Srinivas University
Mangalore - India

Atomic Research Centre (ARC)
Centre for Information on Alzheimer's Disease

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1. Purpose of ARC :

Alzheimer's disease is a progressive neurologic disorder that causes the brain to shrink (atrophy) and brain cells to die. Alzheimer's disease is the most common cause of dementia — a continuous decline in thinking, behavioral and social skills that affects a person's ability to function independently.

A progressive disease that destroys memory and other important mental functions. Brain cell connections and the cells themselves degenerate and die, eventually destroying memory and other important mental functions. Memory loss and confusion are the main symptoms. No cure exists, but medication and management strategies may temporarily improve symptoms. The purpose to start this atomic research centre is to help the people who are affected by this desease

2. Objective of ARC :

Alzheimer's disease is a progressive form of dementia. Dementia is a broader term for conditions that negatively affect memory, thinking, and behavior. The changes interfere with daily living. Dementia can have a range of causes, such as brain injuries or diseases. Sometimes the cause is unknown.

According to the Alzheimer's Association, Alzheimer's disease accounts for 60 to 80 percent of dementia cases. Most people with the disease get a diagnosis after age 65. If it's diagnosed before then, it's generally referred to as "younger onset" or "early onset" Alzheimer's disease.

There's no cure for Alzheimer's, but there are treatments that can slow the progression of the disease.

Alzheimer's facts

Although many people have heard of Alzheimer's disease, it's helpful to know the facts. Here are some key details about this condition:

- Alzheimer's disease is a chronic (long-term), ongoing condition. It is not a typical sign of aging.

- Alzheimer's and dementia aren't the same thing. Alzheimer's disease is a type of dementia.

- Its symptoms come on gradually, and the effects on the brain are degenerative, meaning they cause slow decline.

- Anyone can get Alzheimer's disease, but certain people are at higher risk for it. This includes people over age 65 and those with a family history of the condition.

- There's no single expected outcome for people with Alzheimer's. Some people live a long time with mild cognitive damage, while others experience a more rapid onset of symptoms and quicker disease progression.

- There's no cure for Alzheimer's yet, but treatment can help slow the progression of the disease and may improve quality of life.

2. Description on Proposed Research :

The data set is collected from different hospitals and the data set is pre-processing with different techniques to remove noise in the data set.

Then we thought of applying the different algorithms for the classiciation

- Support Vector Machine
- Random Forest
- Naive Bayes
- Decision Tree
- JRip
- Neural Network

Feature Selection

In the past thirty years, the dimensionality of the data involved in machine learning and data mining tasks has increased explosively. Data with extremely high dimensionality has presented serious challenges to existing learning methods, i.e., the curse of dimensionality.

With the presence of a large number of features, a learning model tends to overfit, resulting in their performance degenerates. To address the problem of the curse of dimensionality, dimensionality reduction techniques have been studied, which is an important branch in the machine learning and data mining research area. Feature selection is a widely employed technique for reducing dimensionality among practitioners. It aims to choose a small subset of the relevant features from the original ones according to certain relevance evaluation criterion, which usually leads to better learning performance (e.g., higher learning accuracy for classification), lower computational cost, and better model interpretability.

4. Expected Outcome :

With the above methodology we are expecting the better outcome with the help of different algorithms applied on the data set and find out the best efficient algorithm which suits for the best prediction of the disease. We can also predict the reasons for the disease as well as the symptoms of the disease very accurately with this study.
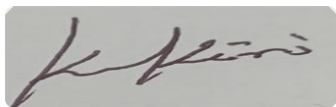
5. List of the Team Members :

1. **Dr. Shashidhar Kini K – Coordinator**
2. **Mrs. Archana Yashodhar - Member**

6. List of Working Papers :

(1) Working with the brain image and applying deep learning algorithms.
(2) Working on recent symptoms of Alzheimer's Disease.

7. List of related Published Papers in Journals, Proceedings, Book Chapters, Magazines by Coordinator &his/her Group year wise in APA format.

1. Yashodhar and S. Kini, "**Performance Measurements of different Classification techniques for the Alzheimer's Disease Neuroimaging Initiative**," *2021 IEEE International Conference on Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER)*, 2021, pp. 322-326, doi: 10.1109/DISCOVER52564.2021.9663705.

2. Paper entitled "**Review on Classification and Feature Selection Algorithms and its Application**" is presented in the **Third IEEE International Conference on Electrical, Electronics, Communication, Computer Technologies and Optimization Techniques (ICEECCOT-2018)** in association with IEEE Bangalore Section organized by GSSS Institute of Engineering and Technology for Women, Mysuru on 14th & 15th December, 2018.

Dr. Shashidhar Kini K.
Name & Signature of Coordinator with date.