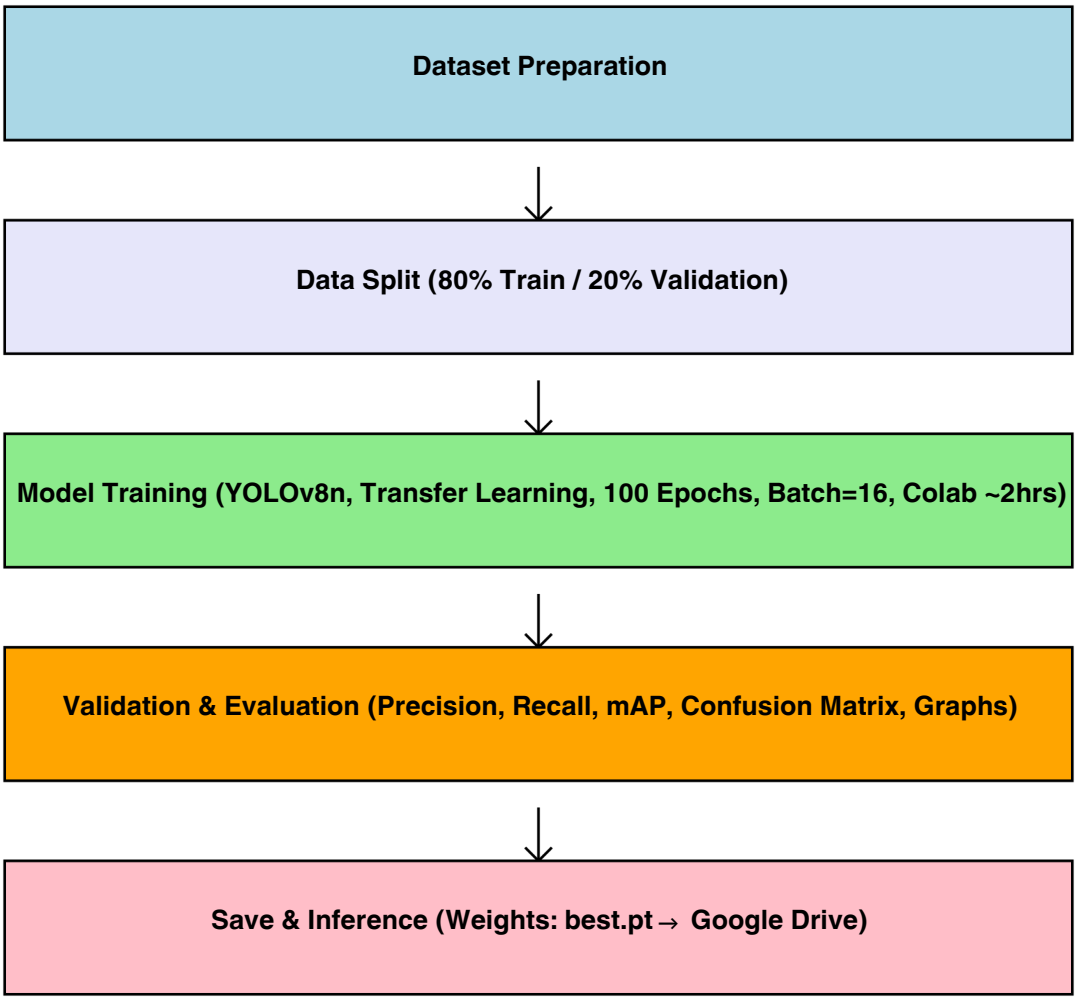
Transfer Learning using YOLOv8n



Detailed Workflow Explanation

1. **Dataset Preparation:** Collect 6000 images and convert annotations from XML format to YOLO format. Ensure three balanced classes: Car, Bus, and Motorbike, with 800 images each.

2. **Data Split:** Divide the dataset into 80% training and 20% validation sets. This ensures the model can learn from sufficient data while still being evaluated on unseen data.

3. **Model Training:** Use YOLOv8n with transfer learning on Google Colab. Train the model for 100 epochs with a batch size of 16. The training process takes around 2 hours.

4. **Validation & Evaluation:** After training, assess the model using metrics such as Precision, Recall, and mean Average Precision (mAP). Generate confusion matrices and graphs to visualize

performance.

5. **Save & Inference:** Save the trained model weights (best.pt) to Google Drive. These weights can be loaded later to perform inference on new, unseen images.