Methods and system for biometric 3D data capture modeling, processing, and matching.

Published date: Aug. 24, 2016

Technology description

Invention Description

UTSA researchers have developed a system and method to provide a biometric three dimensional (3-D) data capture modeling, processing, two dimensional (2-D) + 3-D matching and reporting. In one embodiment, a method for unrolling a deformed finger model and resampling it, thus restoring its original surface and increasing the number of points in the unrolled model. Pressure that is applied on a finger when scanning a rolled finger print is incorporated in the system. The pressure simulated models are mosaicked together to obtain the final 2-D compatible fingerprint which is used for verification with a fingerprint database. The second embodiment describes a method for stitching multiple images/videos. The seam line is determined using Alpha (α) trimmed correlation method, Alpha (α) – winsorized correlation method and weighted rank order correlation method. Additional embodiments of the present invention relates to post mortem human body/fingerprints recognition. Different approaches are presented to perform multimodal biometric verification acquired from multiple biometric traits such as finger, palm, foot, tongue, teeth etc. The final aspects of invention relates to the generation of panoramic biometrical, biomedical, scenic images and videos.

Application area

This technique can be used in a number of application that range from 3-D finger model generation to biometric verification using finger, palm, teeth and foot images to panoramic image/video creation and scene recognition based on the panoramic images.

Advantages

Improved technique and computer algorithms for modelling a deformed 3-D finger model.

Institution

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