COM-PRESS: An Image Manipulation Analysis Dashboard for Fact-checkers (Extended Abstract)

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The advancement of artificial intelligence has made it easier to manipulate images. For example, FireFly or Photoshop Generative Fill enables users to realistically add or delete objects in an image without the need for advanced technical skills. As a result, there is a growing concern that manipulated images will be used more frequently for disinformation purposes. To address this challenge, we present COM-PRESS, a tool designed to equip journalists with efficient image manipulation detection methods, aiding them in fact-checking processes. COM-PRESS results from an interdisciplinary project, which fosters collaboration between computer and communication scientists. The tool is in its alpha version and publicly available on `https://com-press.ilabt.imec.be/`.

The workflow to analyze images in COM-PRESS is as follows. First, users upload an image of interest (i.e., fact-check worthy). The image is then analyzed using multiple state-of-the-art forgery detection methods. The results are then visually presented on the website as heatmaps that highlight potential manipulations or inconsistencies.

To aid the online publication of fact-checks, the dashboard provides two additional features which were derived from interviews with fact-checkers at the beginning of the research project. First, a button to show embedded code is provided, which journalists can copy and paste in their online article. The embedded code enables the visualization of a heatmap image along with a slider to change the transparency to make the underlying image of interest visible. Within fact-checking, transparency is key, and such an embedded code thus strengthens the online fact-check publication. Second, fact-checkers or consulted experts can add comments to the images, so that the COM-PRESS result page can be linked to in articles, and readers are provided with contextual information and interpretations. Fact-checkers oftentimes rely on expert interpretations, hence this was an essential feature to fit the tool in the current fact-checking practices. An example of such a result page is shown in Fig. 1 and on `https://com-press.ilabt.imec.be/result/kp0RcotFa`.

The dashboard currently incorporates the following forgery detection methods: BLK [4], CAGI [2], DCT [6], Noiseprint [1], Comprint [5], and CAT-Net [3]. The first three are conventional methods, whereas the latter three are more recent deep-learning methods. In future versions of COM-PRESS, we will incorporate additional (fused) detection methods. Moreover, we will provide more transparency on the performance of the methods, as well as a tutorial on how to interpret the results, to meet previously detected fact-checker's needs. Furthermore, we will perform a user study to pinpoint opportunities to improve the dashboard.

Compared to existing dashboards (e.g., MeVer Image Verification Assistant on `https://mever.iti.gr/forensics/`), COM-PRESS has the following novelties: integration of Comprint [5] and CAT-Net [3], embedded-code buttons, and the ability to add comments.

In conclusion, COM-PRESS offers journalists a valuable resource to enhance image fact-checking and combat disinformation. By leveraging multidisciplinary approaches and open-source detection methods, it equips journalists with additional tools necessary to verify the authenticity of images and promote the dissemination of accurate information in the face of growing online disinformation.

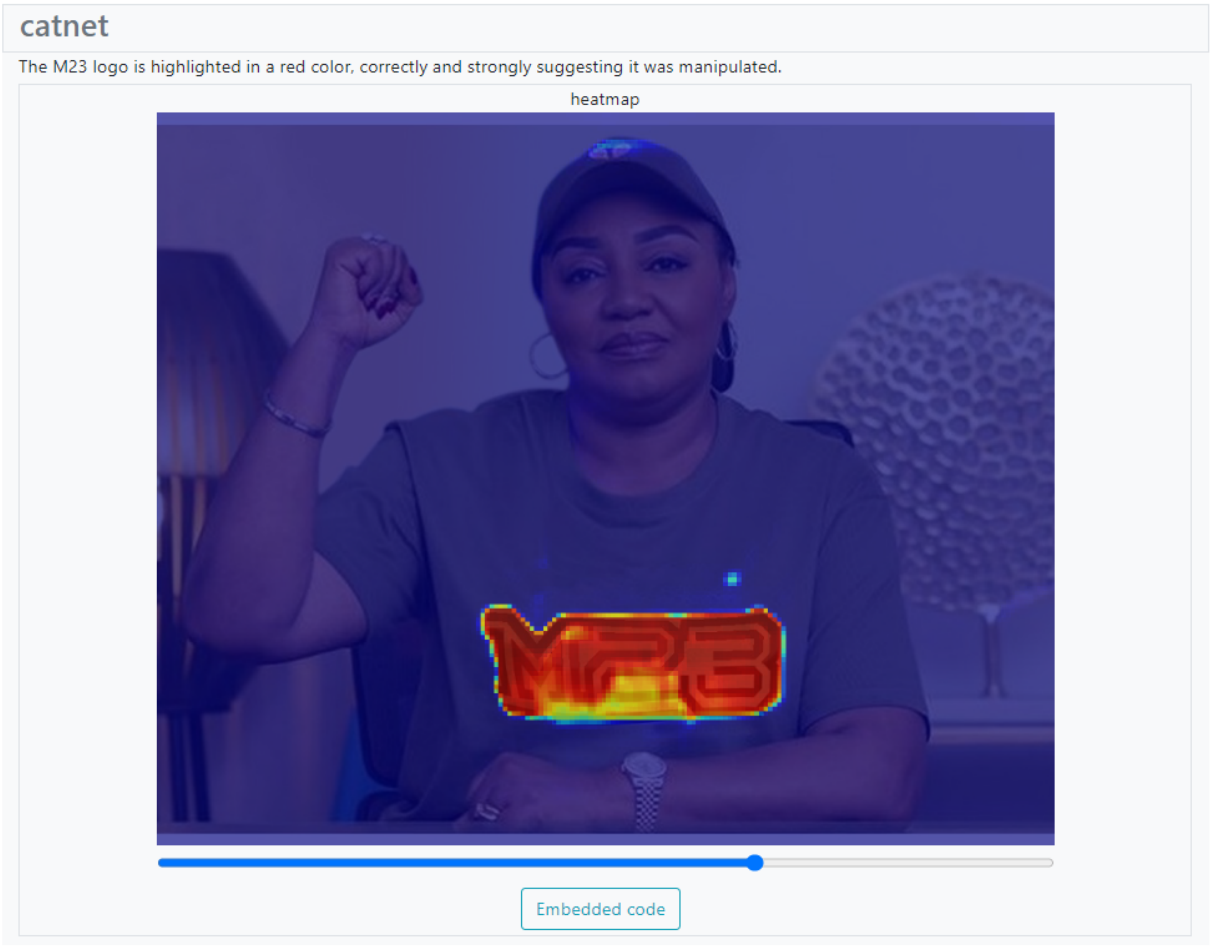

Figure 1: Example result page: `https://com-press.ilabt.imec.be/result/kp0RcotFa`, with comments to aid interpretation, a slider to change the heatmap transparency, and an embedded-code button.

References

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