Applications of Machine Learning

Akshada Sunil Shitole
Department of Computer Engineering
K K Wagh Institute of Engineering Education and Research Nashik, Maharashtra, India
akshadasshitole@gmail.com

***Abstract*— Machine Learning is one of the best trending technologies in today's world. The importance of machine learning is growing day by day in parallel to the other technologies. Machine Learning refers to a subset of the Artificial Intelligence (AI). Due to machine learning it becomes possible to innovate more efficient system compared to the all other old systems. Machine Learning is the self-learning, self-improvement and self-decision-making process. The Input can be a data and statistical tools used to predict the output. Machine Learning has a very wide spectrum of applications in various fields. There is very vast application area of machine learning including predictions from given data, Recognition, Recommendations, Detection, Filtering etc. This paper introduces the machine learning as well as the machine learning applications area using machine learning algorithms. These applications can help researchers to study existing machine learning applications and innovate new ones.**

Keywords: Applications, Algorithms, Machine Learning.

I. INTRODUCTION

Humans have their own mind and memory which is used to take the decisions by its own so this is refers as a Natural Intelligence. Artificial Intelligence refers to a term where the Intelligence is not Natural as humans, it is an Artificial means we are providing Intelligence to some machine which could analyses it and take decision by its own. AI is a utilization of man-made reasoning that gives frameworks the capacity to naturally take in and improve as a matter of fact without being explicitly programmed. Machine Learning provides an ability to learn automatically by using the provided dataset and to take decisions according to it. As a subfield of Artificial Intelligence, machine learning is about the plan and improvement of algorithms and strategies that permit PCs to "learn". Machine Learning asks computer to learn by providing some data and expect the predictable output based on the inputted data. Alexa, Siri are one of the day to day examples of Machine Learning. This paper focuses on the application areas of machine learning where the machine learning is used as well as machine learning can be used. Late exploration patterns in medical services utilizations of AI center around the interpretability of the models. The main of Machine learning is "to make a machine more intelligent by learning its own". While in some medical care applications exactness of the model is significantly more significant than its interpretability, there are numerous situations where interpretability is favored notwithstanding loss of exactness [3]. Very important issue of today's digital world is network security and data privacy as well as protection. The machine learning can be applied for network security and data protection [1]. The machine learning can be applied to from bits to information [17]. Also, the importance of Vocational and Technical Training is increasing day by day the machine learning can be used to determine the trainings for the students [14]. Identification of Application level protocol can be done using the machine learning [12]. The detection of the cyberbullying is also carried out using machine learning [11]. Machine Learning classified into the 3 types which includes the supervised learning, Unsupervised learning and Reinforcement. The supervised learning is the processing will be done with the help of supervisor or the teacher. In supervised learning we have the training data. The training data contains inputs as well as the outputs. In supervised learning we already know the inputs and outputs. The naïve Bayes and classification are the supervised machine learning algorithms. The classification can be used to detect the hate speech from various social media sites [6]. The supervised algorithms can be used to identification of encrypted traffic [9]. The unsupervised learning is the processing will be done without the help of the supervisor. Here we only know the inputs. The clustering and K means are the unsupervised machine learning algorithm. Reinforcement learning is based on rewards and penalty. The goal is to achieve maximum rewards. Q learning is the reinforcement machine learning algorithm. The application of supervised learning is recognition and predictions. The application of unsupervised learning is categorization and recommendation. The application of reinforcement learning is self-driving cars.

II. LITERATURE SURVEY

Bujar Raufi[6], stated the machine learning application mobile application for hate speech detection. Daily lots of comments posted on social media sites. Hate speech must be detected to avoid violent acts. Here they have used Artificial Neural Networks (ANN) for the classification. the process of hate speech detection initiates from the user will post a comment. The comment will be stored in the database. The text gets extracted and removes the stop words after that it passes through Artificial Neural Network the classifier is applied to classify the data into the normal words and the offensive words. Based on the results the system notifies results to admin. If the posted comments contains the offensive words then the comment will be rejected never be post. If the post is normal then it is posted. In this way the hate speech is detected using machine learning algorithm.

Yizheng Xu[1], throws a light on machine learning application in the data science. Machine Learning algorithms can be applied while collecting the data, preparing the data, performing the exploratory data analysis, modelling, model evaluation and deployment. The machine learning application can automatically Understand the problem, clean

the data, extract all the essential features, make a comparison with all the machine learning and optimize to best model.

Chenn-Jung Huang [16], Proposed a application of machine learning in a Intelligent web based learning diagnosis system. The process starts with the identification of the central theme or area of interest. Then identify the subject domain based on the area of interest of learner, collect all the relevant information, generate a thematic report, exhibit all the learning activities. They also explained about the architecture of theme-based learning and the learning diagnosis system. K means and the support vector machine (SVM) algorithms are used.

Yudo Ekanata[7], Social media contains huge amount of data collected day by day. The data can be based on the opinions, sentiments, reviews of the product. Here, the classification of the mobile application reviews is carried out. The machine learning classification algorithm is used to classify the reviews of the mobile application. These classified data can help the application developer to decide which application must be developed for the users in future. Naïve Bayes, Support Vector Machine, Logistic Regression and Decision Tree are used for data classification. The proposed system classify the application review in the Indonesian language. The experiment result Logistic Regression gives the best F-Measure of 85%.

Mingli wu [4], investigated a classification methods of loan application based on machine learning. it shows prediction of repay of loan by customer. The image recognition, speech recognition and natural language processing is done on their experiment. The deep neural network (DNN) is used. ng. The comparison with traditional learning methods, such as Naïve Bayes, decision tree and K-Nearest Neighbor is carried out.

Wen Gong [13], combines the Felder-Silverman learning style with support vector machine to build the dynamic learning style for the learners. They presented a e learning model framework, Architecture of building dynamic learning style applied to emotions, recognitions. Here the machine learning algorithms is used for e learning for students.

Gaurav Meena [2], proposed a machine learning application in traffic prediction system. The aim was to develop an efficient tool which analyses traffic data and make predictions. The two algorithms are stated first was identify the congested situation and second is classify the congested situation. These identification and classification of the congested situation can help to control the traffic and avoid traffic jam problems.

Jiang Hua [15], studies the machine learning rough sets theory. They demonstrate the causal structure of supervised and unsupervised learning. Also shows the learning quality and completeness of rough sets theory.

Arti [5], proposed a machine learning application in opinion mining for the Indian Premiere League (IPL). the methodology contains data gathering from the twitter, positive and negative classification of tweets, preprocessing, features extraction, the supervised machine learning algorithm random forest is applied and the result is evaluated. For the result evaluation they used confusion matrix.

CONCLUSION

Machine Learning has the great significance in the field of computer science and engineering. It has a very wide application in various fields including the predictions from given data, Recognition, Recommendations, Detection, Filtering etc. In this paper, we investigated various application areas including the determination of vocational fields, identification of encrypted traffic, Healthcare, theory of rough sets, intelligent web based system, reviews classifications, traffic prediction, opinion mining, detect cyberbullying, protocol identification, hate speech detection etc. which might provide new innovate ideas for solving the problems in other areas. In future work will come with more interesting machine learning applications to improve complex systems with more accuracy.

ACKNOWLEDGMENT

I would like to Thanks my parents who always motivates me and support me in my life for doing such a innovate work. I would also Thanks and I am sincerely grateful to our professors of K K Wagh Institute of Engineering Education and Research Nashik for their assistance and helpful suggestions.

REFERENCES

[1] Yizheng Xu," Application Research Based on Machine Learning in Network Privacy Security", 2020 International Conference on Computer Information and Big Data Applications (CIBDA), 17-19 April 2020.

[2] Gaurav Meena, Deepanjali Sharma, Mehul Mahrishi," Traffic Prediction for Intelligent Transportation System using Machine Learning", 2020 3rd International Conference on Emerging Technologies in Computer Engineering: Machine Learning and Internet of Things (ICETCE),7-8 Feb. 2020.

[3] Tamer Karatekin, Asst. Prof. Pınar Kırcı, Uz.Dr. Selim Sancak, Op. Dr. Gökhan Çelik, Prof. Dr. Ali Okatan," Interpretable Machine Learning in Healthcare through Generalized Additive Model with Pairwise Interactions (GA2M): Predicting Severe Retinopathy of Prematurity", 2019 International Conference on Deep Learning and Machine Learning in Emerging Applications (Deep-ML),26-28 Aug. 2019.

[4] Mingli Wu, Yafei Huang, Jianyong Duan, "Investigation on classification methods for loan application based on machine learning ",2019 International Conference on Machine Learning and Cybernetics (ICMLC),7-10 July 2019.

[5] Arti, Kamanksha Prasad Dubey, Sanjy Agrawal ,“An Opinion Mining For Indian Premier League Using Machine Learning Techniques”,2019 4th International Conference on Internet of Things: Smart Innovation and Usages (IoT-SIU),18-19 April 2019.

[6] Bujar Raufi, Ildi Xhaferri,“Application of Machine Learning Techniques for Hate Speech Detection in Mobile Applications”,2018 International Conference on Information Technologies (InfoTech),20-21 Sept. 2018.

[7] Yudo Ekanata, Indra Budi,“Mobile Application Review Classification for the Indonesian Language Using Machine Learning Approach”,2018 4th International Conference on Computer and Technology Applications (ICCTA),3-5 May 2018.

[8] Kushal Rashmikant Dalal,“Review on Application of Machine learning Algorithm for Data Science”,2018 3rd International Conference on Inventive Computation Technologies (ICICT),15-16 Nov. 2018.

[9] Yohei Okada, Shingo Ata, Nobuyuki Nakamura, Yoshihiro Nakahira, and Ikuo Oka,“Comparisons of Machine Learning Algorithms for Application Identification of Encrypted Traffic”,2011 10th International Conference on Machine Learning and Applications and Workshops,18-21 Dec. 2011.

[11] Kelly Reynolds, April Kontostathis, Lynne Edwards,” Using Machine Learning to Detect Cyberbullying”,2011 10th International Conference on Machine Learning and Applications and Workshops, 18-21 Dec. 2011.

[12] Wu Amei, Dong Huailin, Wu Qingfeng, Lin Ling,“A Survey of Application-Level Protocol Identification Based on Machine Learning”, 2011 International Conference on Information Management, Innovation Management and Industrial Engineering,26-27 Nov. 2011.

[13] Wen Gong, Wansen Wang ,“APPLICATION RESEARCH OF SUPPORT VECTOR MACHINE IN E-LEARNING FOR PERSONALITY”, 2011 IEEE International Conference on Cloud Computing and Intelligence Systems,15-17 Sept. 2011.

[14] Halil İbrahim BÜLBÜL, Özkan ÜNSAL, “Determination of Vocational Fields with Machine Learning Algorithm”,2010 Ninth International Conference on Machine Learning and Applications,12-14 Dec. 2010.

[15] Jiang Hua,”Study on the Application of Rough Sets Theory in Machine Learning”, 2008 Second International Symposium on Intelligent Information Technology Application,20-22 Dec. 2008.

[16] Chenn-Jung Huang, Ming-Chou Liu, San-Shine Chu, Chin-Lun Cheng“Application of Machine Learning Techniques to Web-Based Intelligent Learning Diagnosis System”, Fourth International Conference on Hybrid Intelligent Systems (HIS'04), 5-8 Dec. 2004.

[17] T. Poggio,“From bits to information with Learning Machines: theory and applications” ,Proceedings of the IEEE 2000 Adaptive Systems for Signal Processing, Communications, and Control Symposium (Cat. No.00EX373),4-4 Oct. 2000.