# Machine Learning Applications in Real World

N. Thirupathi Rao and Debnath Bhattacharyya

*Dept. of Computer Science and Engineering，Vignan's Institute of Information Technology (A)，Visakhapatnam, AP, India*

### *Abstract*

*The utilization of machine learning and its techniques and algorithms in the current day is growing day by day. The involvement of these techniques in the applications makes the applications and gadgets smarter from day-to-day. The size of the devices also becoming smaller and also some advanced features also can be processed by the small and mini devices. The size and the tasks performing by the cell phones or smartphones were one of the best examples for these applications and wonders. Hence, it is required for us to know the set of applications where machine learning is being used in the devices in the current day and the set of benefits the people are getting from these applications and how these devices are making the life of the people smarter and more safe and happy. Hence, in the current paper, a brief description about machine learning techniques and the list of applications where these machine learning techniques are using very high and getting more advantages and more benefits for the human lives.*

*Keywords: Machine learning, Artificial intelligence, Applications, Real world, Human lives*

## 1. Introduction

In traditional communication systems and other technologies available in the markets, the users or the common public is getting so many benefits and further application extensions. But the utilization of these applications and other existing technologies are not going for the smarter and smarter and not support the further extensions of the existing technologies in the current day market. Hence, a vacuum has been created for the technologies to be upgraded for further development of the technologies and for further inventions and utilizations of the technologies for getting more outputs than the expected ones. The utilization of smarter techniques and other smarter logic in the current day technologies will lead to reducing the operational costs of the equipment and more outputs will be generated than the expected outputs from the existing outputs getting from the existing systems and machines. The invention and inclusion of machine learning and its related techniques in the current day applications are getting more beneficial to the people in society [1][2].

Machine learning is part of the application area of artificial intelligence and it is getting momentum for its utilization in almost all areas. The main motto for utilizing these techniques and other application algorithms was to increase the efficiency and accuracy of the working systems and also to get more output than the expected output. The other benefit of utilizing these techniques was to reduce the operational costs and also to reduce the cost of human lives and other practical issues. By using this technology, the users can get the maximum advantage

and more safety features than expected from the current day technology trends. These trends and technologies are using for the last five years and it became more and more famous day-to-day. The utilization of these techniques and other algorithmic models had increased the automation of most of the industries and other companies for their working plants. The automation had increased the growth in terms of production, employees cost cutting and other benefits of safety to the employees and other advantages. The users, nowadays are getting more and more benefits for the betterment of the lives of humans as automation has been increasing in a faster way [1].

These techniques and other algorithms can be used for various sectors for their growth and the benefit of society [2][5][6]. Some of the research areas where these applications and techniques can be processed are Image processing, image matching and image detection and face detection, etc, data classification, data analysis, prediction of data and other data processing techniques [7]. Also can be used for data regression analysis, statistical predictions and processing, etc.

## 2. Applications of machine learning

Some of the applications of machine learning and its related areas can be explained in detail in the following sections. The details about various applications had given with the help of some diagrams also in some sections. The users can get a clear idea about the applications where the machine learning techniques were being used and more advantages and more results are being generated was discussed in detail. Some of them are as follows.

- Image processing
- Speech Recognition
- Medical diagnosis
- Statistical analysis
- Data Analysis
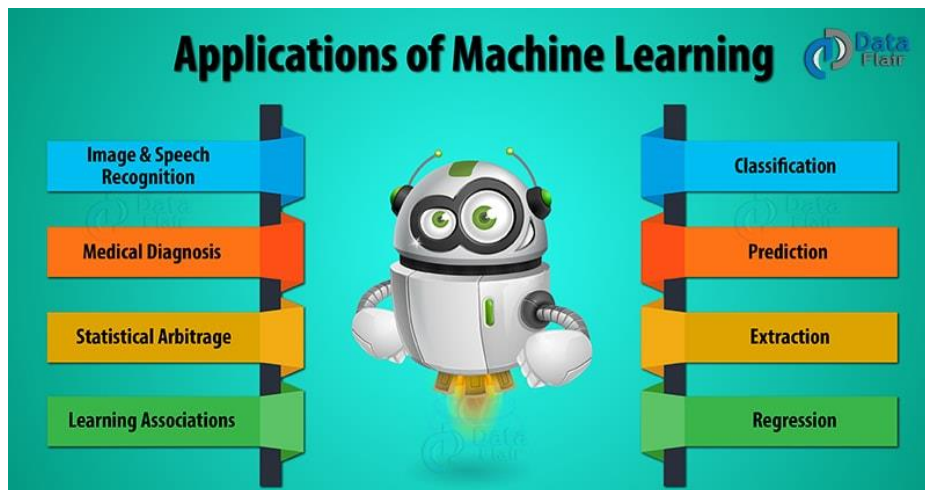- Data Prediction
- Data Retrievals
- Consistency of data



Figure 1. Applications of machine learning

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## 2.1. Image processing

Image processing or the processing of images is one of the important and more useful techniques in the search for several advantages. The processing of images helps in identifying the diseases. Identifying the presence of various severe diseases with various types of scans for the bodies of persons and also for sending some data secretly from one location to another location without knowing to the other people. It is also required to identify these images for other reasons like in some cases viruses or some other malicious data files can be sent through images such that the users cannot predict the damage that is going to happen to the end-user. The damage will be in some cases, the entire setup of the system can be loose or in some cases, the functionality of the systems can be damaged which will cost for several huge amounts for restoring it to the normal working conditions. Hence, the processing of the images is more important and mostly enquires for the people who are working on the internet sources where more data have been transferred from various locations of sources to the various destinations.

The recognition of data in the images was important. Due to the development of the digital era of data, digital images also started growing their utilization. In digital images, as the data in the form of binary data, the inclusion of some virus or other malicious data or some secret data embedding had increased and easy to embed too. The way we need to identify such images was based on the size of the pixels in those images. In the digital images, the types of images will be other issues to be noted. In images, the black and white images, RGB images and other full color images will be present. It is not correct of using the same set of techniques and algorithms for all types of images to get the good and expected outputs.
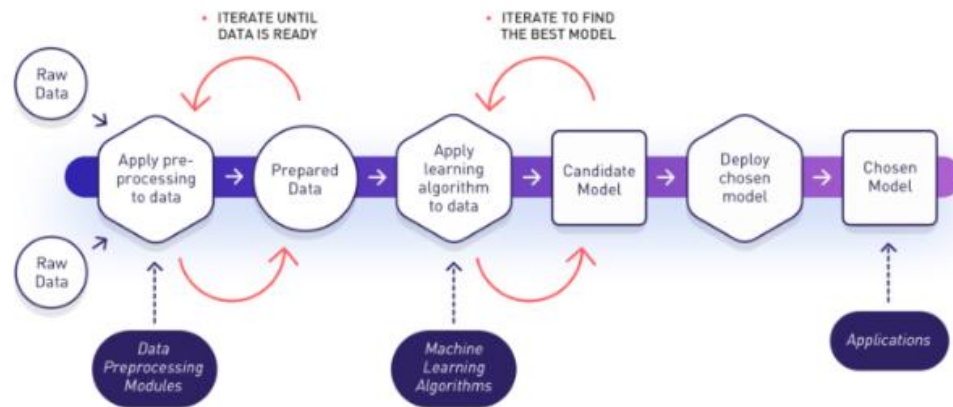


Figure 2. Image processing application example

The other set of application or the processing of these techniques will give us the application like the detection of face. Nowadays, this technique or this technology is becoming more famous for several reasons and also various security agencies need to identify the correct persons. Safety reasons are the primary concern with these applications. This technique can be used more in mobile phones, smartphones such that to unlock them and in some cases, it is required for processing some applications on mobile phones too. The identification of the faces of the people who were involved in the crimes is also important and it helps in solving several cases by identifying the exact persons in the crime scenes [3].

It is also used in some other applications like the posting of attendance automatically based on the detection of the students and faculty who were entering n to institute at the time of the entry gate and also can note the timing of the people when they are leaving the institute by

observing the faces of the students and faculty. In airports, for processing the automatic gate pass or the entry of the passenger can be taken and the boarding pass will be generated automatically without the need for any human intervention there. It is also used in some other set of research areas like the identification of criminals or other sets of thieves who had been involved in the criminal activities during the happening of such events in the society or at various locations of the cities or some rural places [4].

## 2.2. Speech recognition

The other important application of machine learning and its related areas was the recognizing of speech of various people for several sorts of applications. It is very important for several applications for processing the speech of the people. Nowadays, several crimes and other related activities are happening in society. The police are trying to identify the criminals with the data of the call records of the people who committed crimes. To do such processing, intelligent logic or intelligent algorithms are required for identifying the speech or voice of the person who made calls or who received calls or in some other case, who were involved in the crime situations. It always needs some sophisticated systems to identify the voice or speech of the persons who committed or were involved. Also, these techniques or algorithms can be used for processing speech in mobile communications and mobile ad hoc network-based communication networks. The way the customer calls and speaks with the opposite person, the same voice should replicate with the second person in the same frequency of producing spouts for those words given by the first person to the second person.
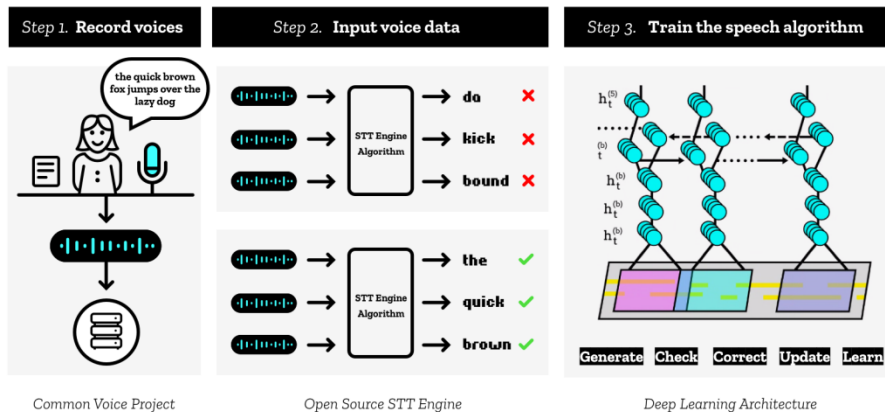


Figure 3. ML applications of the Speech processing process

Also, now a day, the password for mobile phones and smartphones, the voice of the owner of that device can be designed or a password for operating such phones. The user will say some set of words as password, he has to produce the same words with the same accent when he wants to open the lock of such phones and can operate. If the user will produce any difference in pronouncing such words or any little difference in the accent of the person, then the lock of the phone may not open and it will be continued in the lock mode until it matches with the actual words stored in the database of that particular Smartphone. The latest released mobiles or the cell phones like the iPhone and Samsung phones might have this feature of voice

recognition. Nowadays, Google had released voice control assistance for the Android-based OS using phones through which the users can operate the mobile phones with the voice commands of the users. There will be no specific lock of voice for these commands in these Android OS-based phones, only the commands should match with the user's command.

## 2.3. Medical applications

The utilization of these AI techniques had helped the medical field a lot in identifying the diseases and their related issues. If the entire decision was given to the human being, in some cases there may be a little bit of difference in the decision that was being taken by the human beings. But, if the decision-making situation was given or assigned to a machine, the decision given by a machine was almost accurate and more precise as if the machine will take the decision, then the machine will work based on the previous data given by the users to the machine. The decision-making of the machine purely will depend on the data that the users had submitted to the database or the knowledge base of the machine. The machine will purely take decisions based on the data that was available in the knowledge base for the existing question or the existing situation raised. Hence, the user or the developer needs to have a good thought on the data that was being submitted to the machine for the successful working of the machine. The success or fail of the machine will depend on the data that was submitted to the machine.



Figure 4. Scanning example of ML applications

It is very difficult to identify the disease like cancer, trauma or presence of some tumors or some cysts in the brain by observing the scan reports. The presence of cells causing such severe diseases may not be available easily for any user or patient to observe and identify the diseases. It is always somehow difficult to manage such scenarios. The doctors will always be in a state of confusion for the presence of diseases causing cells were present or not. If the doctor starts the treatment by thinking about the presence of such cells, in reality, these cells are not present, then the treatment for such diseases will be very high and the body of such patient will be damaged and also other parts of the body of the patients may have some problems. Similarly, if the doctor would not start the treatment of the patient without confirming in the reports, the valuable time for providing the correct cure for the disease-causing cells may not be provided or delayed, and the disease may cause more severe and cause more damage to the patients. In some other cases, it may lead to the death of the patients. Hence, the decision taking situation

based on such lab reports and the symptoms very critical and applying the correct technique or logic will give such good decisions at a good interval of times.

In other cases of diseases like the identification of tumor and other colloid cysts in the areas of the brain is also important. It is very needed and urgent to identify the presence of these cysts and other tumors such that the treatment at the right times can reduce the effects of such diseases. The identification of cysts and other tumors might take difficult to identify because the presence of these cells may be lower levels of the brain or at the inner deeper levels of the brain. It is always not possible to identify such locations with the general types of scanning. MRI and CRT scanning are required that to identify the presence of such cysts in the lower or deeper levels of the brain and other human delicate parts of the body. Hence, the usage of these Artificial intelligence techniques and other algorithms in this equipment will give an accurate and more efficient way of identifying such diseases and cells will give the users more and more accurate and efficient results.

## 2.4. Data classification

The other important application that can be performed is the data classification or the classifying the same group of objects or data elements from the set of items available in a large dataset. It can also be taken as identifying or classifying the same set of elements or objects that have a similar set of characteristics and features that will have the same class. But in reality, all these sorts of data might be at various locations or various positions, or various databases. Similarly, some data elements may not be present in almost all the datasets or all cases of data availability. In those cases, the data to be separated from the other set of databases, some intelligent techniques or some intelligent algorithms need to be used such that to identify them first and separate them in the subsequent levels or the subsequent stages of data points. To establish some good logic and some good data analysis, first, we need to classify the data exactly with the field that to which part this data points will belong. Then the next steps for further processing will always be taken place.

The best example for these sorts of data classification, the banks providing loans or other financial services or requirements to the people those banks are providing. The banks will collect all data and other important points to be considered for the bank to identify the financial stability and, the financial status of the customer and other security issues related to that particular person should be observed. But, when the banks are collecting such data, the people may provide some misguiding information or wrong data to the banks. The banks should be in a position such that to identify the facts and figures about that particular person who is approaching the banks for some financial assistance under the process of some loans.

The loans may differ from person to person and also from place to place and other issues related. Similarly, the documents required to get approved from that bank may also vary from bank to bank and from the type of land and place of the persons from the country. Hence, to process this huge set of data, some data classification should be required and another set of applications for processing such huge amount of data is required. In order to process such huge data, the machine should have some good logic and good techniques to filter the data required for hem and get the process to be completed fast. If the time taking for processing the application of one person for hours to days, the customer will never prefer the banks because there will be a huge number of banks are existing in the make tans the customer may go for some other banks for the same.

## 2.5. ML applications in finance

The utilization of machine learning applications and their algorithms in the field of finance was increasing from day-to-day. The increase of using financial services with the help of machine learning applications may increase the profits and other benefits. The utilization was increased a lot these days and the financial services had increased a lot and help the other banks and other financial related institutions to grow their results and profits in their day-to-day business transactions. The utilization was increased a lot such that to provide financial services like loans, education loans, vehicle loans, credit cards, etc. The justification of the customers to whom we can provide the customer services will decide the impact of such bank loans or the bank transactions. If the identification of the good customer was successful, then there is a guarantee of good profits to the bank and other financial organizations.



Figure 5. Machine learning applications in Finance example

The utilization of machine learning algorithms will provide the services like business transactions, share market predictions and other financial transactions. The growth and the downfall of share markets and other business applications will be considered as possible. The identification of fraud in financial transactions was also so important and these tasks can be performed easily by using these machine learning techniques and algorithms.

## 2.6. Machine learning examples in finance for fraud detection

Nowadays, the fraudulent applications and transactions for the common people who are using the bank applications had grown a lot. With this act of fraud, so many innocent people are facing financial problems and the people who faced these problems may not be aware of such problems. By the time the people came to know the transactions, the time and the details of such applications and transactions were completed with a lot of time. Hence, people are getting so many difficulties with these fraud applications. Some of the fraud people will call a customer and tell about the persons who had got some prize money and they will provide their data to those fraud people for the prize money. By using this data, the fraud people will perform the financial transactions easily as regular customers and the data will not be reached to the actual customer within the period. By the time the actual customer will come to know about the transactions, the fraud details will be abolished. Hence, the identification of such fraud transactions and fraud calls or fraud messages should be identified and resolved. By using

machine learning techniques and algorithms, we can identify the fraud people or the fraud transactions without any delay or any hassle.

## 3. Conclusions

Artificial intelligence and its applications are growing day by day in the utilization of the developing technologies in society. Almost every technology that was arriving or developing the current days, the backbone such technologies might be the AI and its related application areas. Hence, all the people should have a good thought and idea about the applications of these areas and other sets of applications. Hence, in the current paper, we had given thought and presented various sets of AI applications and their advantages in detail.

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