High Level Design (HLD)

Insurance Premium Prediction

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Anuj Dhyani

High-Level Designing (HLD)

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26-04-2023	1.0	Abstract	Anuj Dhyani
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Abstract

This High-Lavel Design Document encapsulates Insurance premium prediction for low-level documents is the use of data analysis and modeling to estimate insurance costs based on factors like age, health, lifestyle, etc. This helps insurers set fair premiums for life, health, or disability coverage, ensuring pricing matches individual needs and risk levels.

Our primary objective is to empower individuals to approach health insurance providers with confidence, armed with a clear understanding of the expected financial commitments tied to their selected coverage. By eliminating the uncertainty surrounding insurance premiums, we enable people to prioritize their health and well being over pricing complexities. This innovative approach shifts the focus away from the intricacies of policy pricing and toward a user-centric perspective that promotes informed decision-making. Ultimately, our goal is to enhance the overall insurance experience, making it more personalized and user-friendly. We aim to facilitate insurance choices that reflect individual needs and financial considerations, empowering individuals to invest in their health with clarity and assurance

1 Introduction

1.1 Why this High-Level Design Document?

The main purpose of this HLD documentation is to feature the required details of the project and supply the outline of the machine learning model and also the written code. This additionally provides the careful description on however the complete project has been designed end-to-end.

1.2 Description

Problem Perspective

Many individuals struggle to obtain insurance coverage tailored to their specific needs and risk profiles due to the lack of personalized premium estimation tools. This results in uncertainty and potential financial burdens when selecting insurance plans. Developing an accurate insurance premium prediction system is essential to address this issue, ensuring that individuals can make informed decisions about their insurance coverage based on their unique circumstances.

1.3 Problem Statement

Many individuals and businesses face challenges in navigating the complex world of insurance, often struggling to find the right coverage at affordable premiums. Understanding policy options, assessing risk factors, and making informed decisions can be daunting, resulting in inadequate coverage or unnecessary expenses.

1.4. Project Solution

To address this issue, an innovative online insurance advisory platform can be developed. This platform would provide users with personalized insurance recommendations based on their unique needs, risk profiles, and budgets. Through a user-friendly interface, it would offer clear policy explanations, premium estimates, and comparisons among various insurance providers. This solution aims to empower individuals and businesses to make informed insurance choices, ensuring they obtain adequate coverage while optimizing costs. By leveraging technology and data analysis, this platform simplifies the insurance selection process, enhancing user confidence and financial security.

1.5 Answer enhancements

In the insurance sector, adopting blockchain technology and artificial intelligence (AI) can significantly enhance services. Blockchain ensures secure, transparent, and efficient processes, reducing fraud and automating claims. AI improves risk assessment and customer service, resulting in fairer premiums and better support. These innovations empower insurers to offer improved and trustworthy services to policyholders.

1.6 Technical needs

There are not any hardware needs needed for victimization this application, the user should have an interactive device that has access to the web and should have the fundamental understanding of providing the input. And for the backend half the server should run all the package that's needed for the process and provided information to show the results.

1.7 Information needs

The info demand is totally supported the matter statement. and also, the information set is accessible on the Kaggle within the type of standout sheet(.xlsx), because the main theme of the project is to induce the expertise of real time issues, we have a tendency to once more mercantilism {the information into the prophetess data base and commerce it into csv format.

1.8 Tools Used

• Python 3.8 is employed because the programming language and frame works like numpy, pandas, sklearn,flask, streamlit and alternative modules for buildingthe model.

• Visual Studio Code is employed as IDE.

- Front end development is completed victimization
- HTML/CSS. Flask is employed for each information and
- backend readying. GitHub is employed for version
- management.

  Streamlit Cloud and Locallhost is used for Deployment

1.9 Constraints

1.Limited historical data for accurate predictions.

2.Complex regulatory changes affecting premium calculations.

3.Data privacy and security regulations may restrict access to certain data

sources.

4.Resource constraints, including computing power and budget limitations. 5.Variability in individual health factors and lifestyle choices can introduce

uncertainty.

1.10 Assumptions

1.Historical data used for prediction is representative of future trends.

2.Regulatory requirements remain consistent during the prediction period.

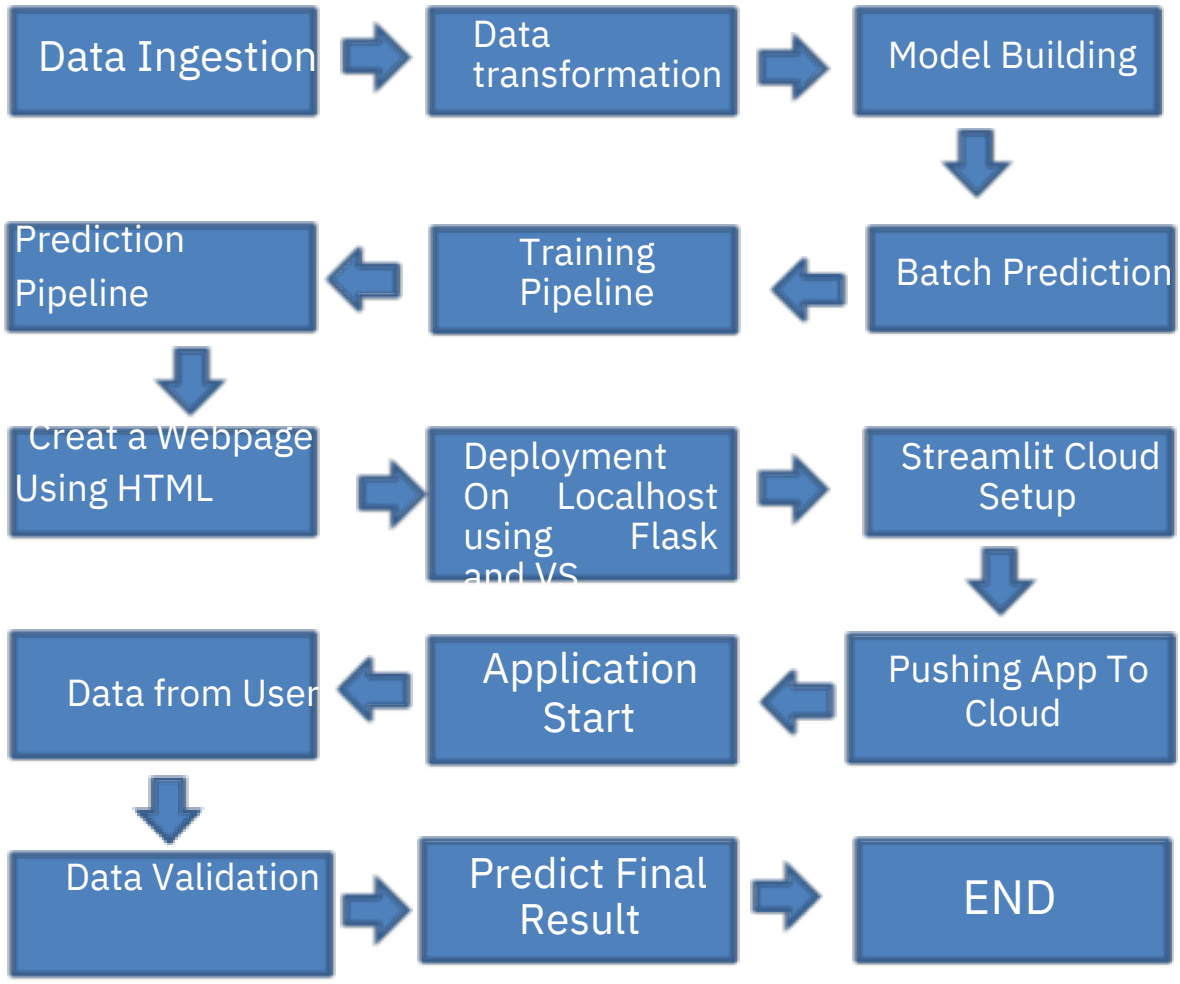
3.Data sources are accurate and up-to-date.

4.Adequate computing resources and budget are available for modeling.

5.Policyholders provide truthful information for premium calculation.

6.External factors like economic conditions do not drastically alter insurance

2.1 and 2.2 Design Flow and Deployment Process



2.3 Logging

Each step is being logged within the system that runs internally, that shows the date time and therefore the processed that has been performed, work is completed in several layers as information, DEBUG, ERROR, WARNINGS. this provides US the perceive of the logged info.

2.4 Error Handling

Once ever a slip is occurred, the reason are logged in its several log file, in order that the developer will rectify the error.

3 Performance analysis

3.1 Reusability

Elements of the code written is accustomed different applications and therefore the rest is changed and be reused.

3.2 Application Compatibility

The various parts for this project are exploitation python as associate interface between them. every element can have its own tasks to perform, and it's the work of the python to make sure correct transfer of data.

3.3 Resource Utilization

Once any task is performed, it'll doubtless; use all the process power offered till that performs is finished.

3.4 Deployment

The model is being deployed on local machine and Streamlit Cloud.

Conclusion

In conclusion, the Insurance Premium Prediction project has paved the way for a more informed and customer-centric approach to insurance decisions. By harnessing data analysis and predictive modeling, we've enabled individuals and businesses to better understand their insurance needs and anticipate associated costs.

Through this project, we've addressed the complexities of insurance pricing and empowered users to make personalized and financially sound choices. By considering factors like age, health, lifestyle, and more, we've contributed to fairer premium calculations and improved transparency.

However, it's important to acknowledge that insurance premium prediction is an ongoing endeavor. Evolving regulations, changing risk landscapes, and advancements in data analytics continually shape the insurance industry. As such, ongoing updates and enhancements will be crucial to ensure the accuracy and relevance of premium predictions.

In the journey to enhance the insurance experience, this project has laid a solid foundation. It has shifted the focus from one-size-fits-all pricing to individualized solutions, ultimately benefiting both insurance providers and policyholders. As we move forward, continued collaboration and innovation will be key to further refining and optimizing insurance premium prediction for the ever-evolving needs of the market.