Abstract

This paper presents a novel symbolic data analysis based correspondence algorithm to identify the correspondence of illumination varying multiple object image sequence for the dynamic image analysis. The correspondence is the matching of the similar data sets or entities or the features such as the region based global features, points, corners, edges between a set of images. The Correspondence of illumination varying multispectral, temporal multiple objects using symbolic data analysis of objects in the dynamic images is a highly challenging problem. The determining Correspondence of features is a high dimensional NP-hard problem, because of their exhaustive search for the features in the sequence of image frames. The current algorithm works on the basis of successive frame difference based segmentation. The minimum boundary rectangle constructed for segmented moving object region. Mean of the rectangle is considered as one of the numeric feature. Next the sequence converted to binary sequence
based on the threshold and 8-connectivity of perimeter is another non numeric feature. Finally establish the correspondence using canonical symbolic data analysis. This work proposes the rectangular correspondence window, generated dynamically which depends on the size and the number of objects in the current frame. Here we have considered mean of minimum boundary rectangle and perimeter of the segmented region as the features. The experiment is conducted with single object in the scene and multiple objects in the scene of illumination varying, noisy image sequence. This experiment is carried out on the binary, gray and RGB color dynamic image sequence. This correspondence algorithm is especially suitable for tracking in indoor images illuminated by unconstrained multiple light sources, objects in the varying illumination environment, noisy image sequence, video surveillance and slow moving dynamic image sequence for indoor scenes of the constant background.

**Reference**

- Diday. E. (1993). Data to knowledge, boolean, probabilistic, possibilist and belief objects for symbolic data analysis. Tutorial at IV conf. IFCS.

**Index Terms**

Computer Science

Pattern Recognition
Key words

Successive Frame Difference  Symbolic data

Analysis
Threshold Based Binary Conversion

Logical Image

Minimum boundary rectangle

8-Connectivity based Perimeter

Canonical Symbolic Correspondence