

***Early Detection of Parkinson's Disease Through Spiral and Wave Images
Using the Convolutional Neural Network Method***

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ABSTRACT

This research is focused on developing an early detection system for Parkinson's disease through spiral and wave images that aims to support initial screening before conducting further examinations to a Neurologist. This research aims to develop an early detection system for Parkinson's disease through spiral and wave images. The method used is to use Convolutional Neural Network (CNN) with DenseNet-169 architecture to classify handwriting as tremor or non tremor. In this study using spiral and wave handwriting to classify handwriting in an image with class division, namely tremor and non tremor. Before the classification process is carried out, the handwriting image goes through a series of preprocessing stages including Gaussian blur, conversion to grayscale, erosion, Otsu Thresholding and image resize. The results of several trials that have been carried out show that a learning rate of 0.0001 achieves an accuracy value of 93.13%. To assess the success of the Parkinson's disease early detection website through spiral and wave images, User Acceptance Testing (UAT) was carried out which showed a success rate of 91.8% which indicates that users accept the Parkinson's disease early detection website quite well.

Keywords: *Convolutional Neural Network (CNN), Deep Learning, Parkinson's Disease, Spiral and Wave Handwriting*