certain characteristics using wavelet transform to get the fused image with almost all the information available in it. Different performance parameters are also evaluated to compare the performance of proposed image fusion algorithms.

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