

{tag} International Journal of Computer Applications  
Foundation of Computer Science (FCS), NY, USA

[Volume 148](#)

-  
[Number 9](#)

Year of Publication: 2016

Authors:

Eman M. Ali, Ahmed F. Seddik, Mohamed H. Haggag

10.5120/ijca2016911320

{bibtex}2016911320.bib{/bibtex}

## **Abstract**

Early detection of Alzheimer's disease (AD) is important so that preventative measures can be taken. Current techniques for detecting AD rely on cognitive impairment testing which unfortunately does not yield accurate diagnoses until the patient has progressed beyond a moderate AD. Alzheimer's disease considered being one of the acute diseases that cause the human death especially in people above 60 years old.

Many computer-aided diagnosis systems are now widely spread to aid in Alzheimer diagnosis. Therefore, an automated and reliable computer-aided diagnostic system for diagnosing and classifying the brain diseases has been proposed [1].

MRI (Magnetic resonance Imaging) is one source of brain diseases detection tools, but using MRI in Alzheimer classification is considered to be difficult process according to the variance and complexity of brain tissue. This paper presents a survey of the most famous techniques used for the classification of brain diseases based on MRI [2].

The Alzheimer detection and classification systems consist of four stages, namely, MRI preprocessing, Segmentation, Feature extraction, and Classification stages respectively. In the first stage, the main task is to eliminate the medical resonance images (MRI) noise which may cause due to light reflections or any inaccuracies in the imaging medium.

The second stage, which is the stage where the region of interest is extracted (Alzheimer region). In the third stage, the features related to MRI images will be obtained and stored in an image vector to be ready for the classification process. And finally the fourth stages, where classifier will take place to specify the Alzheimer kind.

TANNN is a new classification technique user to get a very high performance compared with other classification techniques such as KNN, SVM, DT, and Naïve Bayes.

### References

1. E. M. Ali, A. F. Seddik. M. H. Haggag, "Using Data Mining Techniques for children Alzheimerclassification based on MRI", International Journal of Computer applications , Pp. 36-42, Vol. 131 , No. 2 , December 2015.
2. E. M. Ali, A. F. Seddik. M. H. Haggag, "Classification of Hydrocephalus using TAN", International Journal od Advanced Research in Computer Science and Software Engineering, Pp. 90-97, Vol. 5 , Issue. 11, November 2015.
3. A. Rajkumar, "A Multi- Stage Hybrid , CAD Approach for MRI Brain Alzheimer Recognition and Classification", The IIOAB Journal School of Computing Science and Engineering VIT University, Januar 2016, India.
4. S. Ganesh, "A Comparative Study on Various Brain Alzheimer Classification Methods", India Journal of Engineering , Vol. 13 , Pp. 27-33, January 2016.
5. K. Sakthivel, B. Swathi, S. Vishnu, "Analysis of Medical Image Processing and it's Application in healthcare", International Journal od Advanced Engineering Research and Science (IJAERS), Vol. 3 Issue 2, Feb. 2016.
6. Y. Li , Y. Mingquan, Z. Hao, "Alzheimer Diagnosis Based on the GMM Feature Decision Classification of Brain MR Images", International journal of Multimedia and Ubiquitous Engineering , Vol. 11 No. 3 , Pp. 37- 44, 2016.
7. K. Mayuri, R. Khode, S. Salwe, "A review on efficient Brain Alzheimer Detection Using Various Methods", International Journal of Research in Advent Technology , Vol. 4 , No. 2 , February 2016.
8. L. Hou, D. Samaras, T. Kurc , " Patch-based Convolutional Neural Network for Whole Slide Tissue Image Classification", ARXIV , March 2016.
9. N. Kasat, S. Thepade, "Novel Content Based Image Classification Method Using LBG Vector Quantization Method with Bayes and Lazy Family Data Mining Classifier", 7 th international conference on Communication , Computing and Virtualization, Pp. 483 – 489, 2016.
10. G. Santhosh , K. Sivanaruleselvan, P. Betty, " Survey on Brain Tumour Detection and Classification Using Image Processing", ELK ASIA Pacific Journal of Computer Science and Information Systems, Vol. 2, Issue. 1, 2016.
11. A. Mali, S. Pawar, "Detection & Classification of Brain Alzheimer", International Journal of Innovative Research in Computer and Communication Engineering, Vol 4, Issue 1 , January

2016.

12. K. Selva , P. Geetha, "Semantic Feature Based Classification of Brain MRI using PCA and PNN", International Conference on Electrical , Electronics, and Optimization Techniques (ICEEOT), 2016.

13. BRATS brain Alzheimer dataset, [www.brainAlzheimersegmentation.org](http://www.brainAlzheimersegmentation.org)

14. NBTR brain Alzheimer dataset , [www.nbtr.nhs.uk](http://www.nbtr.nhs.uk)

15. OASIS brain Alzheimer dataset, [www.oasis-brains.org/](http://www.oasis-brains.org/)

16. ADNI brain Alzheimer dataset, [www.adni.loni.ucla.edu/](http://www.adni.loni.ucla.edu/)

### Index Terms

Computer Science

Image Processing

### Keywords

Alzheimer, MRI, Image Classification, Naïve Bayes, Decision Tree, Support Vector Machine, k-Nearest Neighbor.