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**CSE 532 MACHINE LEARNING**

**Weekly Report – 4**

**UAV’s Ground Sample Distance (GSD) Calculation   
Using AU Drone Dataset**

**~ Submitted To Prof. Mehul Raval**

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* **Weekly Progress:**

We worked on Data Preprocessing by making a CSV file from the dataset provided to us consisting of video data. The procedure involved the following steps:

1. **Frame Extraction:** Video frames were extracted in the form of images.
2. **Size reduction:** The extracted frames were significantly larger (3800x2800); thus, we could not process the images properly. So, the image sizes were now reduced to 800x600.
3. **Gaussian Blurring:** To maintain the consistency in the image's colour and reduce the noise level from the data, we applied Gaussian Blurring.
4. **Object Identification:** We used colour and shape detection to detect the object in an image. For colour detection, we took a range of RGB values for which a bounding box would be made, keeping the area of the bounding box also range limited so that the detection can be as accurate as possible.

However, we observed that some extra bounding boxes were still being formed because some portions in the image had RGB values similar to that of our required object.

To solve this problem, we averaged the RGB values of the Object from various frames that had been created and then made the range stricter. This proved to be a much more effective and accurate way to produce a bounding box around the object.

1. **Measurement of Parameters (x, y, w, h, Angle)**: From the newly formed image with the bounding box, we had to extract some parameters that can be added to the CSV file to create a dataset. So, we declared the longer side of the image as the width and the shorter side of the image as the height of the image. Then we obtained the x and y coordinates from the pixel count of the picture and measured the angle from the center of the object to center of the picture.