

INTISARI

EKSTRAKSI CIRI CITRA ULTRASONOGRAFI KIKIL FORMALIN BERBASIS FITUR *GRAY LEVEL CO-OCCURRENCE MATRIX* (GLCM)

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Ekstraksi ciri berbasis fitur GLCM pada citra ultrasonografi (USG) kikir berformalin dan tidak berformalin telah dilakukan. Pengambilan citra USG kikir dilakukan pada frekuensi 5 MHz, 7,5 MHz, dan 10 MHz. Hasil citra resolusi terbaik diperoleh pada frekuensi 10 MHz. Citra USG dilakukan melalui proses pra-pengolahan berupa cropping dan konversi (*grayscale*). Proses ekstraksi citra dilakukan pada fitur GLCM berupa kontras, korelasi, energi dan homogenitas dengan arah sudut yaitu 0° , 45° , 90° dan 135° . Jarak piksel yang digunakan dalam proses ekstraksi sebesar $d=1$. Proses ekstraksi dan konversi dilakukan menggunakan perangkat lunak berupa MATLAB yang didesain berbasis *Graphical User Interface* (GUI). Hasil ekstraksi citra USG kikir yang didapatkan menunjukkan bahwa semakin bertambah lamanya waktu perendaman dan semakin tinggi konsentrasi formalin yang diterapkan memiliki hasil yang menurun pada fitur kontras, sedangkan pada fitur korelasi, energi dan homogenitas memiliki hasil yang meningkat. Dari keempat fitur GLCM yang digunakan, fitur kontras dan energi memiliki hasil representasi ciri tekstur yang paling terbedakan.

Kata kunci: citra ultrasonografi, ekstraksi ciri, kikir, formalin, GLCM

ABSTRACT

A GRAY LEVEL CO-OCCURRENCE MATRIX (GLCM) BASED FEATURE EXTRACTION IN FORMALDEHYDE COWHIDE ULTRASOUND IMAGES

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GLCM based feature extraction on formalin and non-formalin cowhide ultrasonography (USG) images has been conducted. The cowhide ultrasound image was taken at a frequency of 5 MHz, 7.5 MHz, and 10 MHz with 10 MHz frequency image is the best resolution. Ultrasound images were pre-processed in the form of cropping and conversion (grayscale). The image extraction process was carried out on the GLCM features namely contrast, correlation, energy and homogeneity with angle directions of 0°, 45°, 90° and 135°. The pixel distance used in the extraction process was $d=1$. The instrument to obtain the extraction and conversion process used MATLAB software which is designed based on the Graphical User Interface (GUI). The results of the cowhide ultrasound image extraction showed that the longer the immersion time and the more concentration formalin applied had decrease result on the contrast feature and increase result on the correlation, energy and homogeneity features. In addition, among of the four GLCM features used in this research, the contrast and energy features have the most distinguishable representations of texture features.

Keywords: ultrasound image, feature extraction, gravel, formalin, GLCM