Dynamic hand gesture recognition

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Abstract:
Recognition of dynamic gesture is one of the most challenging tasks in the computer vision. This paper deals with dynamic hand gesture (digits) recognition. The method consist of three fold novel contributions: firstly finding the flow of hand, secondly recognition technique of signs (Dynamic digits) and thirdly classification of gesture. We worked on 11 to 20 (digits) gestures. Spatiotemporal volume is not always sufficient to grasp the flow of hand movement. We proposed new method to find flow of hand for special signs. Features are extracted using proposed feature extraction algorithm and gestures are recognized. Proposed algorithm shows recognition efficiency of 94% for dynamic gestures. Time complexity of the given method is less as compared to some traditional methods.

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I. Introduction

Sign recognition is achieved in three steps. Region of interest or segmentation, feature extraction and classification. Segmentation is to separate out hand portion clearly. Many segmentation algorithms' efficiency is high for particular database. Either particular light conditions are essential or uniform and plane background is essential or the hand position must be in middle of the image. Peer et al. [1] proposed RGB segmentation. This is more sensitive to light conditions. Stergiopoulu and Papamarkos [2] proposed YC_bC_r based image segmentation. Plain and uniform background is essential in YC_bC_γ based image segmentation. Rokade et al. [3] used segmentation algorithm where hand position matters. In some approaches [4], specialized gloves with particular background color are essential.

Keywords

IEEE Keywords

Heuristic algorithms, Algorithm design and analysis, Feature extraction, Classification algorithms, Gesture recognition, Image segmentation, Trajectory

INSPEC: Controlled Indexing
gesture recognition, computational complexity, computer vision, feature extraction

INSPEC: Non-Controlled Indexing
time complexity, dynamic hand gesture recognition, computer vision, hand flow, sign recognition technique, dynamic digit recognition, gesture classification, spatiotemporal volume, hand movement, feature extraction

Author Keywords
classification, Hand segmentation, hand flow detection using chain code, feature extraction algorithm

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