

INTISARI

ANALISIS VARIASI UKURAN KERNEL OPTIMUM PADA METODE SURF (*SPEEDED UP ROBUST FEATURES*)

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Kernel adalah matrik dengan elemen-elemen berupa bilangan. Ukuran kernel SURF dapat divariasikan dengan mengubah nilai *octave* dan *layer* hingga menghasilkan parameter uji yang berbeda. Proses deteksi fitur SURF membutuhkan karakter yang mampu bekerja secara optimum. Penelitian membahas bagaimana karakter deteksi fitur yang optimum dengan variasi masukan nilai *octave* dan *layer*.

SURF adalah algoritme ekstraksi fitur hasil pengembangan dari SIFT. Waktu komputasi SURF lebih cepat dari SIFT. Proses pendeteksian fitur membentuk *scale space* dengan konvolusi yang merubah ukuran filternya. Ukuran filter diubah dengan variasi masukan berupa nilai *octave* dan *layer*.

Pengujian dilakukan dengan variasi rotasi, skala, kecerahan dan resolusi. Nilai standar didapat dari penelitian sebelumnya pada *octave* keempat dan *layer* kedua. Variasi *octave* dan *layer* dibatasi pada nilai 8. Pengujian rotasi optimum pada rentang *octave* pertama sampai ketiga, semua nilai optimum lebih baik daripada standar, kecuali untuk *octave* kedua, *layer* kelima dan keenam. Pengujian skala optimum pada rentang *octave* pertama sampai keempat, 55,5% nilai optimum lebih baik daripada standar, 11,1% sama dengan standar. Pengujian kecerahan optimum pada rentang *octave* pertama sampai kedua, 65% nilai optimum lebih baik daripada standar. Pengujian resolusi optimum pada rentang *octave* pertama sampai kedua. Nilai optimum lebih baik daripada standar pada resolusi 5 MP ke atas.

Kata kunci: kernel, SURF, optimum, *octave*, *layer*

ABSTRACT

ANALYSIS OF OPTIMUM KERNEL SIZE VARIATION ON SURF (SPEEDED UP ROBUST FEATURES) METHOD

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Kernel is a small-sized matrix with elements such as numbers. The size of the kernel on the SURF can be varied by providing variation in the value of octave and layer. Changes on this value will produce some different test parameters. Results from an optimum blend will help to optimize the process of feature detection and other processes. The detection process with the SURF feature requires a character who is able to work at its optimum. The study discusses how the characters optimum detection features to perform kernel size variations with the input of values and value octave layer.

SURF or speeded up Robust Features are algorithms for feature extraction which is the development of algorithms SIFT. SURF algorithms have computation time faster than SIFT. SURF able to detect features in the form of bubbles. Detection feature with SURF consists of the process of detection and feature description. This detection process is able to form scale space with a convolution in the filter box by changing the size of the filter. The size of the filter can be changed with input variation of value and value octave layer.

Testing was done by varying the rotation, scale, brightness and resolution. Standard values obtained in previous studies on the forth octave second layer. Variations of octave and layer is limited to the value of the optimum 8. Result of rotation test is at range of first until third octave, all the optimum value better than the standard value, except for the second octave, fifth and sixth layer. Result of scale test in range of first until forth octave, the optimum value of 55.5 % better than the standard value, 11.1 % similar to the standard value. Result of brightness test is at range of first until second octave, 65 % better than the optimum value of the standard value, the rest is worse than the standard value. Testing the optimum resolution in range of first until second octave. The optimum value is better at a resolution of 5 MP and above.

Keywords: kernel, SURF, optimum, *octave*, *layer*