Project Weekly Report

Topic : - Offline Track association problem

Group Name: ML Titans

Project Definition: 3

Group Member's names:-

Kaushik Gohil, Richa Saraiya, Devanshi Rathod, Devasya Rajguru, Jay Golakiya

- ❖ Analyzed some of the methods for object tracking:-
- ➢ Spatio-Temporal Proximity-Based Methods:
  - Merge tracklets based on their spatial proximity and temporal continuity.
  - Use Kalman Filters for prediction and smoothing of object trajectories.
  - Hungarian Algorithm for solving the assignment problem in tracklet merging.
- ➢ Optimization-Based Techniques:
  - Use Integer Linear Programming (ILP) or Quadratic Programming (QP) for global data association and tracklet merging.
- ➢ Graph-Based Merging:
  - By constructing a graph using NetworkX where nodes represent tracklets and edges represent similarity scores (based on spatio-temporal distance or motion consistency).
  - Apply graph clustering to merge fragmented tracks.
- ❖ Also, the process of finding suitable algorithms, started with motion prediction and object re-identification methods, followed by exploring approaches for stable real-time tracking.

◊ **Next week-** We will focus on reviewing research papers to understand different tracking methods, followed by selecting the most suitable approach. The process will also involve refining the search for appropriate algorithms based on project requirements.