
Project Title:-Multiple Type Of Vehicle Counting From Real World Video

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1.Opencv:-

- **OpenCV is the huge open-source library for the computer vision, machine learning, and image processing and now it plays a major role in real-time operation which is very important in today's systems. By using it, one can process images and videos to identify objects, faces, or even handwriting of a human.**

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2. torch:-

- **Torch is an open-source machine learning library, a scientific computing framework, and a script language based on the Lua programming language.**
- **It provides a wide range of algorithms for deep learning, and uses the scripting language LuaJIT, and an underlying C implementation.**

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3. torch.nn.functional:-

- **functional provides some layers / activations in form of functions that can be directly called on the input rather than**
- **defining the an object. For example, in order to rescale an image tensor, you call torch**

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4. glob:-

- **Glob is a general term used to define techniques to match specified patterns according to rules related to Unix shell.**

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5. PIL:-

- **Python Imaging Library. Python Imaging Library (abbreviated as PIL) (in newer versions known as Pillow) is a free library**
- **for the Python programming language that adds support for opening, manipulating, and saving many different image file formats.**

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6. torch.utils.data:-

- It automatically converts NumPy arrays and Python numerical values into PyTorch Tensors. It preserves the data structure,
- e.g., if each sample is a dictionary, it outputs a dictionary with the same set of keys but batched Tensors as values
- (or lists if the values can not be converted into Tensors).

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7. torchvision.transforms:-

- This thing transform our image to tensor means multidimensional array for tensor computing (Mathematical Operation).

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8. tenserflow:-

- It is an open source artificial intelligence library, using data flow graphs to build models.
- It allows developers to create large-scale neural networks with many layers. TensorFlow is mainly used for:
- Classification, Perception, Understanding, Discovering, Prediction and Creation.

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9. __future__-dividion,print_function:-

- The future statement is intended to ease migration to future versions of Python that introduce incompatible changes
- to the language. It allows use of the new features on a per-module basis before the release in which the feature becomes standard. and then access it as usual.

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10. tqdm:-

- TQDM is a progress bar library with good support for nested loops and Jupyter/IPython notebooks.

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11. torch.autograd:-

- **Autograd is now a core torch package for automatic differentiation. It uses a tape based system for automatic differentiation.**
- **In the forward phase, the autograd tape will remember all the operations it executed, and in the backward phase, it will replay the operations.**

Other Apis We have used but They are well known:-

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1. **Matplotlib.patches:-**
    - **Matplotlib.pyplot is an assortment of order style works that make Matplotlib work like MATLAB. Each pyplot work rolls out some improvement to a figure: e.g., makes a figure, makes a plotting region in a figure, plots a few lines in a plotting region, finishes the plot with marks, and so forth.**
2. **skimage-io:-**
    - **Utilities to peruse and compose pictures in different configurations. Locate the fitting module of 'kind' and execute it. Connect all pictures in the picture assortment into an exhibit.**
3. **argparse:-**
    - **Parser for order line alternatives, contentions and sub-orders. The argparse module makes it simple to compose easy to use order line interfaces. The program characterizes what contentions it requires, and argparse will make sense of how to parse those out of sys. argv .**
4. **filterpy.kalman:-**
    - **This is useful where we need to Create Some constant Velocity Model Which I have Created For My Project.**

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5. **PyQt5.Qtcore:-**
    - **PyQt5 module is utilized for working with time, records and indexes, different information types, streams, URLs, emulate types, strings or procedures. The QtGui contains classes for windowing framework reconciliation, occasion taking care of, 2D designs, essential imaging, textual styles and content.**
6. **Qtgui,QtWidgets:-**
    - **Qtgui and QtWidgets are the module of PyQt5.**
7. **Copy:-**
    - **This module doesn't duplicate sorts like module, technique, stack follow, stack outline, document, attachment, window, exhibit, or any comparable kinds. It does "duplicate" capacities and classes (shallow and profoundly), by restoring the first item unaltered; this is good with the way these are treated by the pickle module.**
