Low-Level Design (LLD)
Insurance Premium Prediction

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Abstract

This document outlines the low-level design for an insurance premium prediction system. The system uses machine learning algorithms to predict the insurance premium for different types of policies.

Introduction

1.1 What is an LLD Document?

An LLD document describes the detailed design of a software system. It provides a comprehensive description of the system architecture, design, and implementation.

1.2 Scope

The scope of this document is to provide a detailed design for the insurance premium prediction system. The system will be able to predict insurance premiums for different types of policies based on historical data.

2. Architecture

The insurance premium prediction system will be based on a client-server architecture. The client will be a web application that allows users to input policy details and receive a premium quote. The server will be responsible for processing the input data, running the machine learning algorithms, and generating the premium quote.

3. Architecture Design

3.1 Data Collection

The system will collect data from different sources such as insurance providers and publicly available datasets. The data will be stored in a database for analysis.

3.2 Data Description

The collected data will include policy details such as age, gender, type of policy, coverage amount, and location. The data will be in structured CSV format and will be used for training the machine learning models.

3.3 Importing Data into Database

The system will have a module to import data from external sources into the database. The data will be preprocessed and stored in the appropriate format for further analysis.

3.4 Exporting Data from Database

The system will have a module to export data from the database for analysis and reporting purposes.

3.5 Data Preprocessing

The collected data will be preprocessed to remove missing values, outliers, and redundant features. This will improve the accuracy of the machine learning models.

3.6 Model Creation

The system will use machine learning algorithms such as linear regression, decision trees, and neural networks to predict insurance premiums. The models will be trained on the preprocessed data and evaluated for accuracy.

3.7 Data from User

The user will input policy details such as age, gender, type of policy, coverage amount, and location into the web application. This data will be passed to the server for processing.

3.8 Data Validation

The input data will be validated to ensure that it is in the correct format and within the acceptable range.

3.9 Rendering the Results

The server will generate a premium quote based on the input data and the trained machine learning models. The premium quote will be displayed on the web application for the user.

4. Deployment

The insurance premium prediction system will be deployed on a Streamlit platform. The system will be scalable, reliable, and secure.

4.1 Unit Test Cases

The system will have a comprehensive set of unit test cases to ensure that it meets the design requirements and functions correctly. Test cases will be developed for each module and integration testing will be performed to verify the system as a whole.

By following this low-level design, the insurance premium prediction system can be developed and deployed with a clear understanding of the system architecture, design, and implementation. This ensures that the system meets the requirements of the stakeholders and is scalable, reliable, and secure.