

Sudhanshu Patel | [Course Title] | [Date]

Image source Identification

[Report Subtitle]

**Abstract**

**Introduction**

In the real world, images are generally accepted as a proof of occurrence of an event. In this era because of enormous availability of image capturing devices and image sharing platform, Photos becomes a part of our life. But since copying, downloading, forging or redistribution of images becomes easier and easier because of the availability of automated powerful tools to create & manipulate a digital image. So there is need of tools to verify the authenticity of an image in order to reduce forgery and backtrack origin of controversial images.

Different digital cameras use different pipeline architecture or hardware so a series of different artifacts left on the image during image acquisition phase. These artifacts are the basis of our technique to identify Source camera in Blind fashion (Without using watermarks).

During image capturing phase digital camera performs a series of complex operation including focusing using lenses to interpolation of the different color channel, Color Filter Array (CFA), brightness adjustment etc. Since these operations are noninvertible, So they left traces of artifacts in the final image, and we can use these traces as a footprint in order to trace back source camera.

There are different approaches based on different traces of footprint have been proposed. Example : Using traces of CFA interpolation ([3][4]),effect of lens distortion([6]), traces due to auto white balance algorithm([7]) and exploiting traces of dust particle on acquisition sensors.

Mr. Mehdi Kharrazi and his team identified a set of 34 features ( average pixel value(3 features), RGB pair Correlation(3 features), Neighbour distribution center of mass(3 feature),RGB pair energy ratio(3 feature),Wavelet domain statistics (9 feature),Image Quality Metrics(13 features)) that can be used for source identification. They tested the performance of these features for classification of the image based on their origin, they found the accuracy of 93.42% for 2 cameras and accuracy of 88,02% for 3 cameras using multiclass SVM classifier.

In this thesis, we try to improve the performance of result by enhancing feature extracting method & classification techniques.