

CSE541 - Computer Vision

Weekly Report 1

**Improvising Object Tracking Algorithm SORT for Long-Term Trajectory Extraction**

Mentor: Mehul Raval

| **Roll No.** | **Name** |
| --- | --- |
| AU2140052 | Ayush Patel |
| AU214202 | Kunj Kanzariya |
| AU2140206 | Rutul Patel |
| AU2140026 | Saumil Patel |

2023-2024 (Winter Semester)

### → This week, We focused on understanding the Deep SORT (Simple Online and Realtime Tracking with a Deep Association Metric) algorithm. Deep SORT is a more advanced version of SORT, incorporating deep learning techniques for improved object tracking accuracy and robustness.

1. Objective: Our objective this week was to improve our SORT (Simple Online and Realtime Tracking) object tracking algorithm by referencing the Deep SORT (Simple Online and Realtime Tracking with a Deep Association Metric) algorithm.

2. Focus Areas: We concentrated on understanding the key differences between SORT and Deep SORT, particularly the utilization of deep association metrics for better object tracking accuracy and robustness.

3. Study Approach: We studied both the theoretical aspects and code implementation of Deep SORT to gain insights into how it handles challenging tracking scenarios such as occlusions and crowded environments.

4. Insights Gained: Through this study, we gained valuable insights into the practical implementation of advanced tracking techniques and how they can be applied to improve our own algorithm.

5. Future Steps: Moving forward, our plan is to integrate some of the key insights and techniques from Deep SORT into our SORT algorithm to enhance its tracking performance, especially in challenging scenarios.

6. Overall Progress: This week's progress has been crucial in advancing our project towards our goals. We are excited about the potential improvements we can make and are eager to continue this momentum in the upcoming weeks.

### **References:**

### Sanyam. (2022, November 11). *Understanding multiple object tracking using DeepSORT*. LearnOpenCV. <https://learnopencv.com/understanding-multiple-object-tracking-using-deepsor/>

### Shivani Kapania, Dharmender Saini, Sachin Goyal, Narina Thakur, Rachna Jain, and Preeti Nagrath. 2020. Multi Object Tracking with UAVs using Deep SORT and YOLOv3 RetinaNet Detection Framework. In Proceedings of the 1st ACM Workshop on Autonomous and Intelligent Mobile Systems (AIMS '20). Association for Computing Machinery, New York, NY, USA, Article 1, 1–6. https://doi.org/10.1145/3377283.3377284