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Major Project Report II

On

NOVEL SCHEME OF FEATURES EXTRACTION & CLASSIFICATION OF BRAIN TUMOR INFECTED MRI IMAGE USING NEURAL NETWORK

Submitted in Partial fulfillment of the requirement

For the award of the degree of

MASTER OF TECHNOLOGY

In

(Signal Processing and Digital Design)

Submitted by

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DTU/M.Tech/175

Under the Guidance of

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July 2012

DECLARATION BY THE CANDIDATE

July 2012

Date: _____

I hereby declare that the work presented in this dissertation entitled **"Novel Scheme of Features Extraction & Classification of Brain Tumor Infected MRI Image using Neural Network"** has been carried out by me under the guidance of **Mr. M.S. Choudhary**, Associate Professor, Department of Electronics & Communication Engineering, Delhi Technological University, Delhi and hereby submitted for the partial fulfillment for the award of degree of Master of Technology in Signal Processing & Digital Design at Electronics & Communication Department, Delhi Technological University, Delhi.

I further undertake that the work embodied in this major project has not been submitted for the award of any other degree elsewhere.

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CERTIFICATE

It is to certify that the above statement made by the candidate is true to the best of my knowledge and belief.

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ABSTRACT

Magnetic resonance (MR) imaging has been playing an important role in neuroscience research for studying brain images where MR's soft tissue contrast and non invasiveness are clear advantages. MR images can also be used to determine normal and abnormal types of brain. Moreover, the MRI characteristics will help the doctor to avoid the human error in manual interpretation of medical content. Computer-based classification has remained largely experimental work with approaches. Here a work is done by simulating a method in Matlab using artificial neural network to automatically classify brain MRI images. The diagnosis method consists of three stages firstly feature extraction using discrete wavelet transforms. Wavelets seem to be a suitable tool for this task, because they allow analysis of images at various levels of resolution. Then the features are reduced using principal component analysis (PCA). In the last stage artificial neural network (ANN) is used as a multi class classification technique to classify between normal & brain tumor infected MRI Images & also classify different brain tumor images according to the different location of Tumor in the brain. We obtain good classification rate with the less number of features. The results show that the method is robust and effective.

Keywords–Magnetic Resonance Imaging, wavelet transform, classification, neural network.

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