ECE501_2025_12_Group_2

Project name: **Image Tampering Detection (Forgery Localization)**

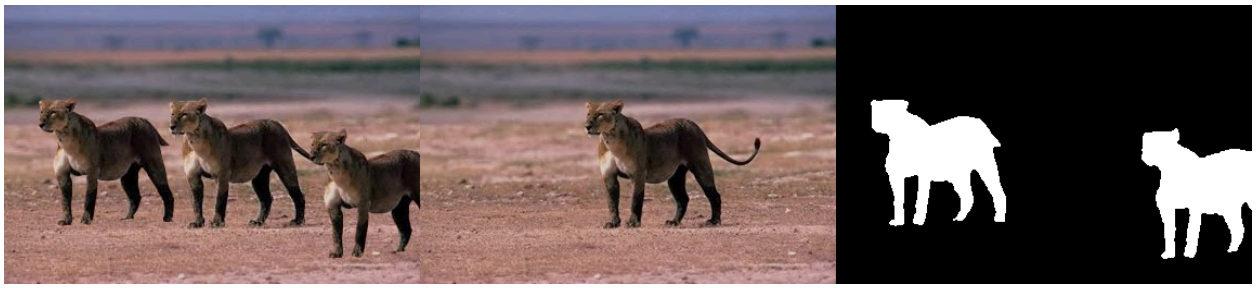
Team Details:

Name	**AU ID**
Prasham Mehta	AU2340135
Dhairya Rupani	AU2340195
Vidhan Nahar	AU2340199
Drumil Bhati	AU2340211

Work done till week 3:

- We finalised the structure of our project and decided the flow of execution.
- We have planned out the methodology to be followed for implementation of the image tampering detection model.
- Our model is as follows:
    - We will first try to divide our image into smaller regions known as segments based on dynamic parameters such as lighting, texture, sharpness, etc.
    - We will focus on these segments in our further processing of copy-move forgery, since most of the time the forgery must indicate some sort of duplicacy in the image.
    - We try to identify this tampering/forgery by first extracting the features using SIFT and SURF algorithms.
    - These algorithms are particularly useful for extracting features from individual segments.
    - We then try to match these features with those extracted from other segments.
    - We then try to join similar areas that we collected during feature matching to highlight the tampered features of the image.
    - The output image highlights the tampered areas as well as we produce a ground truth mask.

- After searching many of the dataset we have finalised https://github.com/namtpham/casia1groundtruth this dataset because this gives us proper difference between the authentic and tampered image by giving ground truth mask.



Tampered image **Authentic image** **Ground truth mask**

- As here it is clearly visible that middle one is original(Autentic) image and left one is tampered with copy move. The difference between this two image is clearly visible in right image(Ground truth mask) which is a binary image where white portion indicates the tampered region.

- After the mid semester presentation we reviewed the research papers and removed the once that were based on conference reviews.
- Reviewed the methods described in the selected methods and discussed its implementation.

Plan for next phase:

- Test and develop algorithms, such as block-based based that have a relation to move forgery detection.
- In the case of datasets, such as images, the determination of the difference between the normal and suspect cases is required.
- A working model, which demonstrates the potential tempering areas in a test image that is forged.
- Combine the use of SIFT and SURF in order to have strong features.
- Try to produce a heatmap output of the tempered region