Traffic Sign Detection App

Glossary

Version 1.1

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Revision History

Date	Version	Description	Name
10/5/25	1.0	First draft	Hayden Jones
1030/25	1.1	Updated and added terms	Hayden Jones

Glossary

General and Machine Learning Terms

A. **CNN (Convolutional Neural Network)** – A class of deep learning algorithms particularly effective for image classification and recognition tasks, such as identifying traffic signs.

B. **Confidence Score** – A numerical value (typically between 0 and 1) that indicates the model's certainty in its prediction for a detected sign.

C. **Dataset** – A collection of labeled images used to train and test the recognition model. In this project, the GTSRB (German Traffic Sign Recognition Benchmark) dataset is used.

D. **Detection Latency** – The time delay between when an image is captured and when the app produces a recognition output.

E. **Feature Extraction** – The process of identifying and highlighting important visual elements in an image, such as shapes and colors, to assist the model in classification.

F. **Frame Rate (FPS)** – Measures how many images (frames) the system processes per second during real-time operation.

G. **Occlusion** – Occurs when a traffic sign is partially blocked by another object (e.g., tree, vehicle, or pole), making recognition more difficult.

H. **Overfitting** – A common machine learning issue where a model performs well on training data but poorly on unseen data.

I. **Preprocessing** – The steps applied to images before they are fed into the model, such as resizing, normalization, and noise reduction.

J. **Training** – The process of feeding data into a model so it can learn to make accurate predictions.

K. **Validation Set** – A subset of data used to evaluate model performance during training to prevent overfitting.

L. **Weights and Biases** – Parameters within a neural network that are adjusted during training to improve prediction accuracy.

Android Development Terms

M. **Android Studio** – The official integrated development environment (IDE) for Android app development. It provides tools for coding, debugging, and testing the mobile application.

N. **Manifest File (AndroidManifest.xml)** – Defines essential information about the app, such as permissions, components, and minimum system requirements.

O. **Text-to-Speech (TTS)** – A feature that converts recognized text (such as traffic sign names) into spoken voice alerts for the driver.

P. **User Interface (UI)** – Refers to the part of the mobile app that the user interacts with, including menus, camera views, and on-screen visual feedback.

Tools

Q. **OpenCV (Open Source Computer Vision Library)** – A library for image and video processing, used for capturing and manipulating live camera feeds in real time.

R. **Cuda -** a parallel computing platform and programming model developed by NVIDIA for its GPUs. It allows developers to use the processing power of NVIDIA graphics cards for speeding up certain mathematical operations