GOVERNMENT OF TAMILNADU

Naan Muthalvan - Project-Based Experiential Learning

IDENTIFYING PATTERNS AND TRENDS IN CAMPUS PLACEMENT USING MACHINE LEARNING

Submitted by

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DEPARTMENT OF COMPUTER SCIENCE

BONAFIDE CERTIFICATE

This is to certify that this is a bonafide record of the project entitled **IDENTTIFYING PATTERNS AND TRENDS IN CAMPUS PLACEMENT USING MACHINE LEARNING** done **By MS. M. VIJAYA LAKSHMI – (20626ER035), MS. B. PONMANI-(20626ER024), MS. S.R. RITHIKKA– (20626ER027), MS. M. SOUNDARYA– (20626ER030)** This is submitted in partial fulfillment for the award of the degree of **Bachelor of Science in Computer Science in GOVERNMENT ARTS COLLEGE FOR WOMEN, NILAKOTTAI** during the period of December 2022 to April 2023.

Project Mentor(s)   **Head of the Department**

Submitted for viva-voce Examination held on _____

INTERNAL EXAMINER   **EXTERNAL EXAMINER**

CONTENT

IDENTIFYING PATTERNS AND TRENDS IN CAMPUS PLACEMENT USING MACHINE LEARNING

1.INTRODUCTION

Manual Training and Placement which is done at various colleges is by human intervention due to which there is a maximum chance of errors. The major problem is searching and updating of the student data. Placement officers have to manage the student's profile and their documents. Placement Officer has to collect the information of various companies who comes for recnatment. They have to arrange profiles of students according to various streams and notify them each time according to company requirements. Placement officers submit the information of students and if any changes or updates are required in the profile of any student, it has to be done manually. This process is so difficult and tedious when the number of users increases. This is tedious and time- consuming. Chances of missing data are also possible. It is also difficult for collecting, managing, and updating student data as the number of students increases[3]. "Placement Management System like many other placement management web sites, provides informa- tion on placement providers and the placements and also keeps up to date information of all students. It is a platform where students can view and assess their opportunities. The system will be having different types of accounts for different types of users such as Admin, Student, HODs, and tutor. A profile for each student is created with the necessary credentials for the portal. The system uses MySQL. for database management and will sort the data of the student based on eligibility criteria demanded by the respective companiesand a list of eligible candidates will be prepared and theycan choose if they are interested to attend that particular drive or test. Based on this a final data-set is created and the interested candidates will be registered automatically by the system. This way it reduces the work of college staff or faculty from the problems caused by human error andwastage of time doing all processes manually.

1.1 Overview

Campus recruitment is a strategy for sourcing, engaging and hiring young talent for internship and entry-level positions. College recruiting is typically a tactic for medium- to large-sized companies with high-volume recruiting needs, but can range from small efforts (like working with university career centers to source potential candidates) to large-scale operations (like visiting a wide array of colleges and attending recruiting events throughout the spring and fall semester).Campus recruitment often involves working with university career services centers and attending career fairs to meet in-person with college students and recent graduates.Our solution revolves around the placement season of a Business School in India. Where it has various factors on candidates getting hired such as work experience,exam percentage etc., Finally it contains the status of recruitment and remuneration details.

We will be using algorithms such as KNN, SVM and ANN. We will train and test the data with these algorithms. From this the best model is selected and saved in .pkl format. We will be doing flask integration and IBM deployment.

1.2PURPOSE

Placement Management System manages student information in the college with regard to placement. It improves existing system .It has the facility of maintaining the details of the student, thereby reducing the manual work. It will save time and energy which are spending in making reports and collecting data. Placement Management System can be accessed throughout the college with proper login provided.

2.PROBLEM DEFINITION & DESIGN THINKING

2.1Empathy map
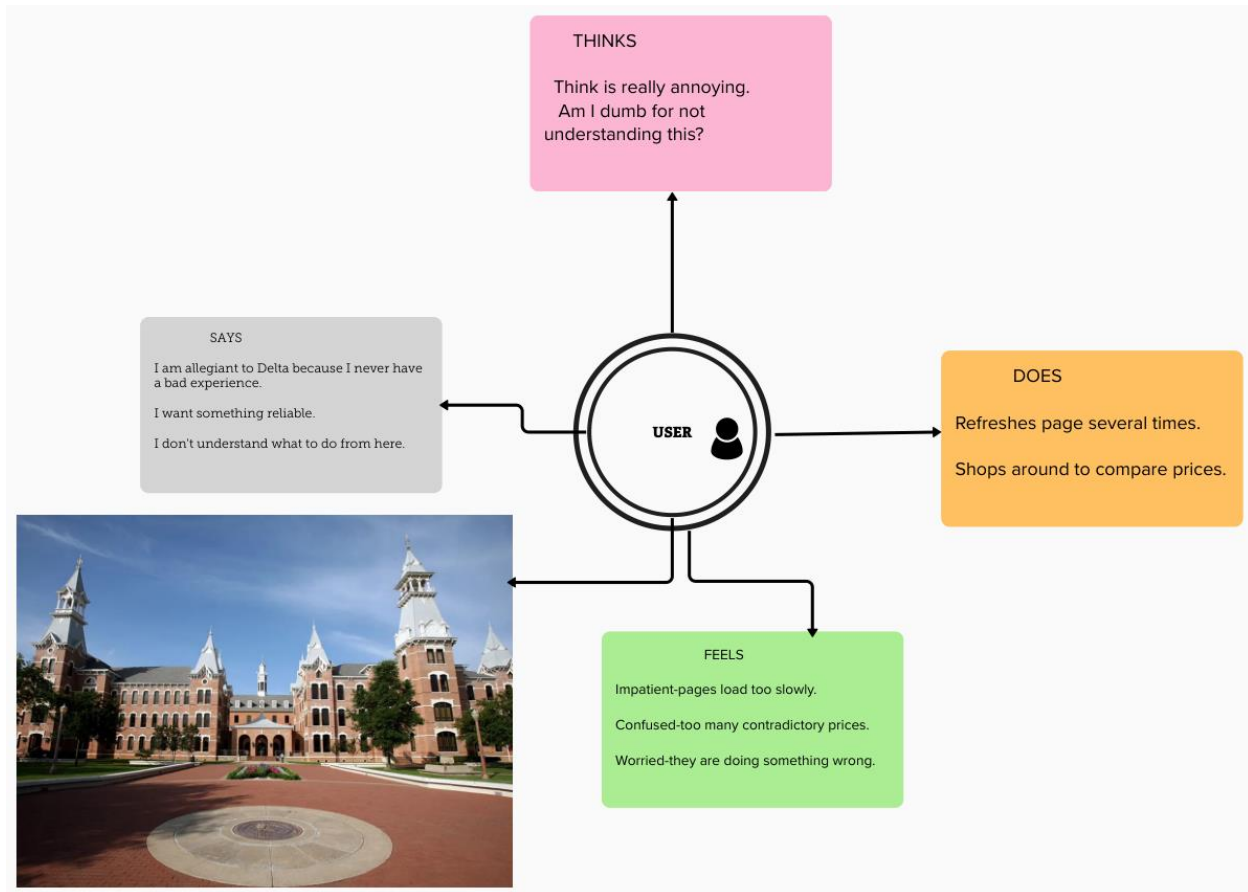
2.2Ideation & Brainstorming map
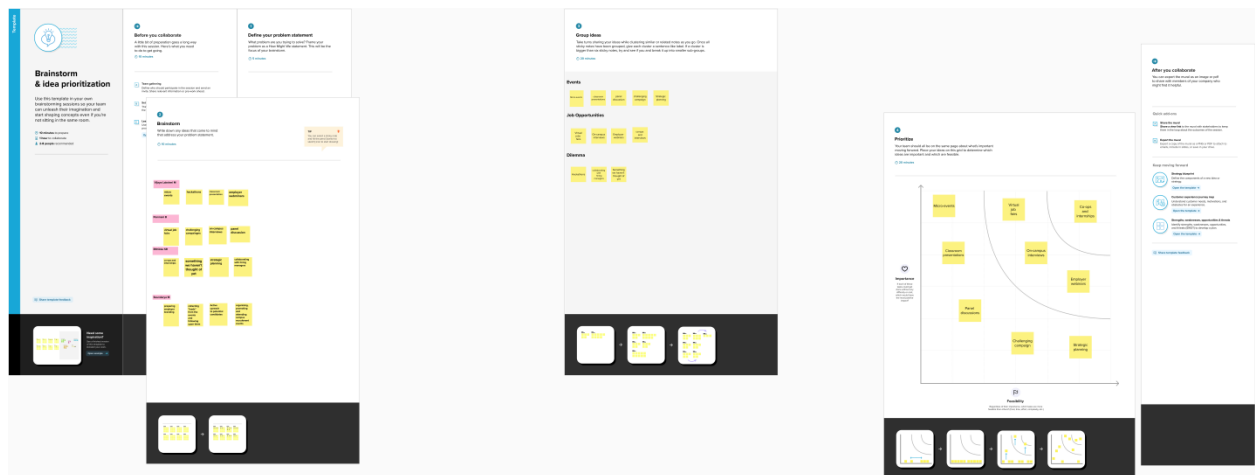
3.RESULT

PLACEMENT PREDICTION

The Prediction is : 1

0 represents Not-Placed
1 represents Placed

ST. JOSEPH'S
COLLEGE OF ENGINEERING
AND TECHNOLOGY,
- P A L A I -

Placement Management
System

Signin

Admission number

Password

Save credentials

Signin

Forgot password? Reset

Create Drives

Basic Details

Company Name
`Company Name`

Description
`Drive Description`

Date	Time	Last date to register
dd-mm-yyyy	--:--	dd-mm-yyyy

Venue
`Venue`

Form Details

Select form details

Submit

Dashboard

- Placements
- Student Details
- Department
- Invoice
- Full calendar
- File upload
- Image cropper

Other

Active upcomming placement drives

Tata Consultancy Service

Mumbai India

Tata Consultancy Services Limited is an Indian multinational information technology service and consulting company headquartered in Mumbai, Maharashtra, India. It is a subsidiary of Tata Group and operates in 149 locations across 46 countries. TCS is the second largest Indian company by market capitalization.

Date	Time	Venue
20 November 2019	9 AM	St. Francis Hall

Infosys

Bangalore India

Infosys Limited is an Indian multinational corporation that provides business consulting, information technology and outsourcing services. It has its headquarters in Bangalore, Karnataka, India.

Date	Time	Venue
21 November 2019	9 AM	DB 3 Seminar Hall

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4.ADVANTAGES & DISADVANTAGES

ADVANTAGES

- Saves Time & Efforts
- Improved Retention rates
- Getting New Knowledge & Skills
- Quick Learners & Skills.
- Quick Learners & Multi-tasking candidates....
- Good relationship between Organization & Campus...
- High Volume of Talent Pool. ...
- Resumes are the only way to select a candidate. .
- Limited Staff & Time

DISAVANTAGES

- Fresh candidates selected through campus placements require adequate training for work.
- This is an additional expense for the company
- Also, students can't work with their dream company and will have to remain satisfied with the company that recruits them during campus selection.

5.APPLICATION

By streamlining the recruitment process and providing a platform for companies to connect with students, a Campus Recruitment System Project can help colleges and universities to provide better career opportunities for their students and improve the overall efficiency of the recruitment process.

6.CONCLUSION

Maximum work goes manually in the present placement system which makes it take time to avail changes. This includes main problems like searching for the data of students and sorting them along with it. Also, updating student data is a cumbersome job and does not have a method to notify the stu- dent in time which makes the management of the placements very difficult. In the proposed system, all of these problems become automated. The registration of the student for an upcoming placement, the addition of a new user, notifying students, sharing information, the privacy of the student, etc is all met. The admin validates the information and gives the student list based on the criteria required which otherwise would have been very difficult to manage.

7.FUTURE SCOPE

The project has a wide scope. Our project mainly helps in improving productivity and makes use of utilization of resources. There is no duplication of work as this was not the case when done manually. Thus it reduces labor and increases morale. The system intends userfriendly operations which may resolve ambiguity. The project is a total management and informative system, which provides the up-to-date information of all the students in the college. Our system also help the college to overcome the difficulty in keeping records of hundreds of students and searching for a student eligible for recruitment criteria from the whole thing. It helps in effective and timely utilization of resources. The project facilitates user friendly, reliable and fast management system. The placement officer itself can carry out operations in a smooth and effective manner. They need not concentrate on record keeping. The college can maintain computerized records thus reducing paper work, time and money.

8.APPENDIX

8.1 Source Code

```
import numpy as np

import pandas as pd

import os

Import seaborne as sns

Import matplotlib.pyplot as plt

from sklearn import svm

from sklearn.metrics import accuracy_score

from sklearn.neighbors import KNeighboursClassifier

from sklearn import matrics

from sklearn.model_selection import cross_val_score

from sklearn import preprocessing

from sklearn.model_selection import train_test_split

from sklearn.preprocessing import StandardScaler

import joblib

from sklearn.metrics import accuracy_score

df= pd.read_csv(r"/content/collegePlace.csv")

df.head()

df.info()
```

```python
df.isnull().sum()

deftransformationplot(feature):

plt.figure(figsize=(12,5))

plt.subplot(1,2,1)

sns.distplot(feature)

transformationplot(np.log(df['Age']))

df=df.replace(['Male'],[0])

df=df.replace(['Female'],[1])

df=df.replace(['Computer Science','ImformationTecnology','Electronics and
Communication','Mecanical','Electronical','Civil'],[0,1,2,3,4,5])

df=df.drop(['Hostel'],axis=1)

plt.figure(figsize=(12,5))

plt.subplot(121)

sns.distplot (df['CGPA'],color='r')

plt.figure(figsize=(12,5))

plt.subplot(121)

snsdistplot(df['PlacedOrNot'],color='r')

plt.figure(figsiz=(18,4))

plt.subplot(1,4,1)

sns.countplot(data['Gender'])

plt.subplot(1,4,2)
```

```python
sns.countplot(data['Education'])

plt.show()

plt.figure.(figsize=(20,5))

plt.subplot(131)

sns.countplot(df["PlacedOrNot"],hue=df['CGPA'])

sns.swarmplot(df['PlacedOrNot'],df['CGPA'], hue =df['Steam'])

sns.swarmplot(df['PlacedOrNot'],df['CGPA'],hue=df['Stream'])

sc=StandardScaler()

x_bal=sc.fit_transform(x_bal)

x_bal=pd.DataFrame(x_bal,columns=names)

X=standardized_data

Y=df['PlacedOrNot']

X_train,X_test,Y_train,Y_test=train_test_split(X,Y,test_size=0.2,stratify=Y,random_state=2)

classifier=svm.SVC(kernel='linear')

classifier.fit(X_train,Y_train)

SVC(kernel='linear')

X_train_prediction=classifier.predict(X_train)

training_data_accuracy=accuracy_score(X_train_prediction,Y_train)

print('Accuracy score of the training data :',training_data_accuracy)

Accuracy score of the training data :0.7685497470489039
```

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```python
best_K={"Regular":0}

best_score={"Regular":0}

for k in range(3,50,2):

knn_temp=KNeighborsClassifier(n_neighbor=k)

 knn_temp.fit(X_train,Y_train)

 knn_temp_pred=knn_temp.predict(X_test)

 score=metrices.accuracy_score(Y_test,knn_temp_pred)*100

 if score>=best_score["Regular"]and score <100

 best_score["Regular"]=score

 best_k["Regular"]=k

 print("-----Results----\nk:{}".format(best_k,best_score))

knn=KNeighborsclassifier(n_neighbors=best_k["Regular"])

knn.fit(X_train,Y_train)

knn_pred=knn.predict(X_test)

tested=accuracy_score(knn_pred,Y_test)

import tensorflow as tf

from tensorflow import keras

from keras.models import sequential

from tensorflow.keras import layers

classifier=sequential()
```

```
classifier.add(keras.layers.Dense(6,activation='relu',input_din=6))

classifier.add(keras.layers.Dropout(0.50))

classifier.add(keras.layers.Dense(6,activation='relu'))

classifier.add(keras.layers.Dropout(0.50))

classifier.add(keras.layers.Dense(1,activation='sigmoid'))


loss_1=tf.keras.losses.Binarycrossentropy()

classifier.compile(optimizer='Adam',loss=loss_1,metrices=['accuracy'])

 classifier.fit(X_train,Y_train,batch_size=20,epochs=100)

 import pickle

 pickle.dump(knn,open("placement.pkl",'wb'))

 model=pickle.load(open('placement.pkl','rb'))
```

```html
<section id="hero"class="d-flex flex-column justify-content-center">

 <div class="container">

 <div class="row justify-content-center">

  <div class="col-xl-8">

   <h1>Identifying Patterns and Trends in Campus Placement Data using Machine Learning</h1>

   </div>

   </div>

   </div>
```

```html
</section><!----End Hero---->

<section id="about"class="about">

<div class="container">

<div class="section-title>

<h2>Fill the details</h2>

</div>

<div class="row content">

<div class="first">

<form action="{{url_for('y_predict')}}"method="post">

<input type="number" id="sen2"name="sen2"Placeholder="Gender M(0),F(0)">

<input type="number" id="sen3"name="sen3"Placeholder="Stream
CS(0),IT(1),ECE(2),Mech(3),EEE(4)Civil(5)">

<input type="number" id="sen4"name="sen4"Placeholder="Interships">

<input type="number" id="sen5"name="sen5"Placeholder="CGPA">

<input type="number" id="sen6"name="sen6"Placeholder="Number of backlogs">

<input type="submit"values="submit">

</form>

</div>

</div>

</div>

</section><!----End About UsSection---->
```

```html
<section id="hero"class="d-flex flex-column justify-content-center">
<div class="container">
<div class="row justify-content-center">
<div class="col-xl-8">
<h1>The prediction is :{{y}}</h1>
<h3>0 represents Not-Placed </h3>
<h3>1 represents Placed </h2>
</div>
</div>
</div>
</section><!-- End Hero -->
```
```python
from flask import Flask,render_template,request
app=Flask(_name_)
import pickle
import joblib
model=pickle.load(open("placement123.pkl",'rb'))
ct=joblib.load('placement')
@app.route('/')
def hello():
 return render_template("index.html")
@app.route('/guest',methods=["POST"])
def guest():
sen1=request.form["sen1"]
sen2=request.form["sen2"]
sen3=request.form["sen3"]
sen4=request.form["sen4"]
sen5=request.form["sen5"]
sen6=request.form["sen6"]
@app.route('/y_predict',methods=["POST"])
def y_predict():
x_test = [[(yo)for yo in request.form.values()]]
prediction =model.predict(x_test)
```

```
prediction = prediction[0]
return render_template("secondpage.html",y=prediction)
app.run(debug=True)
serving Flask app "app"(lazy loading)
Environment: production
Debug mode :on
restarting with watchdog(windowsapi)
Debugger is active!
Debugger PIN:146-359-021
Running on http://127.0.0.1:5000/(Press CTRL+C to quit)
```