School of Engineering and Applied Science (SEAS), Ahmedabad University

CSE623: Machine learning practice and theory

Weekly Project Report Submission

Group Name: Make It Learn

Date of Submission: February 21st, 2026

---

1. Objective Task for this week:

The objective for this week was to visualize the objects from all the 690 CSV files we received on Thursday (19/02/2026) from our mentor. The CSV files contained frame wise vehicle data and our goal was to:

- Organize and sort the data as per the frame number.
- Accurately annotate the vehicles in the frame using OBB.
- Estimate the number of vehicles in the frame.

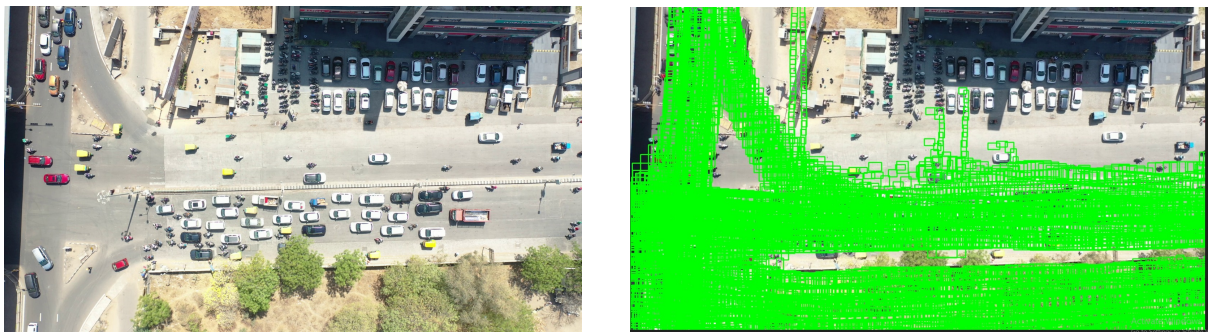
The task focused on data preprocessing and detection validation primarily.

2. Completed Task:

All 690 CSV files were sorted as per their frame numbers.

After completing data organizing, an annotation pipeline was formulated to implement an overlay bounding boxes onto the reference image received from the mentor based on the dataset values.

Initial visualization for the vehicular detection was generated.



(a) Original Frame (b) Annotated Output

Figure 1: Comparison between original reference frame and annotated visualization.

4. Implementation Code:

```
import os
import pandas as pd

# ====== SET YOUR FOLDERS HERE ======
input_folder = r"in_path"
output_folder = r"ou_path"

os.makedirs(output_folder, exist_ok=True)

for filename in os.listdir(input_folder):
    if filename.endswith(".csv"):
        input_path = os.path.join(input_folder, filename)
        output_path = os.path.join(output_folder, filename)

        df = pd.read_csv(input_path)

        df_sorted = df.sort_values(by=df.columns[0])

        df_sorted.to_csv(output_path, index=False)

        print(f"Sorted: {filename}")

print("All files processed successfully.")
```

4. Problems faced:

There were several issues that arose at the time of data sorting due to the format and structure of the dataset. The primary challenge faced was the bounding box coordinate format. The dataset contained object location in a normalized YOLO format, i.e., between 0 and 1. But due to the lack of information, they were treated as absolute pixel coordinates. This mismatch caused the scaling to be inaccurate and thus the result had distorted annotations which were clustered all over the image.

Another issue was the high number of detections that were over 400,000. The dataset contained frame-wise detections without proper IDs, meaning that the same vehicle appeared multiple times in the same file or across various frames. Without proper IDs, each detection was thus considered as a new vehicle which led to a large number of unique vehicles.

The dataset lacked metadata regarding the image resolution and the coordinate system standard in turn increasing confusion during scaling and visualization.

Overall, throughout the data preprocessing task, our biggest challenges were the inconsistency in the dataset, the lack of proper tracking information and insufficient data documentation.

4. Agenda for Next Week:

- Make the bounding box scale right and properly covert the normalized YOLO coordinates into pixel coordinates.
- Improve duplicate vehicle detection by refining clustering logic.
- Find methods to reduce redundant detections across frames.
- Confirm annotation accuracy through manual visual inspection and debugging.