

## **Dog Pose Estimation using YOLOv8**

### **1. Dataset Acquisition:**

- The dataset for the dog pose estimator is downloaded using Roboflow, a platform for managing and annotating image datasets. The specific project and version of the dataset are accessed using the API key and the Roboflow Python library.
- The dataset is configured for the YOLOv8 model format.

### **2. Model Preparation:**

- The ultralytics package, which provides tools for working with YOLO models, is installed.
- A YOLOv8 model is loaded. There are multiple ways to do this:
  - Building a new model from a YAML configuration file (yolov8n-pose.yaml).
  - Loading a pretrained model (yolov8n-pose.pt).
  - Building a model from the YAML file and then transferring weights from the pretrained model.

### **3. Model Training:**

- The YOLOv8 model is trained on the downloaded dataset. The training configuration includes:
  - Setting the dataset path to the YAML configuration file (/content/Dog-Pose-Estimator-1/data.yaml).
  - Specifying the number of epochs (100 in this case).
  - Setting the image size for training (640x640 pixels).

### **4. Model Validation:**

- After training, the model's performance is validated to ensure it meets the desired accuracy and robustness.
- Metrics are calculated to evaluate the model's accuracy, precision, recall, and other relevant performance indicators.

## **Results and Evaluation**

### **• Training Performance:**

- The model is trained for 100 epochs, a sufficient duration for the model to learn the features of the dataset effectively.
- During training, metrics such as loss, accuracy, and other performance indicators are monitored to ensure the model converges well and does not overfit.

- **Validation Performance:**

- Post-training validation is conducted using the same dataset. The model's performance is assessed based on metrics calculated during the validation process.
- These metrics provide insights into the model's ability to generalize to new, unseen data, which is crucial for real-world applications.



