Guided Projects Artificial Intelligence & Machine Learning

Guided Projects: Unsupervised Learning

Incremental Clustering: Intrusion Detection by Visual Surveillance

Detection of abnormalities in live videos requires optimized scene representation which involves real-time detection of objects while efficiently representing the state of objects temporally across frames. For such purposes, **Incremental Clustering** can be used. **Incremental clustering allows clustering of pixels** with motion which is further used for **mapping the trajectories** in subsequent frames and can be used for **Surveillance and for real-time traffic analysis.**

Question:

In today's world, the data is dynamic and hence, it is not always feasible to use **Non -incremental** clustering techniques which rely on the complete dataset for forming the clusters. Thus, we need an incremental clustering algorithm that automatically adapts to itself as the data points increase. Implement a basic **incremental K Means algorithm using the iris dataset** (**available in scikit-learn module or can download the csv file**). Once done, try using the same algorithm for intrusion detection using **any video of your choice** (Only one such video is required as our algorithm will learn as the new frames are introduced automatically).