

# Employee Future Prediction

# Outline

01

## Introduction

Goal of Project

02

## Data Description

Describe the data

03

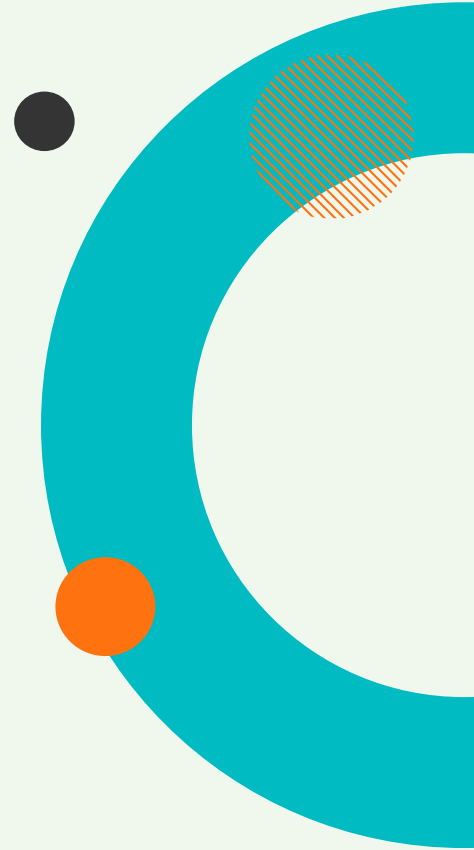
## Data Preprocessing

Analysis and visualization

04

## Machine learning Model


Classification Models





# Introduction

The goal of this project was to use classification models to predict the future of an employee in order to help the company to know to when give them a promotion to let them stay for a longer time. also, it help the company to make a plan to fill the empty position with temporary employees and help the company to know when to give them a promotion to let them stay for a longer time.



# Data Description

- The data pertains to a company's HR department wants to predict whether some employees would leave the company in next 2 years. I will build a predictive model that predicts the prospects of future and present employee.
- The data includes the following features:
  - Education
  - JoiningYear
  - City
  - PaymentTier
  - Age
  - Gender
  - EverBenched
  - ExperienceInCurrentDomain
  - LeaveOrNot





# Data Preprocessing

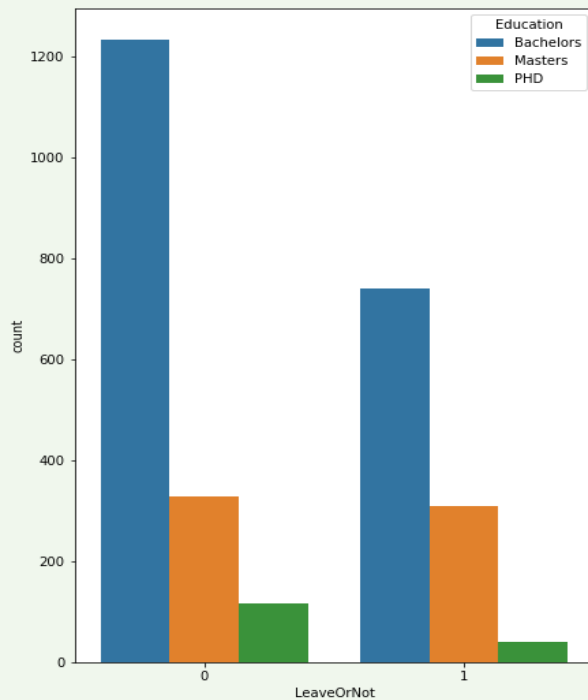
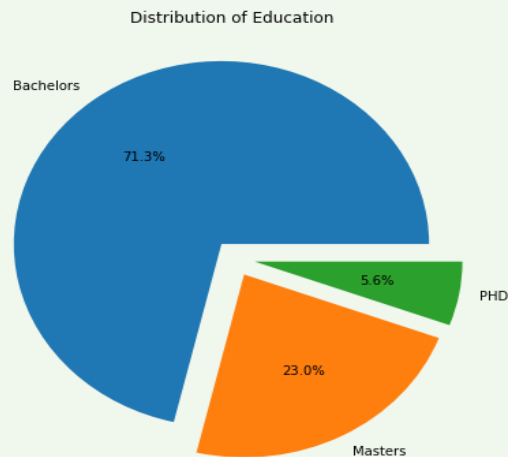
Analysis and visualization



# Analysis and visualization

## - Education

71.3% of the Employees are Bachelors in this dataset followed by Masters and PHD.  
Employees with Bachelors Education are more likley to leave

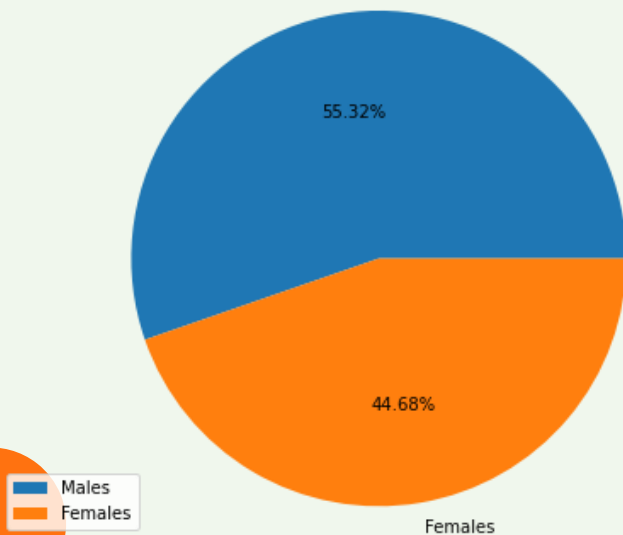


# Analysis and visualization

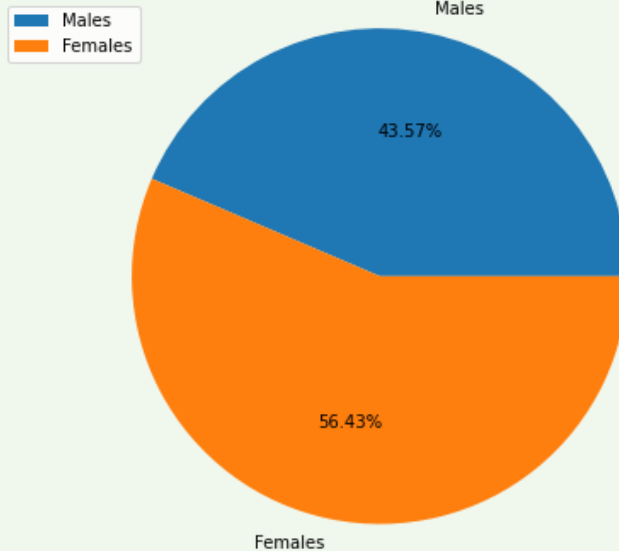
## - Gender

Female Employees are more likley to leave their job.

Distribution Of Males And Female



Distribution Of Males And Females Leaving

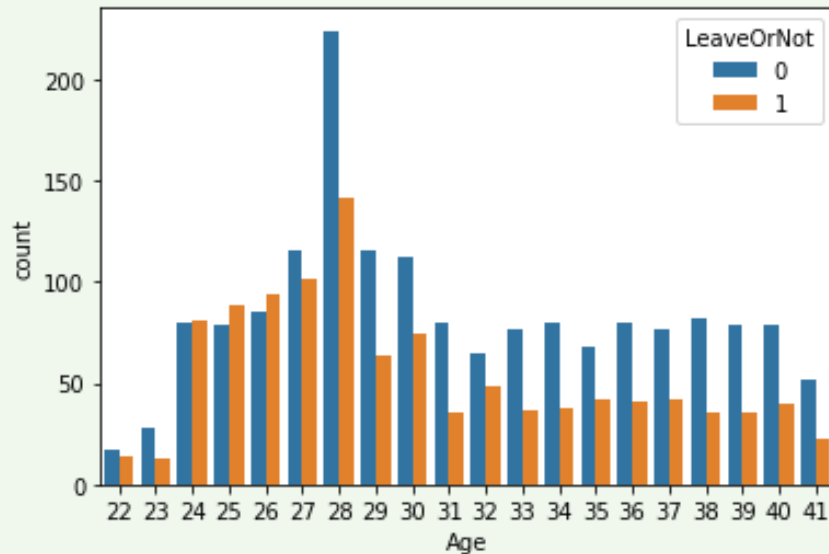
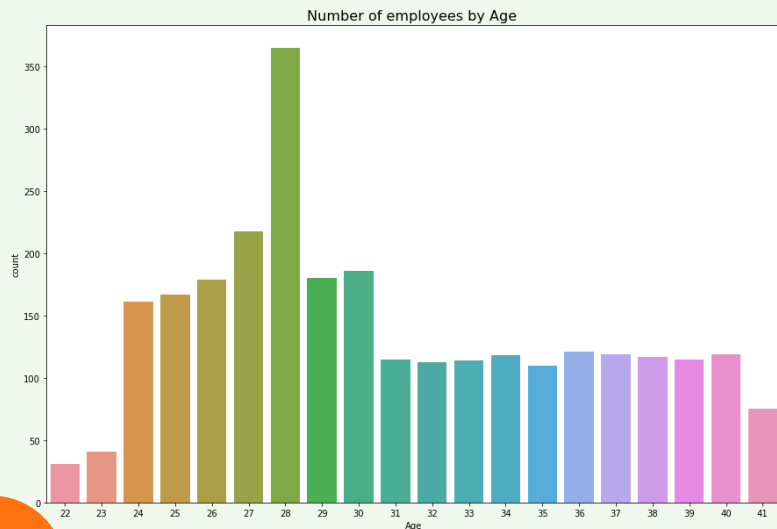


# Analysis and visualization

## - Age

Most of Employees are between 24 to 30 years old.

Most of Employees are between 24 to 28 years old are more likely to leave.

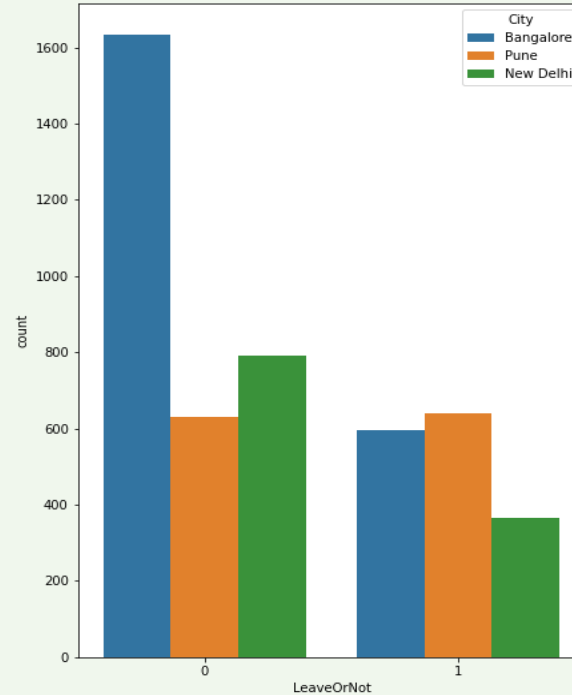
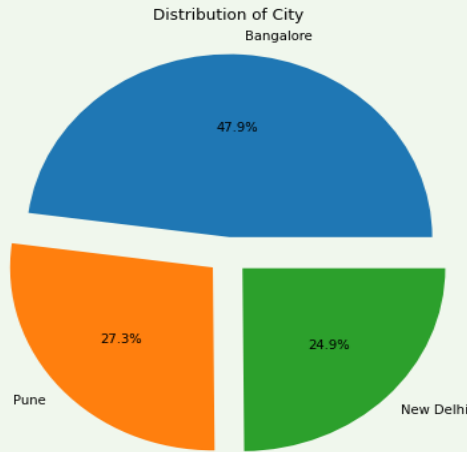




# Analysis and visualization

## - City

47.9% employee are from Bangalore. Bangalore city employee are more likley to leave

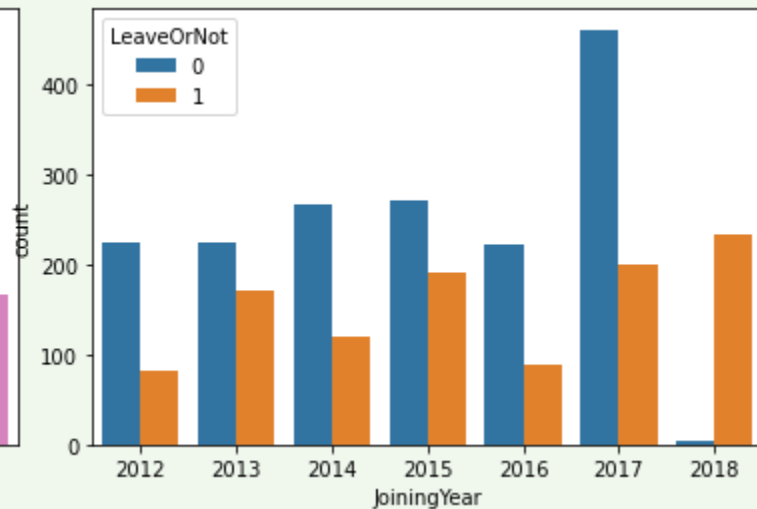
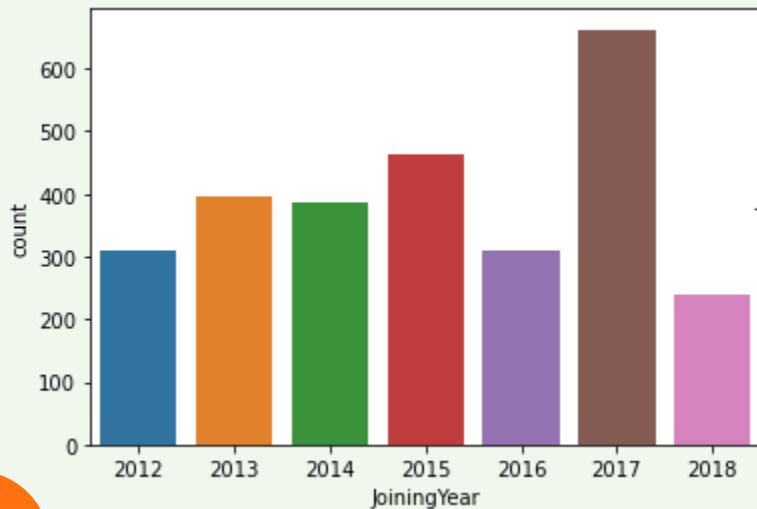


# Analysis and visualization

## - JoiningYear

Most of employee joined in 2017 as shown in chart.

Most number of employee who left the company were from year 2018, followed by year 2017 and 2015





# Machine learning Model

Classification Models



# Classification Models

## SVC

----- SVC scores -----

SVC accuracy_score:	0.6623711340206185
SVC recall_score:	0.0
SVC precision_score:	0.0
SVC f1_score:	0.0

## GaussianNB

----- GaussianNB scores -----

GaussianNB accuracy_score:	0.6881443298969072
GaussianNB recall_score:	0.5457317073170732
GaussianNB precision_score:	0.455470737913486
GaussianNB f1_score:	0.49653259361997226

## KNeighborsClassifier

----- KNeighborsClassifier scores -----

KNeighborsClassifier accuracy_score:	0.7766323024054983
KNeighborsClassifier recall_score:	0.7224080267558528
KNeighborsClassifier precision_score:	0.549618320610687
KNeighborsClassifier f1_score:	0.6242774566473989

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## QDA

----- QDA scores -----

QDA accuracy_score:	0.7233676975945017
QDA recall_score:	0.6290909090909091
QDA precision_score:	0.4402035623409669
QDA f1_score:	0.5179640718562875

## DecisionTreeClassifier

----- DecisionTreeClassifier scores -----

DecisionTreeClassifier accuracy_score:	0.8075601374570447
DecisionTreeClassifier recall_score:	0.7302452316076294
DecisionTreeClassifier precision_score:	0.6819338422391857
DecisionTreeClassifier f1_score:	0.7052631578947369

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## MLP

----- MLP scores -----

MLP accuracy_score:	0.6623711340206185
MLP recall_score:	0.0
MLP precision_score:	0.0
MLP f1_score:	0.0