

Placement prediction Accuracy finding using ML&DL

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Abstract

The campus placement is playing an important role in the education system. Now a day the students before take the admissions into the colleges, at counseling stages they are choosing a specific colleges which will offer the campus placement requirement. Because without having, the campus placement at the outside the students are getting the job very hardly. So, they decided to before leaving the college they have to get job. For them the placement chance prediction system is a useful approach. In this approach, the students came to know how to prepare and which subjects need to be preparing for gaining in campus placement tests. But conducting the test with paper work become a time complexity and tedious work, so by implementing the software application to conducting online test application then it can become easy and reduce the time consuming process. This application can provide number of tests to improve the student academic performance. For student placement prediction we are using machine learning techniques at back ground level. In machine learning algorithms, the multilayer perceptron of neural network deep learning algorithms is to use classify the placement chance prediction. In the prediction system, we require training dataset to predict placement with current participant student as testing dataset. The senior and super senior data records can be take it as training dataset. The experimental results show that our proposed system is providing accurate results.

Keywords: - ML, DL, Placement prediction, Accuracy, Metrics.

1. INTRODUCTION

Everyone knows that in the world that admittance of students in an educational institution relay on the student campus placements. Because, the campus placement is one of the reason evaluate for regulate the performances of the college or

institution. Here every institution works hard to get the good placements to their students. The huge student records will be store in educational institution systems. These student's records are very profitable information but is full-sized data to understand for everyone entirely. In the

education analysis searching useful features in this data is a necessity task. The figure out the placement feasibility of students in the college who does not have good communication skills, knowledge and attitude score does not make a sense to get placement results. So, there is a necessity for recognize those institute students from the number of students who have good skills and attitude knowledge for them getting placement chance will help to them achieve their goal and gain lot of time. Here giving the campus requirement subjects as input for the study is the best group of students having better skills score for better chance of placement which is determined by applying machine learning algorithms and other require data preprocessing methods. The numbers of students in degree or professional degree take a course for securing a good job. So, in the student's life after completion of their education taking a good career decision for the placement is a crucial task. Here higher education is can be divided into two ways such as non-professional and professional education systems. In the professional education system the students can get professional knowledge to get software jobs in corporate sectors. The professional education system is a technical oriented system or it may be

totally focus on improving technical skills of candidate. Mostly B.Tech and MCA courses are produce professional computer technological tutoring to students. This computer technology provides hands-on experience which related to IT and prepare to students for merit to stand in promote information industry. The prediction of institution students where they can get placement after the finalization of their respective courses will gain to improve knowledge of students for proper carrier development. It uses for staff members of institute and it can make fame of institute in previous nearly classification of organizations in the empirical of information technology education.

2. RELATED WORK

The dream of student is well settled in their life. The responsibility is on the educational institution to guide them by offering good placement opportunity. Here all students cannot be get placement opportunity so the objective of this system is to predict campus placement chance of the classified students who have chances of get placement and figure out the placement percentage of the educational organizations for the recent academic year. This prediction system will alert to the colleges to estimate the status of the college academic performance in

comparison with other colleges then they can take the better studies qualities to improve it. To achieve this proposed the prediction model with machine learning classifier the name was called artificial neural networks. The institutions of admission and reputation are mainly rely on campus placements. In this system, the main objective is to determine the senior and super senior student's huge data and predict placement chance of the current year's students of the institution. Here the deep learning model proposed to predict the student's placement chance of companies. The training dataset is collected from Kaggle web repositories for placement chance prediction. For every year, the Information Technology industries are paying huge money to recruit the students by campus placement. So that essential knowledge of the students can reduces the financial issues. In deep learning, they may contain many classifiers algorithms to predict the placement chance. But in this proposed system we are implementing ANN algorithm with MLPClassifier.

3. IMPLEMENTATION

3.1 System model

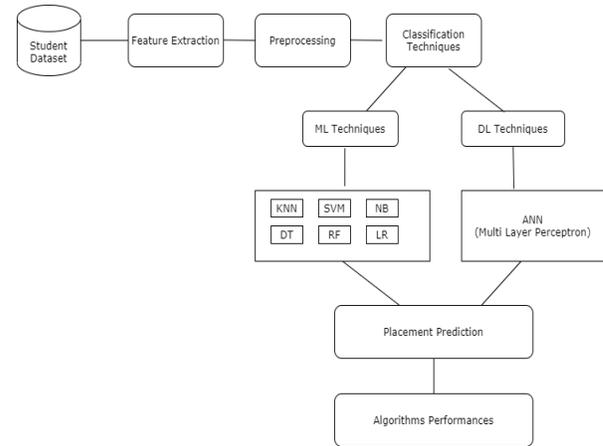


Figure.1 System Architecture

The figure.1 depicts about system model. In this model admin can login with their credentials into the application and upload the required dataset, view the dataset and as well as admin can upload the online question papers and view that question papers details, finally admin can view the student placement details who got placed in specific companies. At the student side, students registered and login with this application and admits online test such coding skills, technical skills and aptitude skills. After collecting results from all online test, given the inputs to training model to predict the placement chance.

3.2 System Modules:

Administration:

The administrator can execute the below modules:

Upload Dataset

In this module, the admin can upload placement dataset in local database. Here admin can take the .xlsx file as input file. It can provide the file upload form with validations like field required parameter.

View Dataset

In this module, when admin can click on view dataset then it will display placement details in table format. The placement details are fetching from local MySQL database.

Upload and view Questions

In these modules, admin can first store the question paper details as file format in to database. It can take .xlsx file format as input file, by clicking the upload questions link this module can be executed as well as when admin click on view questions module then it can display the all questions details with table format which is fetching from database.

Placement

In this module, admin can monitor the student placement details. Here admin can know that how many people are selected in the campus selections.

Student:

In this system, student can follow the below modules:

Signup

In the signup module, student can register in to this system with the input as name, roll

number, password, mobile number and email id. When students click on signup link then they can get registration form and it has form validations to front end validations. This module can check student roll number availability to preventing duplicate student roll numbers.

Online Test

After registered successfully into this system, student can login with their credentials and this system can conduct the online test for improving student knowledge. Here student can write the tests one after another like first admit the coding skill testing, aptitude skill testing and finally technical skill test need to submit. Later getting the all results from all tests those results submit to deep learning techniques to predict the student placement chance. At the background the ANN algorithm can apply and retrieve the student placement chance prediction status.

3.3 Implementation of Deep learning Algorithm**ANN:**

The neural networking is biologically inspiring computational networks. From different types of Neural Networks, in this system, we are implementing MLP classifier with back propagation learning model. In ANNs, the multi layer classifier, is the most

From the figure.4, it shows the questions and answers related dataset. This dataset contains 2046 records with 9 columns. Here *qncolumn* indicate the question name and *A, B, C, D, E* is their related answers and *Ans* column indicate the answers of that questions. Finally, *level* representing the testing level it is like coding, aptitude, technical skills.

3.5 Methodology

Preprocessing:

```
from sklearn.neural_network import MLPClassifier
import numpy as np
import pandas as pd
import sys
import csv
```

From the above snippet this system imported the python libraries, where *MLPClassifier* for prediction and *pandas* and *numpy* are loading the dataset from *.csv* format. The *numpy* array is using for converting one dimensional to multi dimensional array.

Database Connection:

```
import mysql.connector
class DBConnection:
    @staticmethod
    def getConnection():
        database = mysql.connector.connect(host="localhost")
        return database
if __name__ == "__main__":
    print(DBConnection.getConnection())
```

The above snippet shows the database connection code. In this code we importing *mysql.connector* module to connecting MySQL database with database name *stdntplacement*.

Fetching from database:

The below snippet is shows that retrieving the placement dataset from database. The snippet declare the list variable to store the training dataset in dimensional format. In the *x_train* list contain dependent attributes values and *y_train* stores the independent attribute values.

```
try:
    trainset = []
    database = DBConnection.getConnection()
    cursor = database.cursor()
    cursor.execute("select CodingSkills,AptitudeSkills,TechnicalSkills,Projects,Internships,AcademicPerformance,Placed from dataset")
    row = cursor.fetchall()
    y_train = []
    trainset.clear()
    y_train.clear()
    for r in row:
        x_train = []
        x_train.clear()
        x_train.append(float(r[0]))
        x_train.append(float(r[1]))
        x_train.append(float(r[2]))
        x_train.append(float(r[3]))
        x_train.append(float(r[4]))
        x_train.append(float(r[5]))
        x_train.append(float(r[6]))
        y_train.append(r[7])
        trainset.append(x_train)
    trainset = np.array(trainset)
```

Preparing Testing dataset:

After written the online test by students, the results of coding skills, technical skills and aptitude skills outputs will be return it and these values could be written into *live.csv* file for testing dataset. Finally, the training dataset and testing dataset both are given as input to machine learning model. The below snippet has the shows that preparing testing dataset process.

```

cs = sys.argv[1]
ask = sys.argv[2]
ts = sys.argv[3]
prjcts = sys.argv[4]
isk = sys.argv[5]
ap = sys.argv[6]

ta = ['CodingSkills', 'AptitudeSkills', 'TechnicalSkills', 'Projects', 'Internships', 'AcademicPerformance']
tf = [int(cs), int(ask), int(ts), int(prjcts), int(isk), int(ap)]
list = []
list.clear();
list.append(ta)
list.append(tf)

with open('live.csv', 'w') as csvFile:
    writer = csv.writer(csvFile)
    writer.writerows(list)

csvFile.close()
tf = pd.read_csv('live.csv')
testdata = np.array(tf)
# print("Peod=", testdata)
testdata = testdata.reshape(len(testdata), -1)
#print("Peod=", testdata)

# ANN
clf = MLPClassifier()
clf.fit(trainset, y_train)
result = clf.predict(testdata)
print(result[0])

```

Classification:

After preparation of training and testing datasets, this system can create the classification of MLPClassifier object which is imported from *sklearn.neural_network* packages. While invoking the *fit ()* method our training model will be build with *x_train* and *y_train* lists. Here when we execute *predict ()* function with input value testing dataset with help of multi layer classifier object then it returns the output as predicted value student placement chance. The below snippet is giving the explanation of building the classification model and prediction of student campus placement.

```

# ANN
clf = MLPClassifier()
clf.fit(trainset, y_train)
result = clf.predict(testdata)
print(result[0])

```

4. EXPERIMENTAL RESULTS

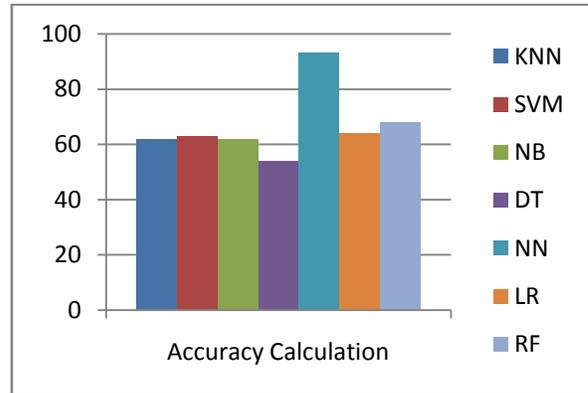


Figure.5 Comparisons Accuracy between all Classifiers

Figure.6 Calculation of Precision between all Classifiers

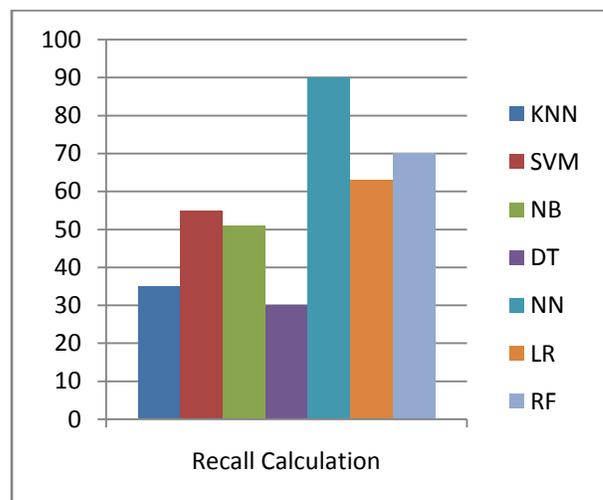
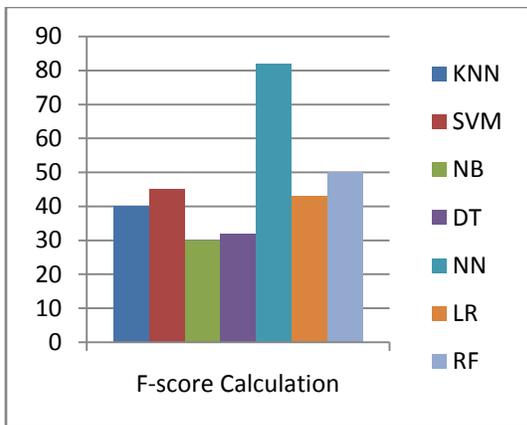
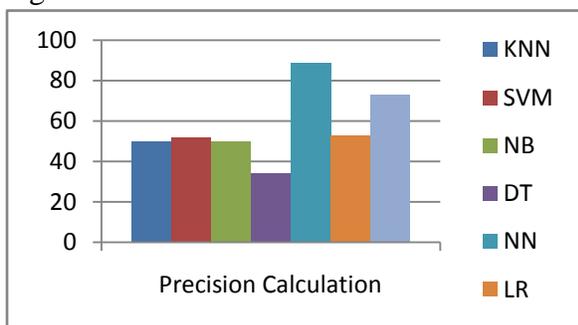


Figure.7 Calculation of Recall between all Classifiers



Fig



re.8Calculation of F-Score between all Classifiers

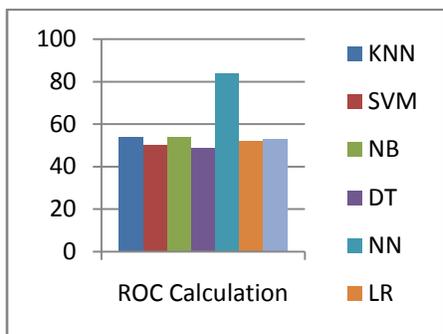


Figure.9Calculation of ROC between all Classifiers

Table.2 Metrics of all classifiers

Algorithm	Accuracy	Precision	Recall	F-Score	ROC
KNN	62	50	35	40	54
SVM	63	52	54	45	50
NB	62	50	50	30	54
DT	54	36	28	32	49
NN	93	89	90	84	84
LR	63	52	64	43	52
RF	64	73	70	50	53

From the above all experimental results the deep learning technique MLP classifier of neural networking model giving good accuracy 92% compare with remaining machine learning algorithms.

5. CONCLUSION

We come to conclusion that over application can provide number of tests to improve the student academic performance. For student placement prediction we are using machine learning techniques at back ground level. In machine learning algorithms, the multilayer perceptron of neural network deep learning algorithms is to use classify the placement chance prediction. In the prediction system, we require training dataset to predict placement with current participant student as testing dataset. The senior and super senior data records can be take it as training dataset. The experimental results show that our proposed system is providing accurate results.

6. REFERENCES

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