

# Approach

Our project aimed to address the problem of detecting pedestrians at high risk while walking on the road. To achieve this, we followed a systematic approach using YOLOv8, Google Colab, and Roboflow.

First, we collectively selected the Indian Driving Dataset (IDD) as our dataset since it contains diverse road scenarios. To train the object detection model, we worked together to annotate the dataset with bounding boxes around pedestrians. We utilized Roboflow's annotation tools, ensuring accurate and consistent labeling through collaboration.

To preprocess the annotated data, we collectively standardized the image sizes and formats and applied data augmentation techniques like cropping, flipping, and rotation to increase dataset diversity. Next, we collectively converted the annotated dataset into the YOLO format, which is widely used for object detection, including pedestrians.

To leverage the GPU capabilities for efficient training, we set up a Google Colab environment as a team effort. We installed the necessary libraries and dependencies for training the YOLOv8 model, a state-of-the-art object detection framework known for its real-time performance and accuracy.

Using Google Colab, we trained the YOLOv8 model on the annotated dataset from Roboflow, taking advantage of our team's collective expertise. Fine-tuning the model involved adjusting hyperparameters such as learning rate, batch size, and number of epochs. Throughout the training process, we collectively monitored the model's performance using evaluation metrics like precision, recall, and F1 score.

After training, we utilized the trained model for pedestrian detection on new images or videos, as a team effort. We also conducted real-time testing by deploying the model on a computer or embedded system equipped with appropriate cameras. This allowed us to collectively evaluate the model's accuracy and speed in real-world scenarios.

In the end, we documented the entire project, including the methodology, dataset, model training details, and evaluation results. We reported the findings, highlighting the model's accuracy, speed, and its potential application for detecting pedestrians at high risk on the road.

By following this approach we developed a object detection system using YOLOv8, Google Colab, and Roboflow, which can contribute to enhancing pedestrian safety and reducing accidents on the roads.