BRISK local corner keypoints based hand position estimation for hand gesture trajectory tracking method

ABSTRACT

In recent years, dynamic hand gesture tracking has attracted the attention of many researchers. However, 2D-vision-based approaches have motivated a sizeable body of research and the rapid improvement of web cameras has facilitated their application to hand-held (portable) appliances, it is a critical process which has encountered many difficulties in the real world. These problems include variations in hand appearance, complicated background as well as confusion and drifting problems caused by the need to look for the hand in the total scene. To increase the accuracy of moving hand position estimation, this paper proposed a novel algorithm to track moving hand positions by searching corner keypoints of the hand last position, assuming that the difference between current and previous hand positions is little since the aim is to track the trajectory of hand movement. The proposed method uses corner keypoints of BRISK and minimum eigenvalue techniques extracted from last segmented region of hand to create searching windows and estimate hand region position on current frame image of video sequences. The experimental results revealed about correct estimation to hand position in the video sequences with non-linear hand movement in the challenging environment.

Keyword: Hand gesture tracking; BRISK keypoints; Skin color segmentation; Motion segmentation; Minimum eigenvalue features