High Level Design (HLD)

Campus Placement

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Contents

Abstract

The "Campus Placement" project leverages machine learning to streamline and enhance the job matching process between graduating students and potential employers on university campuses. This High-Level Design (HLD) document outlines the architecture, functionality, and data flow of the system, with a focus on optimizing efficiency and accuracy in connecting the right talent with the right opportunities.

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Introduction

The transition from academic life to the professional world can be a daunting journey, particularly navigating the complexities of the campus placement landscape. For students, the challenge lies in identifying the right opportunity amidst a whirlwind of options, while companies face the hurdle of sifting through countless resumes to find the perfect candidates. This disconnect often results in missed opportunities and mismatched placements, hindering both student fulfilment and company success.

To bridge this gap and foster a seamless, data-driven approach to campus placements, we introduce Campus Placement: Optimizing Job Matching through Machine Learning. This High-Level Design (HLD) document lays the foundation for a revolutionary system that harnesses the power of machine learning to connect graduating students with their ideal career destinations.

Campus Placement transcends the limitations of traditional placement methods by applying advanced algorithms to analyse vast amounts of data related to student profiles and job requirements. This sophisticated analysis unveils hidden patterns and insights, enabling us to create a matchmaking system that transcends keyword searches and prioritizes genuine compatibility.

By prioritizing skill alignment, cultural fit, and career aspirations, Campus Placement promises to revolutionize the campus placement experience for both students and employers. Students gain access to personalized recommendations that ensure they land fulfilling positions matching their skillsets and ambitions, while companies benefit from a pre-qualified pool of candidates perfectly suited to their needs.

This HLD serves as a comprehensive roadmap for building and implementing this transformative system. Within its pages, you'll find a detailed outline of the system's architecture, core functionalities, data flow, and expected outcomes. We believe that Campus Placement holds the potential to redefine the future of campus placements, shaping a more efficient, fulfilling, and data-driven environment for talent acquisition and career development.

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General Description

This machine learning model is created in a modular fashion according to the instruction and a good example of a production level model.

This document outlines the design of a Campus Placement Prediction System, leveraging machine learning to predict whether a graduating student will secure a job through campus placement, categorized as "Placed" or "Not Placed."

Objectives:

- Increase placement rates: By accurately predicting placement possibilities, students can tailor their job search strategies and focus on opportunities with higher success rates.
- Optimize hiring: Companies can prioritize recruitment efforts towards students with a higher predicted chance of being placed, reducing resource expenditures and increasing hiring efficiency.
- Data-driven insights: The system provides valuable insights into factors influencing placement outcomes, informing academic curriculum development, career guidance initiatives, and campus placement strategies.

System Architecture:

- Data Ingestion
- Data Transformation
- Model Trainer
- Training Pipeline
- Prediction Pipeline
- app.py
- Docker file
- Github Action
- Docker image
- AWS app runner

Expected Outcomes:

- Improved accuracy in predicting placement outcomes.
- Increased job acceptance rates for students.
- Reduced recruitment costs and time for companies.
- Data-driven insights for academics, career counsellors, and placement officers.

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Tools used:

- VS Code is used as an IDE
- Python is used for backend development
- NumPy is used for necessary calculations
- Pandas is used for Handling the data in a Data Frame
- Scikit learn is used for importing Classification models
- AWS is used for deployment of the project
- Git is used for making a central repository
- HTML is used in frontend
- Flask is used for running the application and making a connection between frontend and backend

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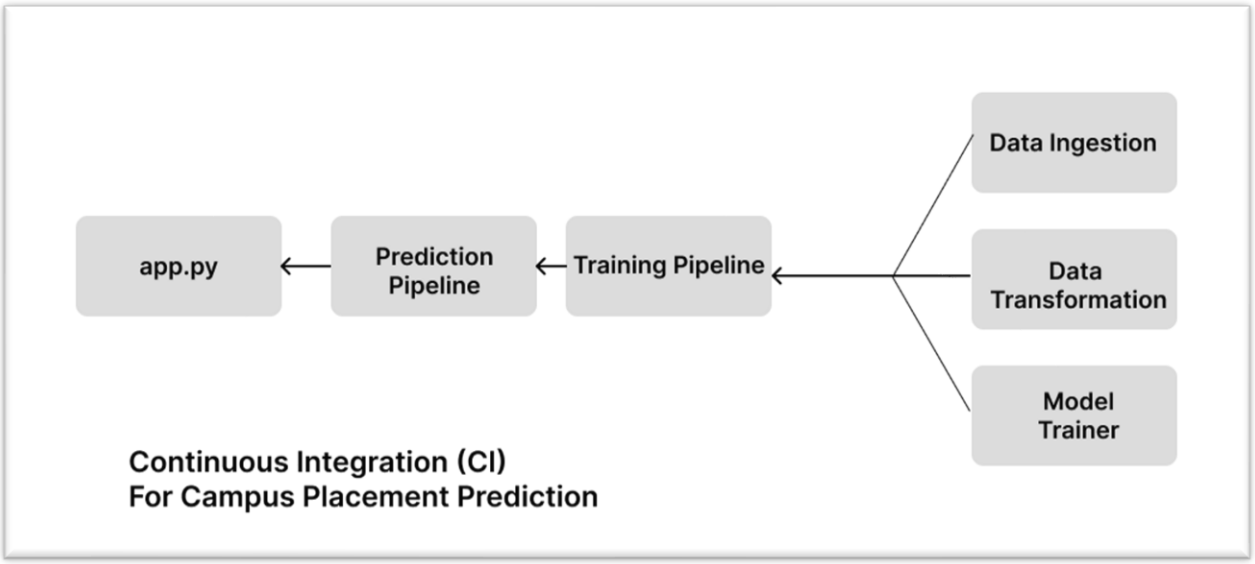
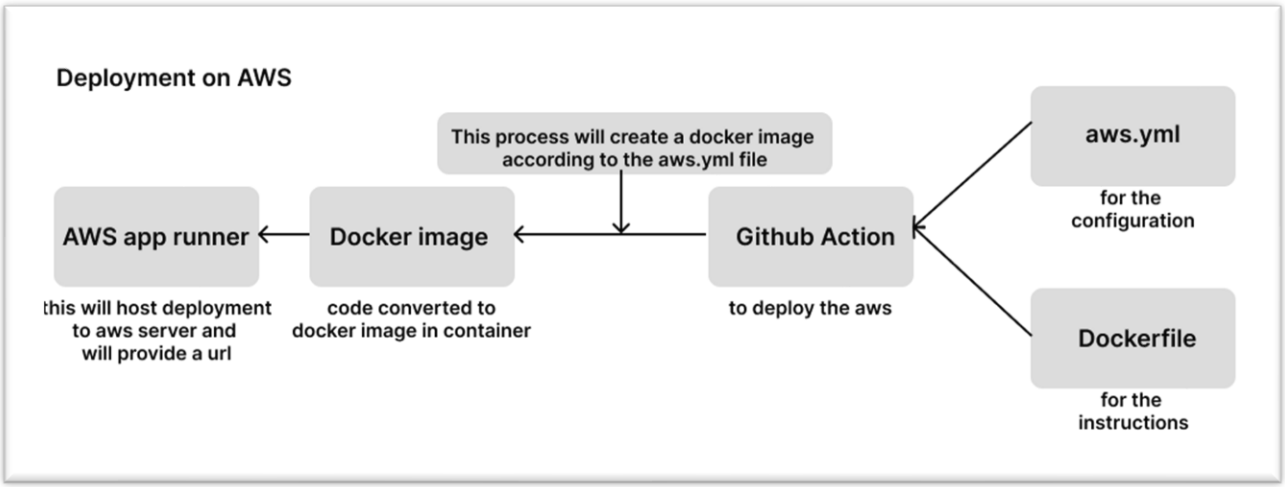
Process Flow

Backend Flow



Deployment Flow



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Event Log

A separate module for logging is created in this project which updates the log file on every step.

Error Handling

A separate module named ‘customexception’ is also created in this model for giving the error messages in a customized manner in the log file itself.

Reusability

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

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.

Resource Utilization

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

Conclusion

This High-Level Design document has laid the groundwork for Campus Placement, a revolutionary machine learning system poised to transform the landscape of campus placements. By predicting job placement outcomes for graduating students, Campus Placement empowers both students and employers, paving the way for a more efficient, data-driven, and ultimately fulfilling experience for all stakeholders.

For students, the system promises increased clarity and confidence in their job search journey. Personalised recommendations based on predicted placement odds allow them to prioritize their efforts and target companies where their chances of success are highest. This not only saves valuable time and energy but also boosts their morale and reduces stress during a traditionally challenging period.

For employers, Campus Placement translates to enhanced recruitment practices and optimized talent acquisition. By identifying pre-qualified candidates with a high likelihood of being placed, companies can streamline their hiring process, minimizing resource expenditure and ensuring they secure the best possible talent. Additionally, valuable insights into student skills, aspirations, and cultural fit offer invaluable feedback for improving company recruitment strategies and employer branding.

Beyond immediate benefits, Campus Placement holds the potential to positively impact the academic ecosystem as a whole. The system's data-driven insights can inform curriculum development, career guidance initiatives, and placement strategies, ensuring students graduate with the skills and knowledge most coveted by employers. This continuous feedback loop between academia and industry will ultimately lead to a more aligned and mutually beneficial relationship.

In conclusion, Campus Placement stands as a beacon of innovation in the world of campus placements. By harnessing the power of machine learning, the system promises to usher in a new era of data-driven career development, personalized job search, and streamlined talent acquisition. With its potential to empower both students and employers, Campus Placement is poised to revolutionize the landscape of campus placements, ensuring a smoother transition from academic life to the professional world for generations to come.

References

Kaggle for raw dataset: Dataset