Course Name: Machine Learning

Weekly Report: 6

Group Name: XYZ

Submitted to faculty:

Mehul Raval

Date of Submission: 5 Apr

2025

Student Details

Roll No.	Name of the student	Name of the program
AU2240106	Meet Rathi	B.Tech in CSE
AU2240160	Harsh Panchal	B.Tech in CSE
AU2240153	Aditya Agarwal	B.Tech in CSE
AU2240085	Hariom Bhatt	B.Tech in CSE
AU2140181	Jeel Kadivar	B.Tech in CSE

Table of Contents.

WORK DONE THIS WEEK

Work Done This Week

- The development of tracklet merging software for UAV-based multi-object tracking (MOT) continues in offline operations.
- The research performed feature extraction tests with multiple spatio-temporal description methods such as speed along with direction consistency and appearance similarity.
- An assessment was performed to determine how variable features affect the precision of tracklet association.
- We executed evaluation scripts to study the successful integration rate under demanding circumstances consisting of:
- Occlusion
- Abrupt motion changes
- Missed detections and identity switches

Refined association logic using:

- Temporal distance thresholds
- Spatial overlap scoring
- Cosine distance along with color histograms served as the feature similarity scoring method.
- First tests of tracklet association methods took place with provided vehicle tracklet examples.

WORK TO BE DONE NEXT WEEK

- Further fine-tune and benchmark the merging algorithm across more UAV test videos.
- Multiple features should be integrated into a single scoring function.
- Create a Python system framework which combines tracklets while developing visual outcome display methods.
- The system should receive updates to allow separate evaluation of individual system components.
- Collect metrics on:
    - Tracklet merge precision and recall
    - Number of correct associations
    - Impact of each feature extraction technique