High Level Design (HLD)

Campus Placement Prediction

Revision Number: 1.0
Last date of revision: 15/05/2022

Document Version Control

Date Issued	Version	Description	Author
15/05/2022	1	Initial HLD - V1.0	Subhankar Roy

Contents

Abstract

The Placement of students is one of the most important objective of an educational institution. Reputation and yearly admissions of an institution invariably depend on the placements it provides it students with. That is why all the institutions, arduously, strive to strengthen their placement department so as to improve their institution on a whole. Any assistance in this particular area will have a positive impact on an institution's ability to place its students. This will always be helpful to both the students, as well as the institution.

1   Introduction

1.1   Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding, and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

- Present all of the design aspects and define them in detail
- Describe the user interface being implemented
- Describe the hardware and software interfaces
- Describe the performance requirements
- Include design features and the architecture of the project
- List and describe the non-functional attributes like:
    - Security
    - Reliability
    - Maintainability
    - Portability
    - Reusability
    - Application compatibility
    - Resource utilization
    - Serviceability

1.2   Scope

The HLD documentation presents the structure of the system, such as the database architecture , application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly-technical terms which should be understandable to the administrators of the system.

2 General Description

2.1 Product Perspective

The placement prediction model is a machine learning model which predicts the exact premium amount depending on various factors.

2.2 Problem statement

To create an AI solution for predicting insurance premium and to implement the following use cases.

- To predict placement based on gender,ssc_p,hsc_p,workex,degree_p,etest
- To predict placement based on Specialisation,mba_p
- To predict placement based on Streams like Arts,Commerce,Science,Comm&Mgmt,Sci-tech and others.

2.3 PROPOSED SOLUTION

The solution proposed here is based on student's performances. If the student is bright then his placement will be guaranteed compared to a student who doesnot study.

2.4 FURTHER IMPROVEMENTS

By predicting the campus placement one institution can work on the overall improvement of the institution or organization.

2.5 Data Requirements

Data requirement completely depend on our problem statement.

There are a total of 215 observations in the training set.

- Feature table

```
In [3]: train
```

Out[3]:

	sl_no	gender	ssc_p	ssc_b	hsc_p	hsc_b	hsc_s	degree_p	degree_t	workex	etest_p	specialisation	mba_p	status	salary
0	1	0	67.00	Others	91.00	Others	Commerce	58.00	Sci&Tech	No	55.0	Mkt&HR	58.80	Placed	270000.0
1	2	0	79.33	Central	78.33	Others	Science	77.48	Sci&Tech	Yes	86.5	Mkt&Fin	66.28	Placed	200000.0
2	3	0	65.00	Central	68.00	Central	Arts	64.00	Comm&Mgmt	No	75.0	Mkt&Fin	57.80	Placed	250000.0
3	4	0	56.00	Central	52.00	Central	Science	52.00	Sci&Tech	No	66.0	Mkt&HR	59.43	Not Placed	NaN
4	5	0	85.80	Central	73.60	Central	Commerce	73.30	Comm&Mgmt	No	96.8	Mkt&Fin	55.50	Placed	425000.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
210	211	0	80.60	Others	82.00	Others	Commerce	77.60	Comm&Mgmt	No	91.0	Mkt&Fin	74.49	Placed	400000.0
211	212	0	58.00	Others	60.00	Others	Science	72.00	Sci&Tech	No	74.0	Mkt&Fin	53.62	Placed	275000.0
212	213	0	67.00	Others	67.00	Others	Commerce	73.00	Comm&Mgmt	Yes	59.0	Mkt&Fin	69.72	Placed	295000.0
213	214	1	74.00	Others	66.00	Others	Commerce	58.00	Comm&Mgmt	No	70.0	Mkt&HR	60.23	Placed	204000.0
214	215	0	62.00	Central	58.00	Others	Science	53.00	Comm&Mgmt	No	89.0	Mkt&HR	60.22	Not Placed	NaN

2.6 Tools used

Python programming language and frameworks such as NumPy, Pandas, Scikit-learn, and Flask are used to build the whole model.
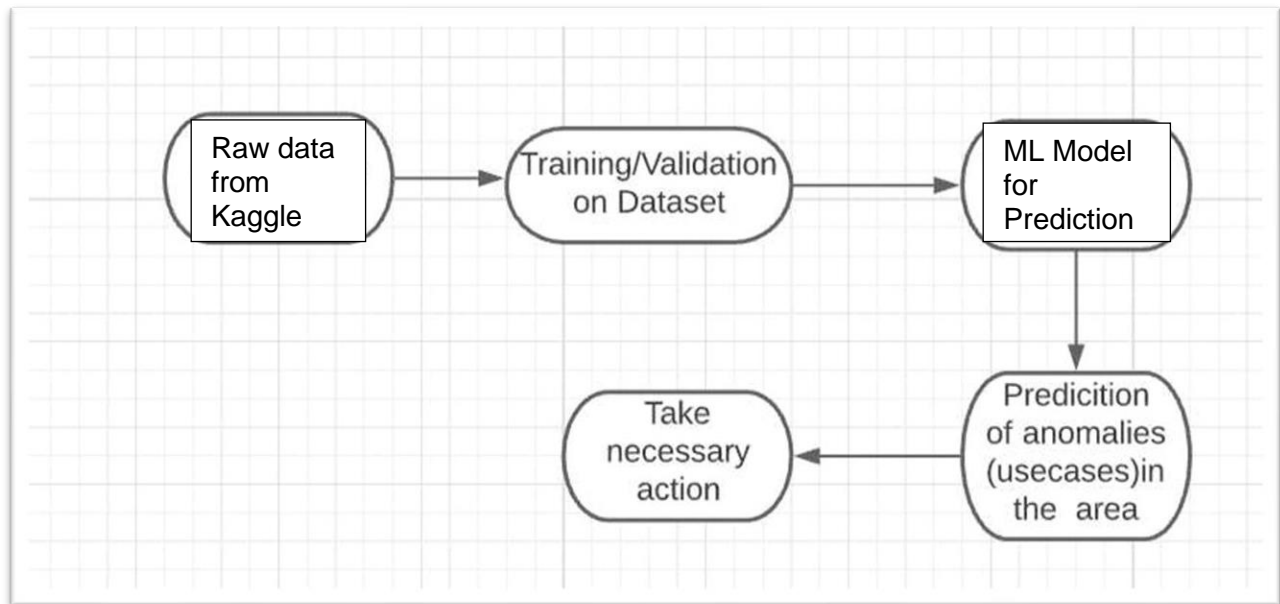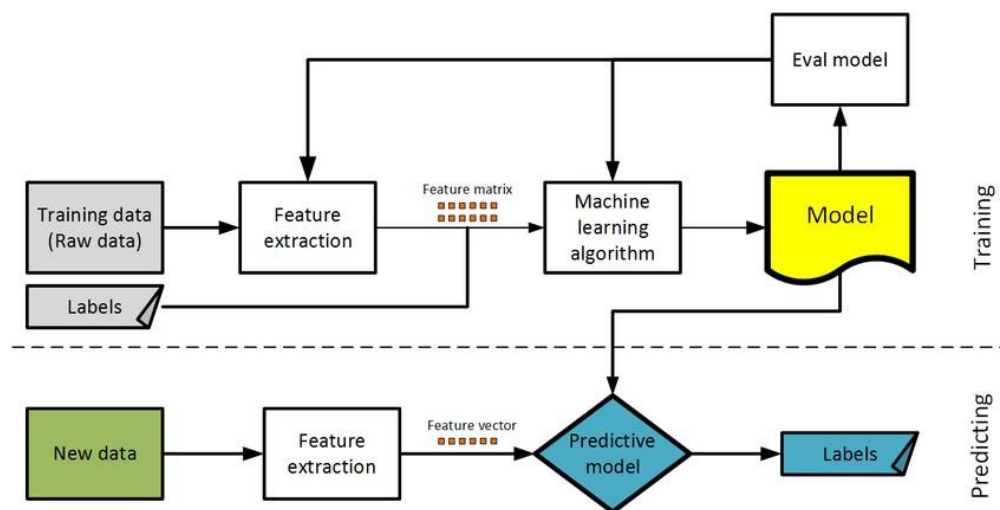
3   Design Details

3.1   Process Flow

For identifying the different types of anomalies, we will use a machine learning base model. Below is the process flow diagram is as shown below.

Proposed methodology

3.1.1 Model Training and Evaluation

3.2 Event log

The system should log every event so that the user will know what process is running internally.

Initial Step-By-Step Description:

1. The System identifies at what step logging required
2. The System should be able to log each and every system flow.
3. Developer can choose logging method. You can choose database logging/ File logging as well.
4. System should not hang even after using so many loggings. Logging just because we can easily debug issues so logging is mandatory to do.

3.3 Error Handling

Should errors be encountered, an explanation will be displayed as to what went wrong? An error will be defined as anything that falls outside the normal and intended usage.

4 Performance

The Campus Placement prediction model is working fine. Also, model retraining is very important to improve the performance.

4.1 Reusability

The code written and the components used should have the ability to be reused with no problems.

4.2 Application Compatibility

The different components for this project will be using Python as an interface between them. Each component will have its own task to perform, and it is the job of the Python to ensure proper transfer of information.

4.3 Resource Utilization

When any task is performed, it will likely use all the processing power available until that function is finished.

4.4 Deployment

5 Conclusion

The campus placement will be predicted from this model and institutions can improve their overall college or university environment based on this.

6   References

1. https://www.kaggle.com/c/ml-with-python-course-project/