

Detecting forged parts of photographs faster and more accurately

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Copy-move forgery is difficult to detect because it involves copying an object or an area in an image and using it in another part of the same image. Credit: Allan Swart / 123rf

Researchers at India's Jaypee University of Information Technology have developed a new way to detect 'copy-move forgery' in photographs that is more successful and faster than currently available methods.

Copy-move forgery is difficult to detect because it involves copying an



<u>object</u> or an area in an image and using it in another part of the same image. This is typically done to cover something up or to add something that was not previously there. For example, an image of three missiles can be forged to look like an image containing five, where two of the missiles are copied and added elsewhere in the picture. Forgers can also use this technique to hide critical data in a <u>crime scene</u>.

Copy-move forgery is difficult to detect because the altered parts of the photograph contain a similar palette, texture and distortions as the original image.

Currently available approaches to detect this type of forgery are slow, as they involve a large number of computational calculations. They can also give false positive results.

The researchers sped up the process by converting an image into its binary form, such that each pixel in the image is either black or white, with black representing parts of objects in the image and white representing the background.

The team developed an algorithm that then translates each black pixel in the image into a position on a histogram. Copied parts of an image will have the same 'profile' in the histogram as an original object in the image. This appears in the shape of a repeated 'valley' in the histogram. Other objects in the image will also appear as valleys, but they will not match the other valleys.

The team successfully tested their <u>method</u> on more than 20 forged images of various sizes and found that there is "tremendous improvement" in the computation time, especially for larger images, compared to other methods.

The technique is limited to images with distinct contrast between copied



objects and the image background, according to the study published in the *Pertanika Journal of Science & Technology*.

More information: An Approach for Identification of Copy-Move Image Forgery based on Projection Profiling *Pertanika Journal of Science & Technology*. <u>www.pertanika.upm.edu.my/Pertanika</u> %20PAPERS/JST%20Vol.%2025%20(2)%20Apr.%202017/10%20JST %20Vol%2025%20(2)%20Apr%202017_JST-0636-2016R1_pg507-518 .pdf

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