**Problem & Background**

- Copy-move image forgery could be used to add or hide some objects appearing a digital image, leading to a different interpretation.
- It could be misled if such a manipulated image was part of a criminal investigation. It is crucial to develop a robust image forensic tool for copy-move detection and localization.
- The results of existing approaches are still far from perfect. It is very challenging to distinguish copy-moves from incidental similarities, which occur frequently.

**Contributions**

- We propose a dual-order attentive Generative Adversarial Network for image copy-move forgery detection and localization.
- Our 1st-order attention module is able to extract the copy-move location aware attention map and the 2nd-order attention module explores pixel-to-pixel inter-dependence.
- Extensive experiments strongly demonstrate that the proposed DOA-GAN clearly outperforms state-of-the-art.

**Datasets and Metrics**

Datasets: USC-ISI, CASIA, and CoMoFD; Metrics: recall, precision, F1 for both pixel-wise localization and image-level detection.

*This work was closely supervised by Chengjiang Long when Ashraful Islam was a summer intern at Kitware, Inc.*

**Quantitative Results**

<table>
<thead>
<tr>
<th>Dataset</th>
<th>Method</th>
<th>Top-10</th>
<th>Top-5</th>
<th>Recall</th>
<th>Precision</th>
<th>F1</th>
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<tr>
<td>CASIA</td>
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<td>CoMoFD</td>
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<td>1.00</td>
</tr>
</tbody>
</table>

**Qualitative Results**

From left to right are the input image; results of DMVN, DMAC, and our DOA-GAN; and the GT mask (top: CASIA; bottom: CoMoFD).

**DOA-GAN: Dual-Order Attentive GAN for Image Copy-move Forgery Detection and Localization**

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**Proposed Approach**

**Key References**


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