

## Assignment - A

1. Consider a large dataset (say, a time series) A. Also, consider a smaller dataset B. How do you ensure whether sets A and B identify the same variable? Illustrate it with a Python script.
2. Collect data (images) and annotate them for two classes: Person and vehicle. You may use platforms such as Labellmg for annotations. You may limit to 800 images for the dataset. Perform object detection on your collected dataset and find the mean distance between the two classes in each image. You may use YOLOv5 for detection.
3. Download an image dataset of your choice for binary class classification. Perform the data augmentation techniques like flipping, rotation and transformation. Apply at least two object classification techniques both on the augmented as well as on the original dataset. Display the performance of the Algorithms. Prepare a comparison chart.
4. Collect images of vehicles with license plates written in Indian regional languages (eg. Hindi, Kannada, Tamil, Telugu, Bengali, etc.). Apply Image augmentation techniques on the collected images. Maintain separate folders for different language license plates. You may limit to 800 images in the dataset including the augmented images.
5. To test ability to comprehend new frameworks and ability to write necessary wrappers:
  - Download the pytorch check point file from here (link to be added) and convert the file to .onnx
  - Perform inferences on an onnx runtime session.
  - Write a wrapper to perform the inference on video feed from webcam.
  - Relevant papers to the .pth file:
    - [Real-time 2D Multi-Person Pose Estimation on CPU: Lightweight OpenPose](#)
    - [Single-Shot Multi-Person 3D Pose Estimation From Monocular RGB](#)

### General Conditions

1. Output must be hosted on github and sent with a link along with any material in PDF format.
2. Data must be zapped in format and attached with it.
3. Time Frame : 100 hours
4. Incase of any questions, please write to [hr@happymonk.co](mailto:hr@happymonk.co) and krishani@happymonk.co

