

Mutammimah, 2020. **Identifikasi Noise Citra MRI Otak Berbasis *Pattern Recognition SVM (Support Vector Machine)***. Skripsi di bawah bimbingan Endah Purwanti, S.Si., M.T. dan Dr. Khusnul Ain, S.T., M.Si., Program Studi S1 Fisika, Departemen Fisika, Fakultas Sains dan Teknologi, Universitas Airlangga.

ABSTRAK

Noise adalah informasi yang tidak diinginkan berupa sinyal eror yang secara umum terdapat pada suatu citra. Citra yang umum ditemukan mengandung *noise* adalah citra medis, salah satunya seperti yang dihasilkan oleh modalitas citra MRI. *Noise* yang muncul dapat menyebabkan informasi asli dari suatu citra tertutupi sehingga mengganggu tenaga medis dalam proses pembacaan. Penelitian ini bertujuan untuk mengidentifikasi adanya *noise* melalui sebuah program yang diharapkan dapat digunakan pada pengembangan reduksi *noise*. Citra yang digunakan adalah citra MRI otak dengan variasi potongan aksial, koronal, dan sagital serta variasi sekuens GD T1W_SE, T2W_TSE, dan T2W_FFE. *Noise* yang diidentifikasi pada penelitian ini yaitu *noise gaussian, speckle, dan salt & pepper*. Metode ekstraksi ciri histogram orde 1 dipakai untuk memperoleh ciri *mean, entropi, variance, skewness, dan kurtosis* yang selanjutnya diidentifikasi menggunakan *Support Vector Machine (SVM)*. Data pelatihan berjumlah 240. Setelah diperoleh program pelatihan terbaik, sebanyak 20 data uji program untuk sekuens T2W_FFE dan T2W_FLAIR diidentifikasi ada tidaknya *noise*. Hasil pelatihan terbaik menunjukkan persentase akurasi sebesar 93,33% dan pengujian paling optimal memiliki akurasi sebesar 86,67%. Selain itu, hasil identifikasi data uji program menunjukkan bahwa metode SVM cukup baik dan dapat digunakan untuk mengidentifikasi *noise* pada citra MRI otak.

Kata Kunci : Identifikasi Noise, Histogram, SVM, Otak, MRI

Mutammimah, 2020. **Identification of Noise MRI Brain Images Based on Pattern Recognition SVM (Support Vector Machine)**. This final assignment is under guidance by Endah Purwanti, S.Si., M.T. and Dr. Khusnul Ain, S.T., M.Si., Physics Study Program, Physics Department, Faculty of Science and Technology, Airlangga University.

ABSTRACT

Noise was an unwanted information on an error signal that generally contained in an image. The image that commonly found to contain noise was medical images, one of which was generated by the MRI image modality. Noise that appears could cause the original information from an image to be covered so that it interferes with medical personnel in the reading process. This study aims to identify the presence of noise through a program that was expected to be used in the development of noise reduction. The image that been used was the MRI image of the brain with axial, coronal, and sagittal cuts as well as GD T1W_SE, T2W_TSE, and T2W_FFE sequences. Noise identified in this study was gaussian noise, speckle, and salt & pepper. The first order histogram feature extraction method was used to obtain mean, entropy, variance, skewness, and kurtosis characteristics which were then identified using Support Vector Machine (SVM). The training data amounted to 240. After obtaining the best training program, as many as 20 program test data for each sequence, T2W_FFE and T2W_FLAIR, were identified whether or not there was noise. The best training results showed an accuracy percentage of 93.33% and the most optimal testing had an accuracy of 86.67%. In addition, the results of identification of program test data indicate that the SVM method was quite good and could be used to identify noise in brain MRI images.

Keywords : Noise Identification, Histogram, SVM, Brain, MRI