Introduction

Alzheimer's disease is a neurological disorder, it is a type of dementia which affects memory, thinking, and behaviour. It is the most common cause in older adults. Currently there is no cure for AD, but early detection and treatment can help manage its symptoms and slow its progression.

Machine learning can play a significant role in detecting Alzheimer's disease. ML models can be used to detect Alzheimer's disease by analyzing a variety of data, such as brain scans, cognitive tests, medical history, and other biomarkers .

Alzheimer's Disease

Alzheimer's disease is a progressive neurological disorder that affects the brain. It is caused by the unusual growth of proteins around the brain cells. These unusual growth of proteins damage the neurons and cause them to die.

The symptoms of Alzheimer’s Disease usually start slowly and get worse over time. Alzheimer’s Disease causes can include memory loss, difficulty concentrating, and problems with language. As the disease progresses, people with Alzheimer’s Disease may also experience difficulty with judgment, problem-solving, and decision-making. They may also have changes in personality and behavior.

Currently there is no cure for AD, but early detection and treatment can help to slow the progression of the disease. Treatment for AD generally includes medication and lifestyle changes.

Machine Learning Models for AD Detection

There are different types of ML models that can detect AD. Most common types of models are:

- Support vector machines (SVMs): SVMs are supervised learning models that can be used to classify data into two or more categories. SVMs are used to classify brain scans as normal or abnormal in people with AD.
- Deep learning models: Deep learning models use artificial neural networks to learn from data. Deep learning models are used to analyze brain scans, cognitive tests, and medical history to detect AD.

- Other machine learning models like Decision Tree, Random Forest, XGBoost.

Current State of the Research

The research on the use of ML models for AD detection is still in its early stages. However, there are some promising results. A recent study found that a deep learning model was able to detect AD with an accuracy of 85%.

There are many challenges that need to be addressed before ML models can be widely used for AD detection. One of the challenges is the lack of large, well-labeled datasets. Another challenge is the variability of the symptoms of AD.

Despite these challenges, the research on the use of ML models for AD detection is very promising. With further research, ML models can be a valuable tool for early detection and treatment of AD.