

INTISARI

PENERAPAN MEDIAN FILTER UNTUK PENGURANGAN *NOISE* DALAM CITRA ULTRASONOGRAFI DAGING SAPI BERFORMALIN

Oleh

Hasinah

18/430215/PA/18728

Citra USG mengalami penurunan kualitas citra karena tercemar *speckle noise* sehingga dapat mempengaruhi proses diagnosis. Reduksi *speckle noise* digunakan sebagai salah satu upaya penyelesaian permasalahan tersebut. Salah satu metode untuk mereduksi *speckle noise* pada citra USG adalah Median Filter. Median Filter memiliki algoritma sederhana yang tidak memerlukan waktu lama sehingga mudah digunakan pada pencitraan USG. Penerapan Median Filter untuk reduksi *speckle noise* citra ultrasonografi (USG) daging sapi berformalin telah dilakukan. Sampel daging sapi berformalin yang digunakan memiliki variasi konsentrasi formalin 0%, 10%, 30%, 50%, dan 70%. Pengambilan citra USG dilakukan pada frekuensi ultrasonik 5 MHz, 7,5 MHz, dan 10 MHz. Proses pra-pengolahan citra USG yang dilakukan adalah *cropping* citra. *Software* Image-J digunakan sebagai media pengolahan data citra USG untuk menerapkan metode Median Filter. Kualitas citra hasil reduksi dievaluasi dengan parameter kualitas citra berupa SNR, PSNR, RMSE, dan MAE. Berdasarkan hasil perhitungan keempat parameter tersebut menunjukkan bahwa metode Median Filter terhadap kualitas citra ultrasonografi hasil reduksi *speckle noise* tidak dipengaruhi oleh variasi konsentrasi formalin. Selain itu, semakin rendah frekuensi ultrasonik maka hasil citranya akan semakin baik.

Kata kunci: citra USG, *speckle noise*, Median Filter, daging sapi berformalin

ABSTRACT

APPLICATION OF MEDIAN FILTER FOR NOISE REDUCTION ON THE ULTRASONOGRAPHIC IMAGE OF FORMALDEHYDE BEEF

By

Hasinah

18/430215/PA/18728

Ultrasound images suffer from image quality degradation due to speckle noise, which can affect with the diagnosis process. Speckle noise reduction is used as one of the efforts to solve these problems. One of the methods to reduce speckle noise in ultrasound images is the Median Filter. The Median Filter has a simple algorithm that does not require a long time, making it easy to use in ultrasound imaging. The application of Median Filter for speckle noise reduction of formaldehyde beef ultrasonography (USG) image has been conducted. The formaldehyde beef samples used had variations in formaldehyde concentration of 0%, 10%, 30%, 50%, and 70%. The ultrasound image was taken at an ultrasonic frequency of 5 MHz, 7,5 MHz, and 10 MHz. The pre-processing of the ultrasound image is image cropping. Image-J software is used as a medium for processing ultrasound image data to apply the Median Filter method. The quality of the reduced image is evaluated with image quality parameters such as SNR, PSNR, RMSE, and MAE. Based on the result calculation of the four parameters, it shows that the performance of the Median Filter method on the quality of ultrasound images resulting from speckle noise reduction is not affected by variations in formaldehyde concentration. In addition, the lower the ultrasonic frequency, the better the image results.

Keyword: USG image, speckle noise, Median Filter, formaldehyde beef