AI Agent for tracking finance using Machine learning and Natural language processing

Abstract

In the current era, where financial management is increasingly complex and digital, this AI-driven financial assistant empowers users to take control of their personal finances by offering real-time tracking, personalized advice, and optimized credit utilization. With rising financial uncertainty, it provides a smart, proactive solution for managing expenditures and improving financial literacy in an intuitive and accessible way.

This project proposes the development of an advanced AI-driven agent designed to track personal financial expenditures and manage credit utilization effectively. The system integrates cutting-edge technologies such as Natural Language Processing (NLP) and Machine Learning (ML) to categorize expenses with high accuracy, track spending patterns, and analyze financial behaviors over time. It also offers seamless integration with bank APIs, enabling real-time access to transaction data for a more dynamic and accurate financial overview. Utilizing sophisticated deep learning models, the agent not only provides valuable insights into the user's spending habits but also detects anomalies, flagging irregularities in real-time for immediate action. Through personalized recommendations, the system suggests ways to optimize spending, save more effectively, and ensure better credit utilization. The incorporation of reinforcement learning allows the agent to continuously adapt to the user's financial behaviors, fine-tuning suggestions based on evolving patterns and preferences. To ensure transparency and build user trust, the system employs explainable AI (XAI) techniques, providing users with understandable and clear reasons behind the suggestions and predictions made by the agent. In addition, the use of Large Language Models (LLMs) facilitates natural, intuitive conversations, allowing users to easily query their financial status and make inquiries in everyday language. By offering tailored expense management plans, proactive credit utilization advice, and real-time financial tracking, this intelligent assistant empowers users to make informed decisions, enhance financial awareness, and optimize their credit usage, all while ensuring a more efficient and personalized financial experience.

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