High Level Design (HLD)

Insurance Premium Prediction

Document Version Control

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Contents

Abstract

To give people an estimate of how much they need based on their individual health situation. After that, customers can work with any health insurance carrier and its plans and perks while keeping the projected cost from our study in mind. We are considering variables as age, sex, BMI, number of children, smoking habits and living region to predict the premium amount. This can assist a person in concentrating on the health side of an insurance policy rather than the ineffective part.

1.Introduction

1.1   Why this High-Level Design Document?

The purpose of this High-Level Design 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:

1.   Present all of the design aspects and define them in detail
2.   Describe the user interface being implemented
3.   Describe the software interfaces

4. Describe the performance requirements
5. Include design features and the architecture of the project
6. List and describe the non-functional attributes likes:
   - 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, 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 insurance premium prediction is a machine learning model that helps users to understand their insurance premium based on some input data.

2.2 Problem Statement

The main aim of this model is to predict Insurance premium price based on some input data like bmi, gender, age etc.

2.3 Proposed Solution

To solve the problem, we have created a user interface for taking the input from the user to predict insurance premium price using our trained ML model after processing the input and at last the predicted values from the model is communicated to the uer.

2.4 Technical Requirements

As technical requirements, we don't need any specialized hardware for virtualization of the application. The user should have device that has the access to the web and fundamental understanding of providing the input. While for backend, we need a server to run all the required packages to process the input and predict the desired output.

2.5 Data Requirements

The Data is accessible on the Kaggle and other platforms. It contains entries regarding age, bmi, children number, smoking habit, region and gender.

2.6 Tools used

Python Programming language and framework such as NumPy, Pandas, Scikit-learn, streamlit, VSCode are used as a tools for the project.

2.7 Constraints

The system must be user friendly, as automated as possible and user should not be required any of workings.

2.8 Assumptions

The main objective of the project is to implement the usecase as previously mentioned for new dataset that comes through source. Machine learning based model is used for detecting the above-mentioned use cases based on the input data. It is also assumed that all aspects of this project have the ability to work together in the way the designer is expecting.

3. Design Details

3.1 Process Flow
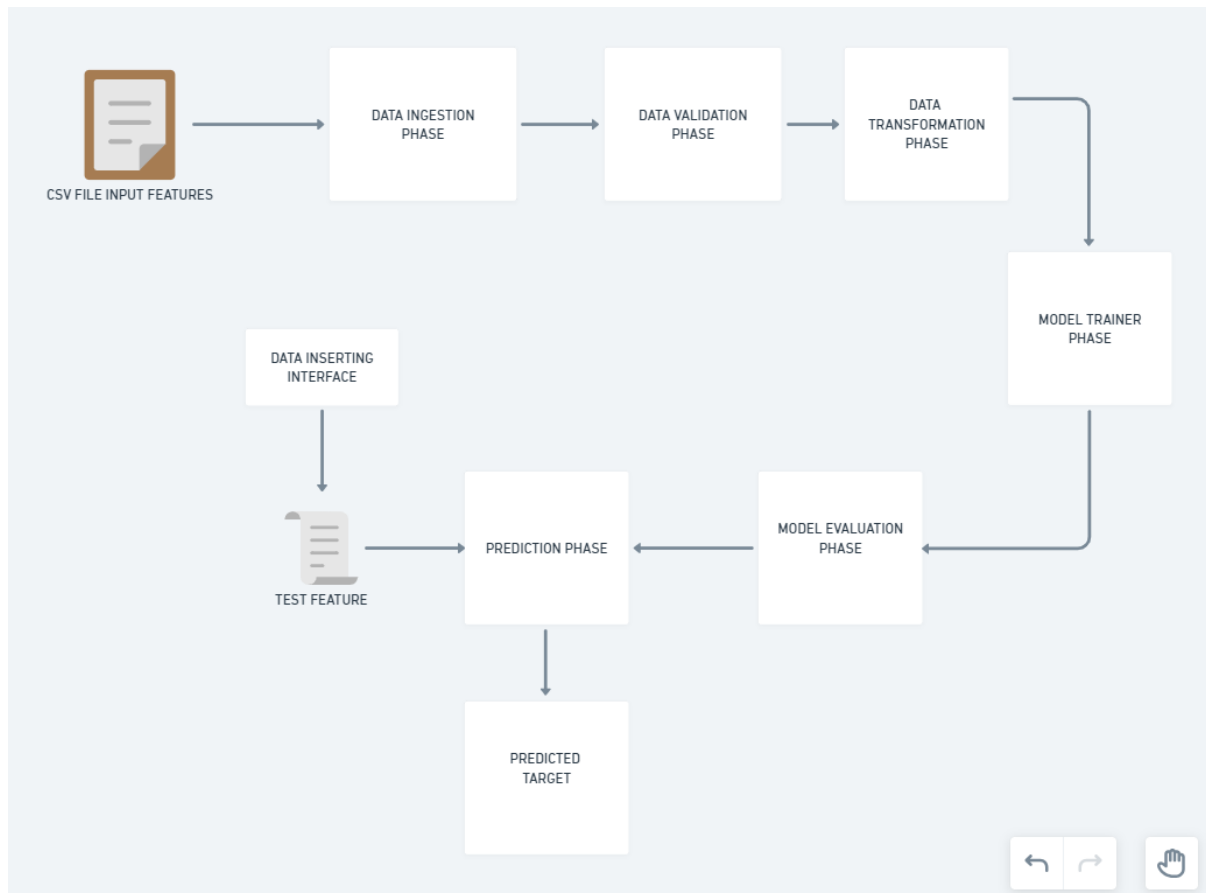
3.2 Logging

In logging, each time an error or exception occurs, the event is logged into the system log file with reason and timestamp. This helps the developer to debug the system and rectify the error.

3.3 Error Handling

We designed our custom exception class which basically inform us about the error in a well organized way.

4. Performance Evaluation

The machine learning based insurance premium prediction project predicts premium based on the input provided features.

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.

5. Conclusion

The Insurance Premium Prediction system will predict the price for helping the customers with the trained knowledge with set of tuples. The user can use this system to recognize the approximate value of their insurance premium.