An Efficient Clustering Technique for Cameras Identification Using Sensor Pattern Noise

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Abstract

In multimedia forensics, source-based image classification problem is a well known problem. It addresses the issue of identifying those images that were captured by a specific source camera from a given set of N data images. This is possible as each camera has a unique Photo Response Non-Uniformity (PRNU) that is registered in every image captured by this camera. Classification is made by clustering images having the same PRNU. In this paper, an efficient technique is proposed to group images originated by the same camera. It is based on evaluating the similarity functions between the estimated PRNUs as well as their Hu's moment invariant information. The proposed technique has the ability to group images taken by a specific camera, even if the input images correspond to the same scene that was captured by different cameras. The classification algorithm is performed by means of a hierarchical clustering. Simulation examples are given to verify the superiority of the proposed technique compared to other techniques.