- ***Summary for paper 'Comparative Analysis of Machine Learning Algorithms on Different Datasets '***

Objectives and Motivations: This research aims at comparing different algorithms used in machine learning. They check the efficiency of Neural Network (NN), K-Nearest Neighbor (KNN), Support Vector Machine (SVM) algorithms. Their goal was to check all three algorithms and find out which performs better. So that they can use that algorithm in future research.

Proposed Methodologies: They applied the algorithms in two datasets. First one is quality of red and white wine with 6500 rows and 13 columns. Another one is biodegradable with 1055 rows 13 columns. They analyzed it on MATLAB Intel i5 with 3GB RAM installed. The different data sets are taken as input for feature extractor and classification algorithm. The datasets are passed through a sequence of pre-processing blocks.

Contributions of the work: In addition, three KNN, PLSDA and SVM calculations were used in the other bio degradable dataset to detect blunders, specificity and impact-ability. 5- The technique of cross validation was used and it was found that KNN has the smallest blunder than the other two, which is 0.17, impact-ability is 0.75 and specificity is 0.91[22]. The SVM classifier has the highest accuracy of 99.38 percent of the others, according to the current outcomes. The results certainly show that the highlights required for the preparation of the classifier model should be strong and unmistakable in order to investigate different procedures of unsupervised and directed learning in order to improve execution. They found that in the field of restorative sciences, law, fund, governmental issues, medication, instruction, and various fields, the SVM-based models and instruments could be useful.

Lacking of the work: For our project, this paper is useful, but there is little information. If they added more algorithms to compare with, it would be more helpful for us.

- ***Summary for Paper 'A Comparative Study on Machine Learning Algorithms for the Control of a Wall Following Robot'***

Objectives and Motivations: Several machine learning models have been tested and evaluated, including Decision Tree (DT), Gradient Boost Classifier (GBC), Random Forest Classifier (RFC), Linear Discriminant Classifier (RFC), Linear Discriminant Classifier (RFC), Analysis (LDA), K-Nearest Neighbor (KNN), Support Vector Machine (SVM). In this paper, a comparison of the output of different machine learning models is given to predict the path of a wall following a robot. To build a highly accurate controller for a mobile robot, they used various machine learning algorithms. To test and compare the accuracies of the most common machine learning algorithms for this issue and related issues, this paper uses the sensor fusion problem. The goal of this paper is to provide research insight to resolve other data fusion issues with similar data features.

Proposed Methodologies: This research used an open-source dataset containing ultrasonic sensor readings and the corresponding trajectory of the robot. Three dataset formats, a complete format with 24 sensor inputs and two simplified ones with 4 and 2 sensor inputs were used to train the models. For the simplified dataset which achieves a mean accuracy of 100 percent, a perfect solution was proposed using a DT model. The value of n=50 iterations was used to evaluate all the proposed models in this paper. On the other hand, for the complete dataset with 24 input sensors using GBC, an accuracy of 99.82 percent was achieved. In terms of precision, the proposed models in this paper outperform all the previously proposed models for this dataset. Using Monte- Carlo cross-validation, all models were assessed.

Contributions of the work: As several machine learning algorithms have been used in this paper, we will get to know these algorithms before using them. They build a table of different precision algorithms on a particular dataset that is the motive of our projects. It will be useful for selecting datasets and algorithms and then for our project to be applied for research. A dropout regularization of 10 percent was used in each layer of the network to discourage overfitting. In addition, the input data has been normalized, and each layer's output has also been normalized, known as batch normalization. This model was trained using 200 Epochs, with a batch size of 32. The model used the Adadelta optimizer and the loss function of categorical crossentropy. It can be easily shown when contrasting the accuracies obtained by machine learning and deep learning models that the machine learning models are more suited to use for this problem of sensor fusion. A distinction between the proposed models in this paper and the models proposed in previous papers is provided in this section. Using GBC for the 24 sensors dataset achieves a mean accuracy of 99.82% which is also the highest compared to all previous designs.

Lacking of the work: The paper seems to me okay. Although our research goals are the same based on various machine learning algorithms, our motivation is not the same. The algorithms for controlling a wall following a robot were implemented and we will perform a comparative analysis of various ML algorithms on a specific dataset in terms of accuracy.

A short summary mentioning the relation:-

Our motive is to find out accuracy by implementing different kinds of ML algorithms on a specific datasets. It's necessary because any researcher around the whole world will be able to choose the best algorithm for a specific kind of dataset without further investigation. We will choose datasets and then perform implementation review. In these two papers, in separate datasets, they use different algorithms with the precision that is really important for us. We could use their assigned datasets, which for us will take time. In the 1st paper, they discovered that SVM is the best and in the 2nd paper, in terms of precision, their proposed models outperform all previously proposed models for their described dataset. Using a DT model, they also got a great solution and got 99.82 percent precision for the complete dataset using GBC. So, if we use these algorithms, data from these points can be collected and we do not need to evaluate it again.