H76   Identification of the Living on Video Surveillance Systems: A Novel Approach

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After attending this presentation, attendees will learn that the use of a total station may ameliorate the quality of identification of the living from images taken from video surveillance systems.

This presentation will impact the forensic community and/or humanity by demonstrating the comparison of height and facial physiognomy of images of criminals taken from video surveillance systems with those of suspects the use of a total station may provide a more accurate means of identification.

More and more often the identification of criminals whose facial or body image has been taped on videos and photographs (thefts, pedopornographic material, etc.) is performed by comparing such bidimensional images and photographs with bidimensional images of suspects. However visual identification is frequently difficult or impossible due to several problems: the low resolution of images, distortion, inclination of the face or the presence of glasses, hats, and other artifacts used to hide physiognomy. These are cases in which experts are called in to determine whether it is possible to identify the criminal as the suspect, or, indeed, to exclude him or her. Commonly used methods include height estimation, the comparison of facial morphological traits, facial anthropological indices and in the superimposition of the two images (pertaining to the criminal and suspect).

A novel method which consists in using a total station, which gives tridimensional coordinates of set points via a laser beam, and which has been used in three actual judicial identification cases will be described. The total station was used to obtain topographical information of the environment in which the crime took place and from this information a virtual reconstruction of that environment was performed. This virtual environment was then superimposed onto images of the environment on video; in order to correct any distortion caused by the optics of the video surveillance systems. This method also allowed the authors to calculate the height of the subjects represented on the videos.

The total station was also used to pinpoint on the suspect standard cephalometric points and a series of other points between these. This data allowed for the subsequent tridimensional reproduction of the cephalometric points (anthropological landmarks) and of the facial profile of the suspect (who must give his or her consent) which was reconstructed on the computer. This reconstructed face of the suspect was then superimposed onto the face of the criminal (or rather, the facial images of the criminal extrapolated from the video surveillance system) and matching of anthropological landmarks was then assessed. The use of the total station resulted in a useful and accurate comparison of height and facial morphology in order to exclude or confirm identity of a criminal.

Identification, Living, Total Station