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Budget Tracker

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Abstract: This project aims to develop a budget tracker system for efficient management of personal and business finances. The system will leverage the Random Forest machine-learning algorithm to analyse financial data in real-time and offer predictions of the budget based on historical data. It will provide real-time financial information, including income and expenses, allowing users to track their spending patterns. Users can easily add their income and expenses into the system either by voice or by typing.

To achieve the objectives of this project, the regression algorithm will analyse transactional data and historical trends. The development process will prioritize the creation of a user-friendly and intelligent platform. It will also provide a report on how much expenses are made, and how they compare with the estimated budget. Finally, this information is used to predict the budget required for the next month.

The ultimate aim of this project is to establish a highly effective budget tracker system that can empower individuals and businesses to attain financial stability and prosperity. The system will provide real-time insights and recommendations, assisting users in making informed financial decisions and improving their financial well-being.

Keywords: Random Forest, Prediction, Machine Learning

I. INTRODUCTION

Managing personal or business finances can be a daunting task, especially for individuals without financial expertise or experience. Many people struggle with keeping track of their spending, creating budgets, and making informed financial decisions. Current methods of budgeting and financial management are often manual and time-consuming, requiring significant effort and attention. Additionally, the lack of real-time insights and recommendations can result in poor financial decision-making and hamper financial progress.

To address these challenges, a Budget Tracker system can be an effective solution. Such a system can leverage advanced machine learning algorithms to analyze financial data in real-time and provide valuable insights and recommendations based on historical trends and data. It should be designed to be user-friendly and intuitive, enabling individuals and businesses to manage their finances efficiently and effectively.

The ultimate goal of such a system is to empower individuals and businesses to attain financial stability and prosperity by providing real-time insights and recommendations, assisting users in making informed financial decisions and improving their financial well- being.

II. EXISTING SYSTEM

The existing budget tracking applications in the market lack the capability to predict future expenses, which is a significant limitation. These applications do not utilize Machine Learning models to forecast future expenses, leading to a gap in providing users with valuable insights. This absence of predictive capabilities hinders users from effectively planning and managing their budgets. By incorporating Machine Learning models, budget trackingapplications can leverage historical data to generate accurate predictions of future expenses, empowering users to make informed financial decisions and enhance their overall financial management experience.

III. PROPOSED SYSTEM

Random Forest emerges as a promising solution to address this limitation. It is a robust machine learning algorithm with the capability to predict future expenses and enhance budget tracking applications. By incorporating Random

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Forest, the application can generate more accurate and dependable predictions by harnessing an ensemble of decision trees. The algorithm effectively learns from historical data, establishing meaningful connections between the extracted features and future expenses, enabling users to make more informed financial decisions.

3.1 Proposed System Architecture

In the proposed system architecture for the budget tracker application, users can input their financial data, including income and expenses, into the system.

The Random Forest model learns from the input data and establishes relationships between various features and future expenses. This enables the model to make accurate predictions of future expenses based on the user's spending patterns and financial history. The predicted expenses can be displayed to the user in a user-friendly interface, providing them with valuable insights for budget planning and financial decision-making.

By incorporating the Random Forest machine learning algorithm into the budget tracker application, users can benefit from more accurate and reliable predictions of their future expenses. This helps users to proactively plan their budgets, identify potential savings opportunities, and make informed financial choices to achieve their financial goals effectively.



Fig.1 Architecture Diagram

IV. IMPLEMENTATION

This project is implemented using HTML, CSS, Javascript, Laravel, Python, Bootstrap and PostgreSQL. We have used laravel to create all the web pages where it will get data from the user and to access database to provide response to user. PostgreSQL is used as database to store all the data collected from the users. All the machine algorithms and packages that are used for this project is built using Python, so that we have used FastAPI for integrating python and laravel. We have used several laravel packages such as Yajra, Breeze, Blade.

First the user is asked to login or register to enter into the system. Then the user is asked to add the income then the system will divide this income into number of days in a month, which acts as an estimated budget for each day. Then the user has to enter his day-to-day spending either using text or using the voice. Then this Spacy library will convert the speech into text now this text will be analyzed and the related keywords extracted are automatically stored into the database. Here the feedback given by the user is analyzed using the package Text Blob.

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Using all the data retrieved from the user, a chart is made using Apex chart which displays the actual and expected amount spent in each day in Y-axis and the date in X-axis. Then Random Forest is used to predict the future expense by utilizing all the previous expenses made by the user and again a chart is made made using Apex chart which displays expected amount spent in each day in Y-axis and the date in X-axis.

V. EXPERIMENT RESULTS







Fig .3 Forecasted Expense

VI. CONCLUSION

The Budget Tracker system is an efficient tool for personal financial management that allows users to keep track of their income and expenses. The system provides a user-friendly interface that makes it easy for users to input, categorize and monitor their financial transactions. With this system, users can easily access their financial information from anywhere and at any time. The system allows users to generate reports that give them a clear picture of their spending habits and financial standing. The Budget Tracker system is designed to provide a secure and reliable platform for managing personal finances. It is built with security features that protect user data and prevent unauthorized access. The system is also scalable and can be modified to accommodate new features and functionalities as required. Overall,

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the Budget Tracker system is an effective tool for personal financial management that provides users with the necessary tools to manage their finances effectively. The system is easy to use, secure, and scalable, making it a valuable asset for anyone looking to take control of their finances.

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