

ANALISIS PERBANDINGAN METODE GAUSSIAN FILTER DENGAN WIENER FILTER UNTUK MEREDUKSI NOISE GABUNGAN GAUSSIAN DAN SALT AND PEPPER

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ABSTRAK

Kemudahan dalam proses pengambilan dan penyimpanan informasi berupa citra digital membuat masyarakat mulai meninggalkan citra analog. Dari kemudahan tersebut terkadang citra digital dapat terkontaminasi derau (noise). Derau/noise akibat proses pengiriman baik itu melalui media kabel ataupun melalui satelit sangat berpengaruh terhadap kualitas citra. Dengan menggunakan teknik filtering akan dilakukan proses pengurangan noise pada citra digital yang sebelumnya telah diberi noise gabungan gaussian dan salt and pepper dan dilanjutkan dengan Similarity Measurement untuk mengidentifikasi kesamaan citra digital hasil filtering dengan citra original. Penelitian ini dilakukan untuk menentukan teknik filtering yang tepat untuk mengurangi noise gabungan gaussian dan salt and pepper. Proses pengolahan citra dalam penelitian ini terdiri atas proses input citra, konversi citra, penambahan noise, reduksi citra dengan metode filtering gaussian dan wiener. Dari hasil penelitian didapat bahwa penerapan Gaussian Filter dengan nilai standar deviasi = 0,1 menghasilkan citra digital yang paling mendekati citra original dibanding dengan penerapan Gaussian filter dengan standar deviasi rentang 0,1 s.d 10. Diperoleh juga hasil perhitungan euclidean distance lebih konsisten dan mendapatkan jarak terkecil terhadap citra asli. Hal tersebut di dukung juga dengan perhitungan RMSE dan PSNR bahwa metode Gaussian Filter memiliki efektivitas sebesar 86,7% lebih bagus daripada Wiener Filter dalam mereduksi citra yang mengandung gabungan noise Gaussian dan Salt and pepper. Supaya penelitian ini berkembang dapat menggunakan jenis metode atau noise yang lain.

Kata Kunci : Citra digital, Gaussian Noise, Salt and Pepper Noise, Euclidean Distance, Manhattan Distance, Gaussian Filter, Wiener Filter, RMSE,PSNR

ANALYSIS OF COMPARISON BETWEEN GAUSSIAN FILTER AND WIENER FILTER TO REDUCE NOISE OF COMBINATION OF GAUSSIAN AND SALT AND PEPPER

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ABSTRACT

Simplicity in the process of retrieval and storage of information in the form of digital image making community started leaving the analog image. From the ease of digital image sometimes can be contaminated by noise. Noise due to the process of delivery either via cable or via satellite media is very influential to the quality of the image. By using the technique of filtering noise reduction process will be performed on a digital image that has been previously given the joint Gaussian noise and salt and pepper and continued with Similarity Measurement of digital image similarity to identify the results of filtering with the original image. This research was conducted to determine the appropriate filtering techniques to reduce the combined noise Gaussian and salt and pepper. The process of image processing in this study consists of process input imagery, image conversion, addition of noise reduction filtering method of image with Gaussian and wiener. Of research results obtained so that the application of the Gaussian Filter with a value of standard deviation = 0.1 produces digital images that best approached the original image compared to the application of the Gaussian filter with standard deviation range 0.1 s.d 10. Retrieved also Euclidean distance calculation results more consistent and get the smallest distance against the original image. It is also supported by calculation of the RMSE and PSNR Gaussian Filter method that has the effectiveness of 86.7% nicer than Wiener Filter in reduction of the image containing the joint Gaussian noise and Salt and pepper. This research developed so that can use different types of methods or other noise.

Keyword : Digital Imagery, Gaussian Noise, Salt and Pepper Noise, Euclidean Distance, Gaussian Filter, Wiener Filter, RMSE, PSNR