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THEORETICAL ASPECT OF IMAGE REGISTRATION WITH APPLICATION TO MINIMUM SPANNING TREE METHOD

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Abstract:

Investigation has been carried out on Image Registration. For this purpose, parametric and Non- parametric multi-sensor data fusion algorithms have been applied. During the course of study, parametric model has been taken to explain this parametric multi-sensor data fusion. Similarly a new method has also been introduced to explain for Image Registration.

KEYWORDS:

Image Registration, Sensor data fusion & Parametric- model

INTRODUCTION

Fast growing of Science and technology, multi-sensor data fusion has attracted the researchers to work in this field, in a variety of science and Engineering disciplines, such as automated target recognition [1-3], automatic / landing guidance [4-5] Remote sensing [6-7] monitoring of manufacturing process [7] and medical applications.

Some Researchers has worked for data fusion but they not got so success. For this purpose, the parametric and non-parametric models are necessary because they have some common characteristics. They share the basic data processing flow patterns – first put the measure meets from sensor into a common co-ordinate and extract feature vectors from the measurements and finally combine the feature vectors to achieve together accurate detection.

Therefore in this paper, efforts has been made to detect image Registration using Minimum spanning tree Method (MST).

DISCUSSION

The merits of the sensor fusion methods are to provide a better estimation of the feature of interest and to provide a result represented by hypothesis that is more accurate. There are many problems which considered on basis of single sensor. In order to enhance the accurate measure of the observed data, a multi-sensor data fusion technique is required.

A wide range of technique for image registration has been developed using mean squared alignment, Correlation, registration, Movement invariant matching but all these technique exploits this different images. Based on mutual information matching algorithm, we have presented a registration algorithm using Renyi entropy.

The minimum spanning free (MST) is a graph theoretic method which demonstrated the dominant Skeletal pattern of a point set by mapping the shortest path.

FORMATION OF IMAGE

Here we registered sensor images. Let us consider X_1 and X_2 represent two pixels from two registered sensor images to be fused. The model can be modeled as

$$X_k = s_k + n_k, k = 1, 2 \dots \dots \dots (1)$$

where,

S	=	Underlying scene
β_k	=	Sensor Selectivity factor of image k.
n_k	=	unwanted degradation.

Since MTS algorithm and k-MST greedy approximation algorithm are polynomial in the number of vertices, it is crucial to extract feature vector from the original images. The feature vectors must be able to well represent the original image without losing too much information.

CONCLUSION

In this paper, parameter fusion algorithm has been presented for image registration. For this purpose, the model has been considered on this basis of mathematical formulation.

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