

Car Brand Recognition Using Sift

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Abstract—At the present, the number of cars on the road are increasing continuously that the difficulties in remembering and identifying brand if only the human manage the data of cars running on the road. Computer has been used for identifying car brand on the road for reducing police's responsibilities. The research shall apply pattern recognition technique to study using SIFT for extracting image local feature. The extracting image local feature shall verify cars with the most similar images in database for prediction that cars brand by using Similarity Measurement. The Similarity Measurement shall vote the best correct image and identify brand by developing the research with python

Keywords—Sift , Image Processing,Pattern Matching

I. Introduction

The benefit in remembering car brand is reducing human errors and effective working more than human work. The using manpower to remember car brand on the road shall identify in time due to the large cars quantity.

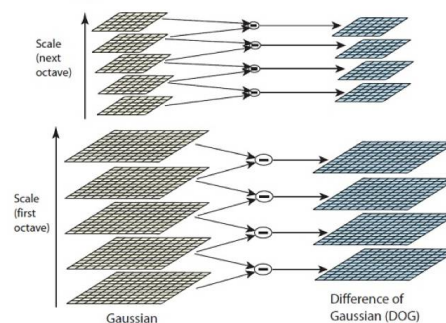
The research shall study car remembering by using Pattern Recognition and extracting image local feature. Then the image feature shall compare with image database for prediction cars brand in computing similar feature by using Euclidean Distance. The research shall reduce human errors and increase efficiency on jobs, saving and speeding up working time.

The research shall apply python in developing SIFT Algorithm for searching image Local Feature that identify two sections. The first section is Query Image.The second section is Database Images. Both sections (Similarity Measurement) shall apply Euclidean Distance for searching similar image.

II. Sift Algorithm

SIFT Algorithm SIFT Algorithm is to extract local feature from the image and storing in database. The recognition shall compare keypoints for searching similar keypoints or similarity measurement for comparing with query Image by using Euclidean distance of their feature vectors.

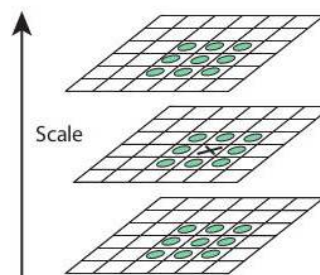
A. Scale Space extrema detection



The first algorithm is to find image keypoints by computing DOG equation in different image size. The Gaussian Space equation is $D(x,y,\sigma)=L(x,y,k\sigma)-L(x,y,\sigma)$ by k is constant of scale space of images $I=(x,y)$ for Gaussian can be defined as

$$G(x, y, \sigma) = \frac{1}{2\pi\sigma^2} e^{-(x^2+y^2)/2\sigma^2}$$

B. Keypoint Localization



This algorithm shall compute to search image keypoint and limite some keypoint.