



NARASARAOPETA ENGINEERING COLLEGE: (Autonomous)
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
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Batch Number	CG3
Team Members	Manepalli Yuva Sravani – 21471A05H6 Pulivarthi Priyanka – 21471A05I9 Gogada Sirisha–21471A05F2
Guide	Moturi Sireesha M.Tech, Ph.D
Title	DeepWaveMRI: Early Alzheimer’s Detection
Domain/Technology	Deep Learning
Dataset Link	https://drive.google.com/drive/folders/1eYFTJXZNQYTTKCUicg0nXy-nfUz8ezns?usp=drive_link
Base Paper Link	https://ieeexplore.ieee.org/document/10113861
Software Requirements	Browser : Any Latest browser like Chrome Operating System : Windows 10 Language : Python Platform : Visual Studio Code
Hardware Requirements	Processor : Intel(R) Core™2 i7-5500U CPU @ 2.50GHz RAM : 8GB(gigabyte) System Type : 64-bit operating system, x64-based processor
Abstract	<p>Alzheimer’s disease (AD) is the common type of dementia, which is a decline in cognition with significant memory loss that cannot be reversed causing the loss of independent functionality. Early detection is thus important for proper management because the current diagnostic methods, among them being cognitive testing, behavioural assessments, brain imaging, and history, are both unreliable and insufficient for the early stage diagnosis. The paper will propose a novel approach for early-stage AD detection based on MRI capability with enhanced image processing, using convolutional neural networks in combination with Wavelet Transform, Random Forest, and Support Vector Machine techniques. Our approach applies the Discrete Wavelet Transform of the MRI images to decompose them into multiple frequency frames, and further features are extracted by processing the wavelet coefficients with kurtosis-based thresholding for denoising enhanced representations. Then, the findings are used to train on a broad data set offered by Kaggle with CNN, Random Forest, and SVM models which can classify different stages of Alzheimer’s diseases. The proposed approach improves the accuracy of detection significantly, which provides a more reliable solution for early diagnosis. Future work will be based on further optimization of the model’s performance and its extension to the application of the tool for other neurodegenerative conditions.</p> <p>Keywords: Alzheimer’s Disease(AD), Deep learning, Early Disease prediction, Convolutional Neural Network, Kurtosis, Wavelet transform, MRI Images, Random Forest, SVM</p>

Signature of the student(s)

Signature of the Guide

Signature of the project coordinator