

## Measuring the Height of a Person in Closed Circuit Television Video Footage Using 3D Human Body Model

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**Abstract :** The height of criminals is one of the important clues that can determine the scope of the suspect's search or exclude the suspect from the search target. Although measuring the height of criminals by video alone is limited by various reasons, the 3D data of the scene and the Closed Circuit Television (CCTV) footage are matched, the height of the criminal can be measured. However, it is still difficult to measure the height of CCTV footage in the non-contact type measurement method because of variables such as position, posture, and head shape of criminals. In this paper, we propose a method of matching the CCTV footage with the 3D data on the crime scene and measuring the height of the person using the 3D human body model in the matched data. In the proposed method, the height is measured by using 3D human model in various scenes of the person in the CCTV footage, and the measurement value of the target person is corrected by the measurement error of the replay CCTV footage of the reference person. We tested for 20 people's walking CCTV footage captured from an indoor and an outdoor and corrected the measurement values with 5 reference persons. Experimental results show that the measurement error (true value-measured value) average is 0.45 cm, and this method is effective for the measurement of the person's height in CCTV footage.

**Keywords :** human height, CCTV footage, 2D/3D matching, 3D human body model

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