Application of Machine Learning In Healthcare with Suitable Examples

Bhagya Roy
Assistant Professor
St. Joseph's College of Engineering and Technology Palai,Kerala,India
bhagyaroy@gmail.com

Abstract: Machine Learning is modern and highly approached technological applications which became an enormous trend within the industry. Machine Learning is widely utilized in various applications. it's playing an important role in many fields like finance, life science and in security. Machine learning is employed to get patterns from medical data sources and supply excellent capabilities to predict diseases.

Keywords: Technological application, data source

I. INTRODUCTION

Machine learning is one of the most trending fiels of computer science industry. It contains wide range of application and research scope. The application differs from medical science to security analysis. Machine learning is a subset of Artificial Intelligence which collect data from given training data, analyze and give proper result or outcome. Machine learning learns from the data given and tries to predict the model from the learned data. Machine learning can be categorized as given below

- Supervised learning
- Semi-supervised learning
- Unsupervised learning
- Reinforced learning

A. Supervised learning

As the name suggest, there will be a "supervisor", a teacher in this type of classification.Here we train the machine using certain set of example data and the machine will learn from this example.

B. Semi-supervised learning

It is a combination of Supervised and Unsupervised learn- ing. Here during training small amount of labelled data will be mapped to a large amount of unlabelled data. The best classifier from the labelled and unlabelled data will also be identified.

C. Unsupervised learning

Unsupervised learning is the correct opposite of supervised learning. Here the machine should do the task like , it should classify the unsorted information based on the like and unlike characteristics in the data(without any proper knowledge of the data provided)

D. Reinforcement learning

There is no training data-set and it learns from its previous experiences. There is no correct answer key but the agent for reinforcement do whatever necessary to perform the given task.

II. WHY THERE IS A NEED OF MACHINE LEARNING IN HEALTHCARE?

Many citizens from foreign countries had lost their life every year because of error report in heath care centres. Machine learning can be used in such a situation for a greater extend because , it provided scalability, speed, accuracy (for a greater extend) , prediction of many result for health care domain also. Both doctor and machine tries to do the same work here. A doctor examine that patients symptom and comes to a conclusion about the type of disease he/she is suffering from the same, the machine also tries to find the disease from the training samples provided to the machine or by its past experience. So, if we apply machine learning to healthcare, it will be of great help.

III. SOME FAMOUS PREDICTIONS OF VARIOUS DISEASE

- Heart disease detection UCL machine learning repository contains frequently used data set to diagnose heart disease with more accuracy.
- Diabetic disease detection and analysis UCL machine learning Repository provided data set which provide increased accuracy to detect diabetics in patients.
- Breast Cancer detection It is one of the most common cancer which occurs in women. Machine learning can be used to predict these cancers. WISCONSIN dataset present in UCI machine learning repository is used to predict breast cancer.

IV. APPLICATIONS OF MACHINE LEARNING

- Disease identification Many disease can be identified with much speed and accuracy using Machine learning in healthcare. Machine learning can also be used to diagnose and also be used for treatment in different medical areas.
- Diagnosis in Imaging Machine learning used to show more clear and complete image of illness in medical healthcare. Deep learning can also be used for this propose.
- Drug discovery Machine learning can also be used to find out new drugs for medical field. Google and IBM have already created machine learning platform to help healthcare by discovering new methods of treatment for patients.
- Surgical tools for Robotics Da Vinci Robot, is a robot which manipulate limb(robotics) in order to perform surgeries which involved greater risk and also detailing. Theses can perform more accurately than humans.

V. CONCLUSION

Machine learning is one of the fastest growing technologies nowadays. It have many applications in our day to day lives. Through this paper we get to know the basis of machine learning, its types and also applications of machine learning with respect of medical field. Healthcare can be a field which can use most of the properties of machine learning because they are closely linked.

REFERENCES

[1]. Rajani Singh, Nagesh Sharma, "Machine Learning based Medical Information Analysis Estimations and Approximations over Present Health Research Domain", Computational Performance Evaluation (ComPE) 2020 International Conference on, pp. 704-708, 2020.

[2]. Bhardwaj Rohan and Ankitha R. Nambiar, "A Study of Machine Learning in Healthcare", IEEE 41st Annual Computer Software and Applications Conference, 2017. (ETFA), 2015 IEEE 20th Conference on. IEEE, 2015, pp. 18.

[3]. Animesh et al., "Study and analysis of Breast cancer Cell Detection using Na¨ıve Bayes SVM and Ensemble Algorithms", International Journal of Computer Applications, vol. 2, 2016.

[4]. Jalpaiguri et al., "Heart Disease Diagnosis and Prediction Using Machine Learning and Data Mining Techniques: A Review", Advances in Computational Sciences and Technology, vol. 10, pp. 2137-2159, 2017.

[5]. A. Iyer, S. Jeyalatha and R Sumbaly, "Diagnosis of Diabetes Using Classification Mining Techniques", International Journal of Data Mining Knowledge Management Process (IJDKP), vol. 5, pp. 1-14, 2015.

[6]. S.K. Sen and S Dash, "Application of Meta Learning Algorithms for the Prediction of Diabetes Disease", International Journal of Advance Research in Computer Science and Management Studies, vol. 2, pp. 396-401, 2014.