Abstract

The human hand is a masterpiece of mechanical complexity. The anatomy of the hand is complex, intricate, and fascinating. Its integrity is absolutely essential for everyday functional living. Hands may be affected by many disorders, most commonly traumatic injury. In treating hand problems, the mastery of anatomy is fundamental in order to provide the best quality of
care. In this paper, the focus is on the construction of middle finger of the hand when only fractional part of the finger tip image is available. 24 Geometric features of both the hands from 100 people of different age group were extracted from the silhouettes. From the known middle finger width, the proposed method can be used to estimate middle finger length, position of knuckles and also finger width at the second knuckle using taalamana system and shilpa shastra. 600 images of various age groups were collected and from the fractional part of the middle finger image, complete middle finger is constructed based on the estimated values of finger length and width. The estimation accuracy of more than 91% is achieved for all the estimated features. Our construction algorithm efficiently works for various cases like fingers with nail, fingers of left or right hand and fingers with high degree of variation in color and age.

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