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Project:

T5

Project Members and roles :
Nada Alkharji : choosing an existing dataset, loading it in the notebook and doing the preprocessing.
Sarah Aljuwayr : Data augmentation and project presentation
Aliah Alotaibi : Compile the model, regularization and participated in the report.
Najla Aldhubaib : Model evaluation, visualization and the project report.

Project Title:	**Deep Learning for Traffic Violations Prediction** Violations of Not Wearing a Helmet

Description

Project Overview:

The project aims to recognize images of cyclists and determine whether they are wearing a helmet or not from the Traffic Violations Prediction dataset. The project will explore different aspects of deep learning, including model design, hyperparameter tuning, overfitting handling, feature transformation, and visualization techniques.

Dataset: Traffic Violation Dataset from Kaggel.

Down Dataset Link: https://www.kaggle.com/datasets/meliodassourav/traffic-violation-dataset-v3

- **Tasks:**

- **1-Data Loading and Preprocessing:**
- Download the Traffic Violations Prediction dataset and load it into google colab environment (Python).
- Preprocessed the data by rescale pixel values and splitting it into training and validation sets.
- It was downloaded and loaded using google drive.

2-Design and implement CNNs:

- Design and implement the Convolutional Neural Networks (CNNs) model using TensorFlow. The breakdown of the model architecture contains : 1 input layer
- , 3 hidden layers and 1 output. Group members chose to implement CNNs because we have a classification, CNNs were be sutiable for the dataset, including
- variations in the number of target size,batch size, neurons per layer, and epochs number.

3-Regulrization by Early Stopping :

- Early stopping was used to prevent overfitting during model training. This helps us to halt training at the optimal point where the model performs best on
- unseen data, rather than continuing to train and potentially overfitting the training data.

- **4-Training the Model and Evaluation:**
- Train and evaluate the model's performance using:
- accuracy metric and binary_crossentropy loss function.

Conclusion

At the end visualising the accuracy and loss and seenig the outcome to predict the

traffic violations .