

TABLE OF CONTENTS

CHAPTER NO	TITLE	PAGE NO
	ABSTRACT	3
	LIST OF FIGURES	7
	LIST OF TABLES	6
1	INTRODUCTION	8
	1.1 Technologies used	9
	1.1.1 Machine Learning	9
	1.2 Importance of Machine learning	10
	1.3 Machine learning process	10
	1.4 Types.of Machine Learning	12
	1.5 Supervised Machine Learning	12
	1.6 Unsupervised Machine Learning	13
	1.7 Reinforcement Machine Learning	13
2	LITERATURE REVIEW	15
	2.1 Incident detection algorithm	15
	2.2 Design of a system solution for relative positioning	16
	2.3 Vehicle - to - Vehicle safety messaging in DSRC	17
	2.4 Integrating dead reckoning,map matching and GPS positioning	18
	2.5 Challenge for localisation-based Systems	19
3	PROJECT DESCRIPTION	20

	3.1 Existing system	20
	3.2 Proposed system	20
	3.3 Working	21
	3.4 Module Description	21
	3.4.1 Data cleaning and Data Preprocessing	22
	3.4.2 Data cleaning	23
	3.4.3 Data visualization	23
4	METHODOLOGY FLOW	24
	4.1 System architecture	24
	4.2 Input images	24
	4.2.1 Accident dataset creation	
	4.2.2 Working	
	4.3 Disadvantages of Existing System	25
	4.4 Advantages of Proposed System	26
	4.5 Applications	26
5	TOOLS AND TECHNIQUES	27
	5.1 Python	28
	5.2 Pycharm	29
	5.3 Software code	39
6	RESULTS	40

	6.1 Final results	43
7	CONCLUSION	44
	7.1 Conclusion	44
	7.2 Future work	44
	7.3 Scope of further study	44
8	REFERENCES	46

LIST OF FIGURES

FIGURE NO	TITLE	PAGE NO
1.1	Machine Learning process	10
1.2	Types of machine learning	12
4.1	System architecture	24
5.1	Software code and deployment	29
6.1	Accident occurred	40
6.2	Accident will happen	41
6.3	Accident occurred	42
6.4	No of accident occurred	43

CHAPTER 1

INTRODUCTION

The problem of deaths and injuries as a result of accidents is to be a global phenomenon. Traffic safety has been a serious concern since the start of the automobile age, almost one hundred years ago. It has been estimated that over 300,000 persons die and 10 to 15 million persons are injured every year in road accidents throughout the world. Statistics have also shown that mortality in road accidents is very high among young adults that constitute the major part of the work force. In order to overcome this problem, there is need of various road safety strategies and measures. Losses in road accidents are unbearable, to the society as well as a developing country like us. So, it has become an essential requirement to control and arrange traffic with an advanced system to decrease the number of road accidents in our country. By taking simple precautions, based on prediction of a sophisticated system may prevent traffic accidents. Moreover, to tackle this situation where every day so many people were killed in a traffic accident. and day by day this rate is getting increased.

1.1 TECHNOLOGIES USED:

To implement this project we have used Machine learning

1.1.1 Machine Learning

Machine Learning (ML) is coming into its own, with a growing recognition that ML can play a key role in a wide range of critical applications, such as data mining, natural language processing, image recognition, and expert systems.

" A computer program is said to learn from experience E with respect to some task T and some performance measure P, if its performance on T, as measured by P, improves with experience E."

1.2 Importance of Machine Learning

Machine learning is important because it gives enterprises a view of trends in customer behaviour and business operational patterns, as well as supports the development of new products. Many of today's leading companies, such as Facebook, Google and Uber, make machine learning a central part of their operations.

1.3 Machine Learning Process

Machine learning workflow refers to the series of stages or steps involved in the process of building a successful machine learning system.

The various stages involved in the machine learning workflow are-

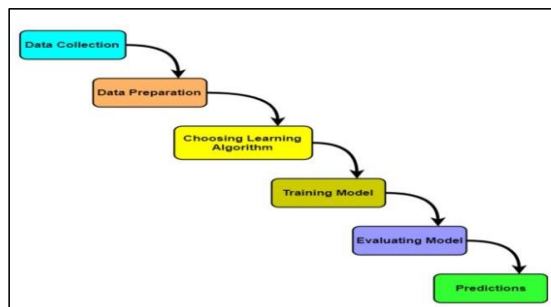


Figure 1.1 Machine Learning Process

Figure 1.2 Machine Learning Process

Data Collection- In this stage,

Data is collected from different sources. The type of data collected depends upon the type of desired project. Data may be collected from various sources such as files, databases etc. The quality and quantity of gathered data directly affects the accuracy of the desired system.

Data Preparation- In this stage,

Data preparation is done to clean the raw data. Data collected from the real world is transformed to a clean dataset.

Raw data may contain missing values, inconsistent values, duplicate instances etc. So, raw data cannot be directly used for building a model.

Choosing Learning Algorithm- In this stage,

The best performing learning algorithm is researched. It depends upon the type of problem that needs to be solved and the type of data we have. If the problem is to classify and the data is labeled, classification algorithms are used.

If the problem is to perform a regression task and the data is labeled, regression algorithms are used.

If the problem is to create clusters and the data is unlabeled, clustering algorithms are used.

Training Model- In this stage,

The model is trained to improve its ability. The dataset is divided into training dataset and testing dataset.

The training and testing split is in the order of 80/20 or 70/30. It also depends upon the size of the dataset. Training dataset is used for training purpose. Testing dataset is used for the testing purpose.

1.4 Types of Machine Learning

There are 3 types of Machine Learning

1. Supervised Machine Learning
2. Unsupervised Machine Learning
3. Reinforcement Machine Learning

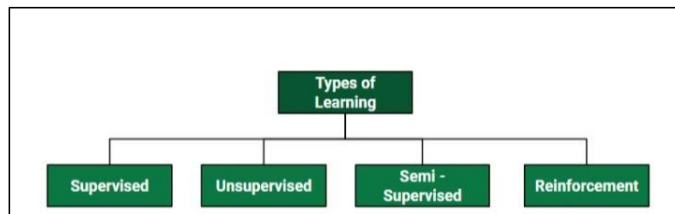


Figure 1.2 Types of Machine Learning

1.5 Supervised Machine Learning :

Supervised machine learning is based on supervision. It means in the supervised learning technique, we train the machines using the "labelled" dataset, and based on the training, the machine predicts the output. Here, the labelled data specifies that some of the inputs are already mapped to the output. More precisely, we can say; first, we train the machine with the input and corresponding output, and then we ask the machine to predict the output using the test dataset.

Supervised machine learning can be classified into two types of problems, which are given below:

- a) Classification : Classification algorithms are used to solve the classification problems in which the output variable is categorical, such as "Yes" or No, Male or Female, Red or Blue, etc

- b) Regression : Regression algorithms are used to solve regression problems in which there is a linear relationship between input and output variables. These are used to predict continuous output variables, such as market trends, weather prediction, etc.

1.6 Unsupervised Machine Learning :

In unsupervised learning, the models are trained with the data that is neither classified nor labelled, and the model acts on that data without any supervision.

The main aim of the unsupervised learning algorithm is to group or categories the unsorted dataset according to the similarities, patterns, and differences.

Unsupervised Learning can be further classified into two types, which are given below:

- a) Clustering : The clustering technique is used when we want to find the inherent groups from the data. It is a way to group the objects into a cluster such that the objects with the most similarities remain in one group and have fewer or no similarities with the objects of other groups.
- b) Association : Association rule learning is an unsupervised learning technique, which finds interesting relations among variables within a large dataset. The main aim of this learning algorithm is to find the dependency of one data item on another data item and map those variables accordingly so that it can generate maximum profit.

1.7 Reinforcement Machine Learning :

Reinforcement learning works on a feedback-based process, in which an AI agent (A software component) automatically explore its surrounding by hitting & trail,

taking action, learning from experiences, and improving its performance.

Reinforcement learning is categorized mainly into two types of methods/algorithms:

- a) **Positive Reinforcement Learning:** Positive reinforcement learning specifies increasing the tendency that the required behaviour would occur again by adding something. It enhances the strength of the behaviour of the agent and positively impacts it.
- b) **Negative Reinforcement Learning:** Negative reinforcement learning works exactly opposite to the positive RL. It increases the tendency that the specific behaviour would occur again by avoiding the negative condition