

Human Recognition in Surveillance Settings

Recognizing humans in surveillance settings is among the major challenges in artificial intelligence, due to the wide range of potential applications (e.g., security, safety and forensics). By assuming that subjects are not aware of the data acquisition process, it is expected that the collected data has very poor quality, not only in terms of resolution and lighting, but also in terms of pose and occlusions.



Figure 1: Typical conditions in surveillance settings, where recognition faces severe problems due to poor data quality (source: <http://verdict.co.uk>).

Hence, there are numerous efforts being developed to develop automata able to recognize human beings in such type of conditions, i.e., using extremely poor-quality data. Among the many difficulties that arise in this setting, one of the problems is the inexistence of solid information about the actual variations in the data collected with respect to each data covariate (e.g., distance, pose, resolution, and lighting).

This work aims at collecting and annotating a novel dataset for research on Human recognition in Surveillance settings. Students should constitute groups of two elements, and each group will be responsible for collecting synchronized data from (at least) 25 volunteers/participants.

For each volunteer/participant, a synchronized pair of videos (of at least 1 min) should be collected, simulating 1) the acquisition in totally constrained/controlled scenarios, and 2) in surveillance scenarios, with substantial variations in pose, lighting, scale, perspective and heavy degradations in data quality (e.g., resolution, blur,...).



Next, students should exchange their data with the remaining elements of the class and:

- Using a face detection model, provide the face annotation metadata;
- Using a human silhouette detection model, provide the human annotation metadata;
- Using a pose estimation model, provide the skeleton-based metadata;
- Using a state-of-the-art face recognition model, develop a solution for identifying “look-alike” persons.