IMAGE FORGERY DETECTION USING DEEP LEARNING

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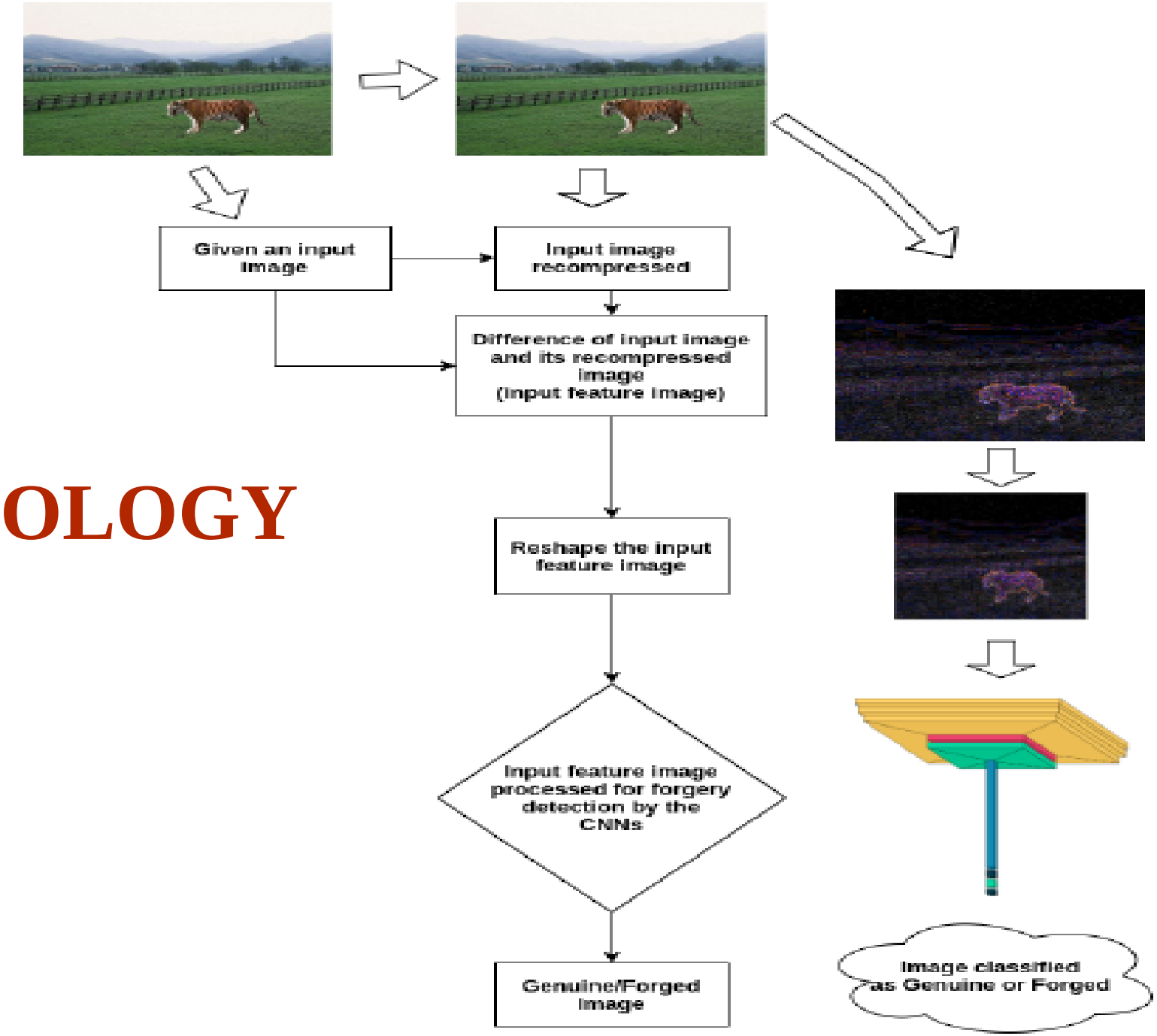
DESCRIPTION

Images are essential in our daily lives because they contain a wealth of information, and it is often required to enhance images to obtain additional information. A variety of tools are available to improve image quality; nevertheless, they are also frequently used to falsify images, resulting in the spread of misinformation. This increases the severity and frequency of image forgeries, which is now a major source of concern. Numerous traditional techniques have been developed over time to detect image forgeries. In recent years, convolutional neural networks (CNNs) have received much attention, and CNN has also influenced the field of image forgery detection. A technique capable of efficiently and accurately detecting the presence of unseen forgeries in an image is required. Introduce a robust deep learning based system for identifying image forgeries in the context of double image compression. The difference between an image's original and recompressed versions is used to train our model.

OBJECTIVES

- The objective of this project to find whether the image is tampered or not.
- To check the image is image spliced or have any copy move.
- To detect image forgeries and to prevent the spread of misinformation as well as to restore public trust in images.

METHODOLOGY



ALGORITHM

CNN

Within Deep Learning, a Convolutional Neural Network or CNN is a type of artificial neural network, which is widely used for image/object recognition and classification. Deep Learning thus recognizes objects in an image by using a CNN. CNNs are playing a major role in diverse tasks/functions like image processing problems, computer vision tasks like localization and segmentation, video analysis, to recognize obstacles in self-driving cars, as well as speech recognition in natural language processing.

MODULES

1) Image re compressing

- Loading image from dataset
- Re compress image and save
- load saved re compressed image
- Finding difference of original image and re compressed image
- Reshape feature image
- Add features and labels to list

2) Split features and labels to training and testing set

3) Train CNN

- Initialize CNN model
- Train generated image features and labels using CNN
- Calculate accuracy
- Saving Trained CNN model

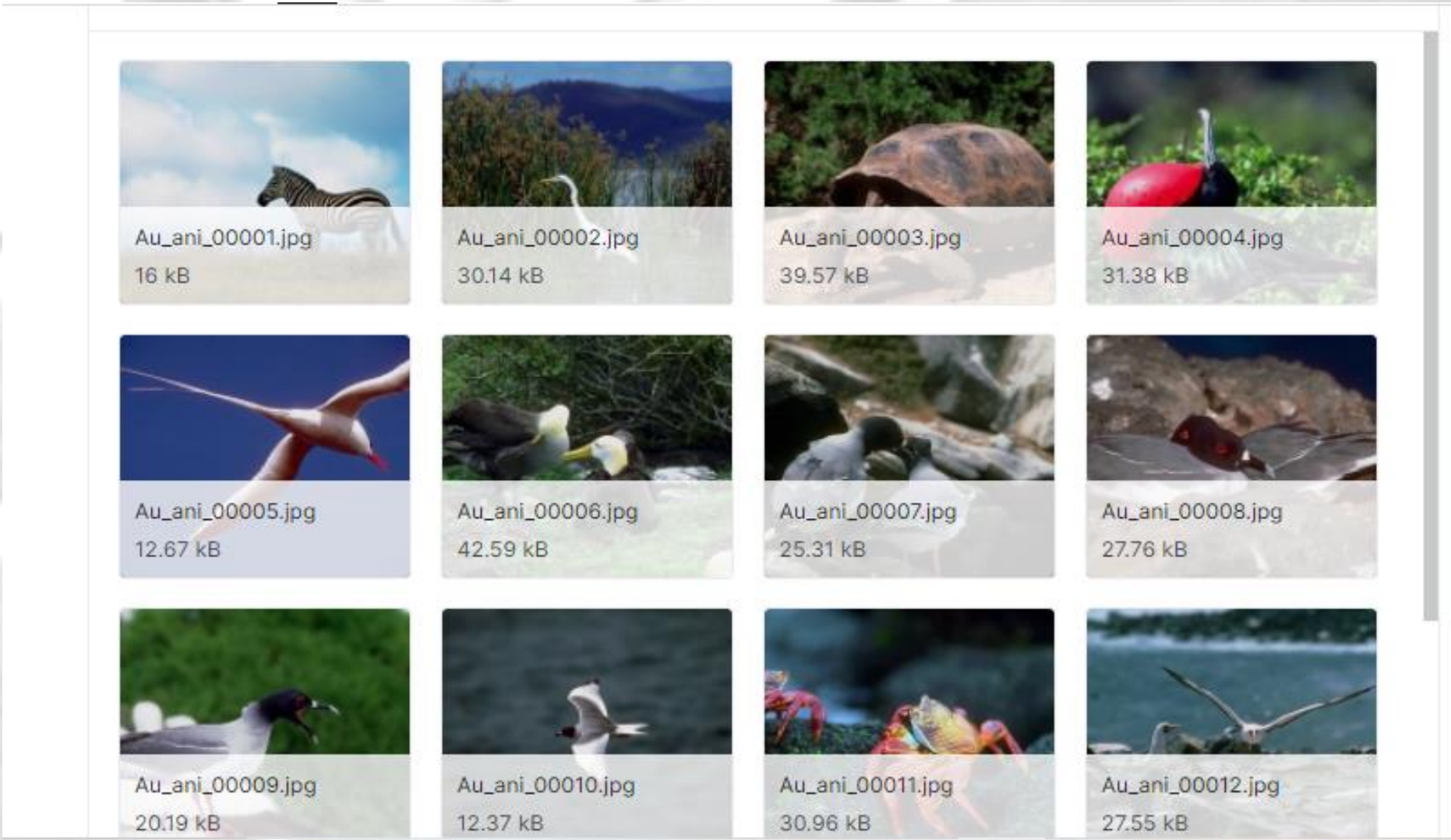
4) Prediction

- Loading saved model
- Load testing image
- Image re compression and feature extraction as in Step1
- Input features to loaded CNN model
- Prediction of image as forged or not

TOOLS USED

- **Front End :- Python,CSS,HTML**
- **Back End :- Django**

DATASET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27.55 kB

REFERENCE

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2) Xiao, B.; Wei, Y.; Bi, X.; Li, W.; Ma, J. Image splicing forgery detection combining coarse to refined convolutional neural network and adaptive clustering. Inf. Sci. 2020, 511, 172–191. [CrossRef]

3) Kwon, M.J.; Yu, I.J.; Nam, S.H.; Lee, H.K. CAT-Net: Compression Artifact Tracing Network for Detection and Localization of Image Splicing. In Proceedings of the 2021 IEEE Winter Conference on Applications of Computer Vision (WACV), Waikoloa, HI, USA, 5–9 January 2021; pp. 375–384.

4) https://www.youtube.com/watch?v=D3wwOU5-3fU


THANK YOU