A PROJECT REPORT

ON :

NIC RECOMMENDATION SYSTEM

DEPART OF COMPUTER SCIENCE & ENGINEERING

NIC AGARTALA (2024-25)

DEPARTMENT OF NIC

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Introduction

Project Overview :

This report analyzes a dataset containing user demographics and their participation in various schemes. The primary goal is to gain insights into the distribution and patterns among different user groups and schemes. Understanding these patterns can help in the effective design and targeting of schemes to meet the needs of different social categories and age groups.

Motivation And Interest :

The motivation behind this project stems from the need to optimize the allocation and effectiveness of various schemes designed to benefit different demographic groups. Understanding how users interact with these schemes based on their gender, social category, age, and domicile can provide invaluable insights for policymakers and organizations.

Key Motivation

Targeted Scheme Implementation:

By analyzing user participation across different schemes, we can identify which demographic groups are underrepresented and tailor schemes to better meet their needs.

Enhanced User Engagement :

Understanding the preferences and characteristics of different user groups can help in designing more engaging and relevant schemes, leading to higher user satisfaction and participation rates.

Efficient Resource Allocation :

Insights from this analysis can guide the allocation of resources to the schemes and demographic groups that need them the most, ensuring efficient use of funds and efforts.

Policy Development :

Policymakers can use the findings to develop more inclusive and effective policies that address the specific needs of various social categories and age groups.

Personal Interest :

On a personal level, the interest in this project arises from a passion for data-driven decision-making and social impact. Analyzing real-world data to derive actionable insights not only enhances analytical skills but also contributes to making a tangible difference in the community. This project combines a technical interest in data analysis with a commitment to social betterment, making it both a professionally rewarding and personally fulfilling endeavor

This section highlights the motivations behind the project and the personal interest in leveraging data analysis to drive social impact and improve scheme implementation.

DATASET DESCRIPTION

Data Columns

User_id : *Unique identifier for each user.*

Gender : *Gender of the user.*

Social_Category *: Social category of the user.*

DOB : *Date of birth of the user.*

Age : *Age of the user.*

Scheme_id : *Unique identifier for each scheme.*

Scheme_name : *Name of the scheme.*

Domicile of Tripura *: Indicates if the user is a resident of Tripura.*

Description : *Additional information about the user or the scheme.*

OBJECTIVE

Develop an API:

Utilize FastAPI to build a robust API for the recommendation system.Implement various endpoints to retrieve filtered data and recommendations from the dataset.

Build Recommendation System:

Use Python to develop the recommendation algorithms (collaborative filtering, content-based filtering, and hybrid approaches).Integrate the recommendation system with the API.

Create Frontend Interface:

Develop a user-friendly frontend using React, HTML, CSS, and JavaScript.

Ensure the frontend can interact seamlessly with the API to display recommendations and filtered data.

Timeline :

Week 1-2 : Project Setup and Initial Development :-

Set up the project repository and environment.

Collect and preprocess the dataset.

Develop basic endpoints with FastAPI.

Week 3-4 : Recommendation System Development :-

Implement collaborative filtering, content-based filtering, and hybrid recommendation algorithms.

Test and validate the recommendation system with sample data.

Week 5-6 : API Integration :-

Integrate the recommendation system with the FastAPI endpoints.

Ensure the API can handle requests for different types of recommendations and data filtering.

Week 7-8: Frontend Development :-

Set up the React project and develop the main components.

Implement user interface with HTML, CSS, and JavaScript.

Connect the frontend with the FastAPI backend to retrieve and display data.

Week 9-10 : Testing and Deployment :-

Conduct thorough testing of both the API and frontend.

Debug and fix any issues.

Deploy the application to a cloud platform (e.g., AWS, Heroku).

Deliverables .

API:-

FastAPI endpoints for retrieving recommendations and filtering data.

Documentation for the API endpoints.

Recommendation System:-

Python scripts implementing the recommendation algorithms.

Integrated recommendation logic within the API.

Frontend :-

A fully functional React application.

User interface for interacting with the recommendation system.

Deployment :-

Deployed application accessible via a web URL.

Deployment scripts and configuration.

Tech Stack.

Backend :-

Framework: FastAPI

Language: Python

Recommendation Algorithms: Collaborative Filtering, Content-Based Filtering, Hybrid Approach

Data Processing: Pandas, NumPy .

Database:

Frontend:

Framework: React

Languages: JavaScript, HTML, CSS

UI Library: Bootstrap

Deployment:

Platform:

This plan outlines the objectives, timeline, deliverables, and technology stack for developing a recommendation system with an API backend and a frontend interface.

CONCLUSION

Summary :

The analysis provided insights into user demographics and scheme participation patterns. The data shows significant trends in gender and social category distribution across different schemes.

Future Work :

Deeper Analysis: Investigate reasons for the popularity of certain schemes.

Predictive Modeling: Develop models to predict scheme participation based on demographics.

Additional Data: Incorporate more user attributes and scheme details for comprehensive analysis.

This report provides a structured overview and insights derived from the dataset, focusing on demographic distribution, scheme participation, and age analysis.