Synopsis Report

On

CUSTOMER CHURN PREDICTION

Submitted as partial fulfillment for the award of

BACHELOR OF TECHNOLOGY

DEGREE

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CSE-Data Science

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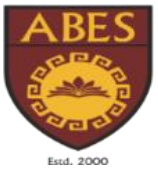

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Student's Declaration

I / we hereby declare that the work being presented in this report entitled **"Customer Churn Prediction."** is an authentic record of my/ our own work carried out under the supervision of Ms. Dimple Tlwari **, Assistant Professor, CSE-DS.** The matter embodied in this report has not been submitted by us for the award of any other degree.

Date:

Signature of student

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(Roll No.:- 2000321540043)

Department: CSE-DS

This is to certify that the above statement made by the candidate(s) is correct to the best of my knowledge.

Signature of HOD	**Signature of Supervisor**
.....	**Mr. Prabhat Singh**
CSE-DS	**Assistant Professor**
Date:	**CSE-DS**

cknowledgement

We would like to convey our sincere thanks to **Ms. Dimple Tiwari** for giving the motivation, knowledge and support throughout the course of the project. The continuous support helps in a successful completion of project. The knowledge provided is very useful for us.

We also like to give a special thanks to the department of Information and Technology for giving us the continuous support and opportunities for fulfilling our project.

We would also like to extend our sincere obligation to....., Head of Department, Information Technology for providing this opportunity to us.

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ABSTRACT

Customer churn analysis and prediction in telecommunication sector is an issue now a days because it's very important for telecommunication industries to analyze behaviors of various customer to predict which customers are about to leave the subscription from telecommunication company. So machine learning techniques and algorithm plays an important role for companies because its help to retail in buisness in today's commercial conditions because gaining a new customer's cost ismore than retaining the existing ones or to gaining to one we can loose more customer . This project focuses on many various machine learning techniques for predicting customer churn through which we can build the classification models such as Logistic Regression, Random Forest and lazy learning and also compare the performance of these models..

Chapter 1

ntroduction

The customer churn is tell us the percentage of the product of the customer of company who stop buying product at a certain period of time , the customer who cease or stop purchasing a product or service for a given period is referred as churner.so, to predict the percentage or analysis we use customer churn prediction. It is mainly use in a telecommunication company, the individual who has opted service from a firm is referred to as Churn .It is also called customer attrition . Many industries build a model like a churn as a common application or prediction for data mining technique. Mobile telephone organizations present across the globe are almost on the verge of building their own churn model. Furthermore, to retain the customers, churn results can be efficiently utilized for various other goals. While performing the analysis using machine learning customer experience tends to provide valuable insights. Some people will change their service providers from time to time because companies can not full fill the service of customer as they like . Increase or decrease in the calling rate will also depend on different job responsibilities. Based on the availability of the data various situations may reflect. mainly the churn prediction use the start up companies because the major company have already spread their services and fame like amazon flipkart . they don't need like this prediction but also uses because to use they can analysis the product rate and predict if it is low selling then provide more sale and discount to increase the production . But in start up company , they have not fame so they do more hard work and always use this production to full fill the needs of customer to increase the selling and production .

hapter 2

elated Work

The related work associated with our project is given below:

1.1. Existing Approaches

- **When customers are unhappy, they stop doing business with you. It's that simple. The more customers that leave, the less you grow. If you want to keep your customers, then you need to address customer churn.**
- **Customer churn has a significant impact on your business as it lowers revenues and profits. Yet surprisingly, more than 2 out of 3 companies have no strategy for preventing customer churn.**
- **Here, we share a list of 12 practical strategies to help you focus on reducing customer churn and build relationships with your existing customers, so that you can keep happy and loyal.**

Customer Churn is one of the most important and challenging problems for businesses such as Credit Card companies, cable service providers, SASS and telecommunication companies worldwide. Even though it is not the most fun to look at, customer churn metrics can help businesses improve customer retention.

1.2. Comparative Analysis of Existing Works

- Examination of Data Set

Data set is a two-dimensional matrix with observation units take part in on the rows and
variables take part in on the columns.
Establishing the Model
For the model to be balanced, stratified sampling is applied according to a variable such as age a
way that the numbers of people in the sub-groups of the churn variable (churn = 1 and churn=
0) is equal.

hapter 3

roject Objective

- The main aim of the project was to predict the churn rate based on Software as a service provider (SaaS), Retail market, Subscription-based businesses
- (media, music and video streaming services, etc.)]
- It gives the customer rating in product by which we analyse the product and

improve the system according to customer

-
- This project will analyze different Machine Learning Algorithms and finds the one with best accuracy.

hapter 4

Proposed

Methodology

Problem Statement-> No business can thrive without it's customers. Means "to run a business we need customer "On the flip side, "customersleaving the business is a nightmare that every business owner dreads! "it is big problem if customer is running away and company will be lost that is big effect to company

1. SK learn model selection :->

- In this model, we are splitting the data , first we need to split the dataframe into x, y or any two variable.
- then use train-test-spilt function(data) to split the data
- use random state to have same data each time you run the program
- use stratify to cut the data with the same portion
- Perform the cleaning by calling the cleaning function

2. Logistic Regression:-

logistic regression is a statistical model and also known as logit model. It is often used to classification and predictive analytic. It is a supervised learning technique which is dependent variable using a given set of independent variables. Logistic regression gives outcome in boolen or binary form like 'yes or no' , 1 or 0, true or false in caterogical or discrete value. It is a linear classification model

3. Random Forest Classifier:-

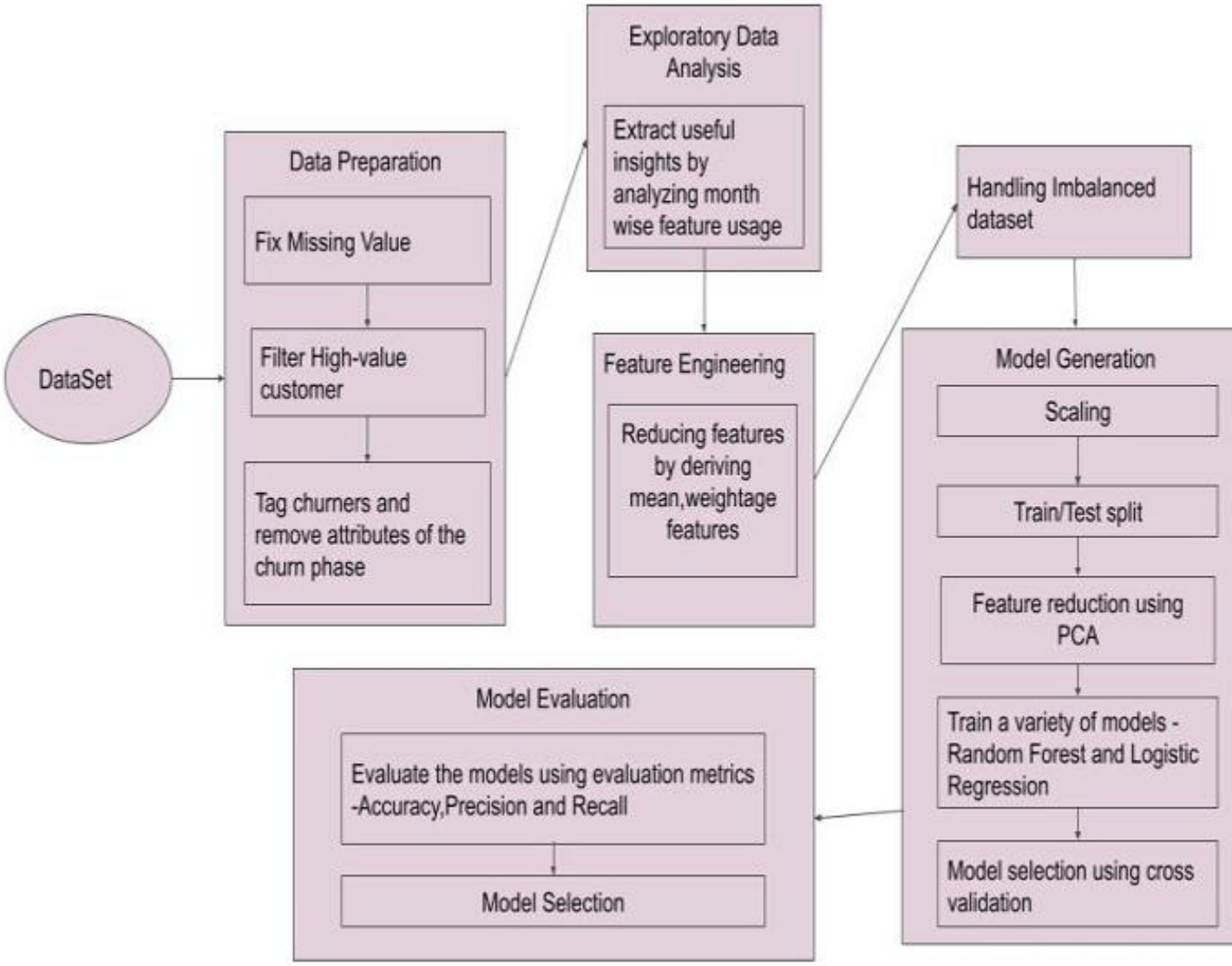
Random forest classifier is a supervised learning technique which is

a popular machine learning . It is a process of combination of multiple classifiers to solve a complex or difficult problem and to improve the performance of the model.Random Forest is a classifier that contains a number of decision nodes on various subsets of the given datasets and takes the average to improve or predict analysis accurately of that dataset. It takes the prediction from each node and based on the majority points of predictions, then it gives the final output. We use random forest because , it takes or make less training time to compare to other algorithm. And it predict the high accuracy in giving output and also it can maintain the accuracy when a delete or large records with the missing value.

hapter 5

esign and Implementation

The design and implementation of our project is as follows:



5.1. Work Flow Diagram

The dataset has been extracted from Kaggle .Python library Numpy is used for the numerical computation and pandas is used for the data manipulation

Matplotlib is used for the graphical representation of results.

Model used here are:

- SK learn classification model

- Logistic Regression
- Random Forest Classification
- Gradient Boosting Classifier

hapter 6

Results and Discussion

The result we got from analyzing the tweets is given below in Fig.3.

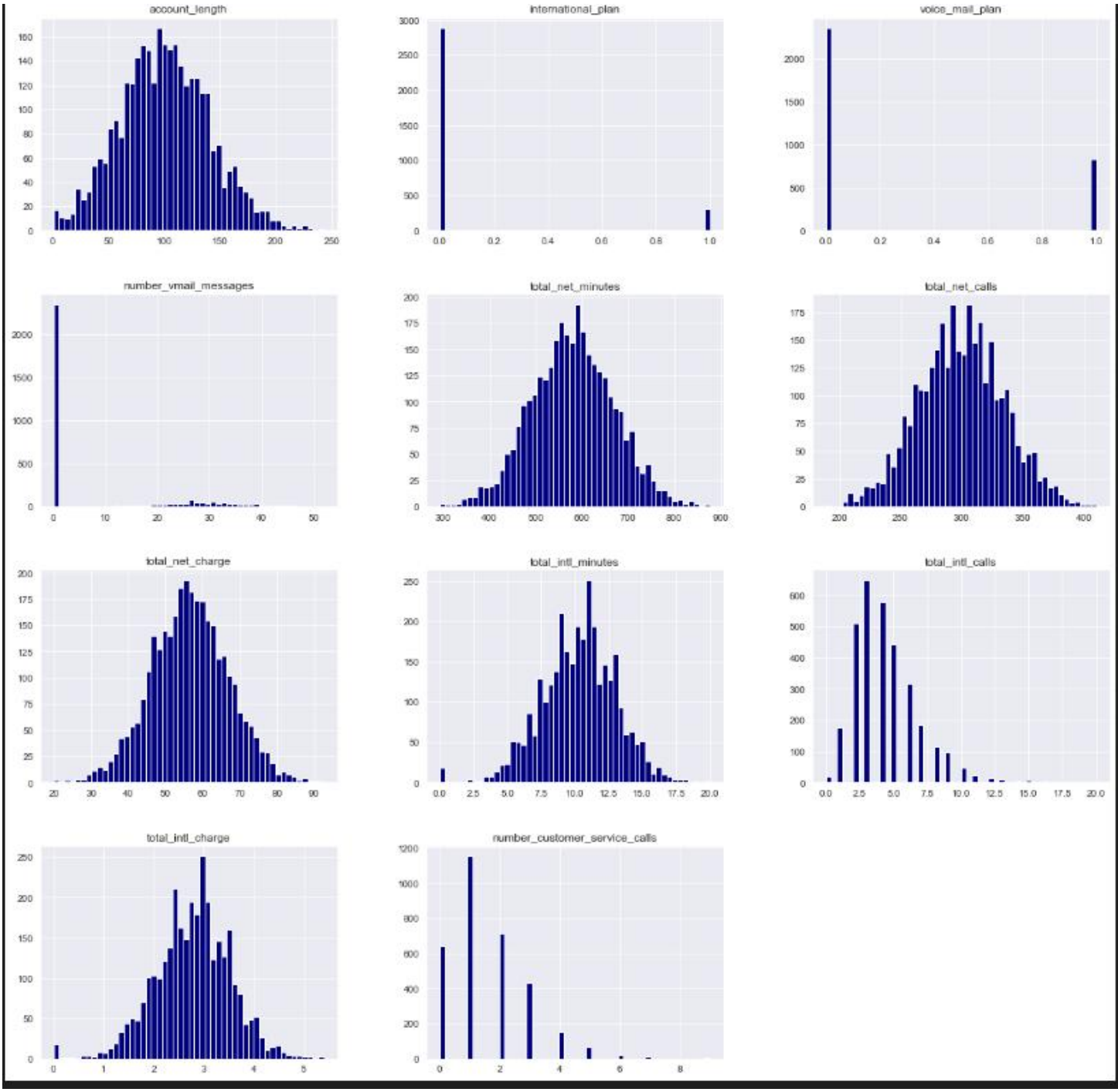


Fig.2. Machine Learning Algorithms Analysis

hapter 7

onclusion and Future Scope

Now to solve the problem statement we use **dataset ,** by dataset we take data of user of product or service to predict churn .

The formula to calculate the customer churn rate:-

CCR = (customer beginning of month-customer ending of month)

Customer beginning of month

By using machine learning we can solve the churn rate .So , there are some following method and models which is uses to predict the churn rate

- SK learn classification model
- Logistic Regression
- Random Forest Classification

- Gradient Boosting Classifier

Every user of a product or a service is assigned a prediction value that estimates their state of chum at any given time. This value may be based on multiple factors such as the user's demographic, their browsing behavior and historical purchase data, among other details .

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