Conclusion and Future Work

In this work, forgery detection networks were proposed in two categories: (1) image level forgery identification and (2) pixel level forgery localization. The feature extractor is then fed into a local anomaly detection network proposed by Wu et al. [11]. The forgery detection networks were designed to detect forged regions in a local manner.

Image Level Forgery Identification

The Image Manipulation Dataset

The Image Manipulation Dataset (IMD) [1] was collected for the purpose of training and testing image manipulation detection models. The dataset contains images that have been manipulated in various ways, including: (1) copy-move, (2) locally enhance, and (3) splicing.

Pixel Level Image Forgery Localization

The Convolutional Neural Network Architecture

The convolutional neural network (CNN) architecture used in this work was inspired by recent advancements in image classification tasks. It consists of several convolutional layers followed by a fully connected layer. The network was trained using the Adam optimizer with the initial learning rate of 0.001.

Table: Performance Comparison

<table>
<thead>
<tr>
<th>Model</th>
<th>Trained Parameters</th>
<th>Test Accuracy</th>
<th>AUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our Model</td>
<td>0.27 M (7M in total)</td>
<td>0.794</td>
<td>0.93</td>
</tr>
<tr>
<td>LADN trained ManTraNet</td>
<td>0.2 M (7M in total)</td>
<td>0.798</td>
<td>0.91</td>
</tr>
<tr>
<td>Our Model with ResNet</td>
<td>0.67 M (27M in total)</td>
<td>0.678</td>
<td>0.93</td>
</tr>
</tbody>
</table>

Future Work

Future work will focus on improving the performance of the forgery detection networks. One potential area for improvement is the use of more sophisticated feature extractors, such as pre-trained models like VGG or ResNet. Additionally, the dataset could be expanded to include more types of forgery and manipulated images.

Introduction

Image Level Forgery Identification and Pixel Level Forgery Localization

via a Convolutional Neural Network

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