**LITERATURE SURVEY**

Ronghui Ju et.al, suggested method of deep learning along with the brain network and clinical significant information like age, ApoE gene and gender of the subjects for earlier examination of Alzheimer’s [1]. Brain network was arranged, calculating functional connections in the brain region by employing the resting-state functional magnetic resonance imaging (R-fMRI) data. To produce a detailed discovery of the early AD, a deep network like autoencoder is used where functional connections of the networks are constructed and are susceptible to AD and MCI. The dataset is taken from the ADNI database. The classification model consists of the early diagnosis, initially preprocessing of raw R-fMRI is done [1]. Then, the time series data (90 ×130matrix) is obtained and that indicates bloodoxygen levels in each and every region of brain and changes a long period. Then, a brain network is built and transformed to a 90 ×90 time series data correlation matrix. The targeted autoencoder model is used which is a three layered model which gives intellectual growth of the nervous system then excerpts brain networks attributes completely [1]. When finite amount of data cases is taken, k-fold cross verification was implemented mainly to avoid the over fitting complication. K.R.Kruthika et.al, proposed a method called multistage classifier by using machine learning algorithms like Support Vector Machine, Naive Bayes and K-nearest neighbor to classify between different subjects [2]. PSO (particle swarm optimization) which is a technique that best selects the features was enforced to obtain best features. Naturally image retrieving process requires two stages: the first stage involves generating features so that it reproduces the query image and then later step correlates those features with already gathered in database [2]. The PSO algorithm is used to select the finest biomarkers that show AD or MCI taken from Alzheimer's disease Neuroimaging Initiative (ADNI) database. The MRI scans are preprocessed first after taking from the database. The feature selection includes volumetric and thickness measurements. Then the optimum feature lists were obtained from PSO algorithm [2]. The Gaussian Naïve Bayes, K- Nearest Neighbor, Support vector machine was used to distinguish between the subjects. Here a 2 stage classifier was used where in the initial stage GNB classifier was used to classify the objects between AD, MCI and NC and in later stages SVM and KNN were used to analyze the object based on the performance of the initial one [2]. Control Based Image Retrieval was used for retrieving images from the database. Ruoxuan Cuia et.al, proposed a model where longitudinal analysis is performed on consecutive MRI and is essential to design and compute the evolution of disease with time for the purpose of more precise diagnosis [3]. The actual process uses those features of morphological anomaly of the brain and the longitudinal difference in MRI and constructed classifier for distinguishing between the distinct groups. The MRI brain images of 6 time points that is for consecutive intervals in a gap of six months are taken as inputs from ADNI database [3]. Then feature learning is done with the 3D Convolutional Neural Network. The CNN is followed by a pooling layer and have many ways for pooling, like collecting mean value otherwise the maximal, or definite sequence of neuron in the section. But for studying the characteristics, the convolutional operation of 2×2×2 is applied so that a linear combination is studied for pooling of neurons [3]. The fully connected layer has neurons that produce output of all neurons in a linear combination, which are taken from preceding layer and then is moved through nonlinearity. Finally for the last fully connected, a softmax layer is particularly used and then tuned finely for back-propagation to predict the class probability [3]. The result of each node varies from 0 to 1, and the total of nodes will always be 1. Finally the classification includes the deep network construction including the 3D CNN training and RNN model training. Then the results of fully connective layers are directly mapped using a softmax function [3]. The initial parameters that were trained by both 3 dimensional CNN and the RNN network are established and then only the uppermost fully connective layer parameters and the softmax layer that was used for prediction are adjusted so that the dimensional and longitude features were united for distinct identification.