Food Recommendation Systems Based On Content-based and Collaborative Filtering Techniques

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Abstract—On the internet, numerous options are available for a specific type of product. It is tough to manually go through every product in a particular type when a user is trying to choose the best one. Because of this, manual searching is not very efficient. The recommendation system is crucial in recommending the best product in that situation. A food recommendation system is developed in this research paper using K-nearest neighbor's methods. The food data set is taken from Kaggle. We used Python programming language to implement the system. Our proposed recommendation system recommends food based on food name, food id, cuisine type, diet type like veg or non-veg in the case of content based filtering recommendation. For recommending the food with help of collaborative filtering we have used user id, food id and rating as an attributes.

Index Terms—recommender systems, k-nearest neighbors, food recommendation systems, content-based filtering, collaborative filtering

I. INTRODUCTION

By selecting user-related data from a wide range of data, recommender systems are simple algorithms that give users recommendations for products relevant to their needs. This system identifies data patterns in the data set by learning user preferences. It provides them with results relevant to their needs and interests. The internet has now become an irreplaceable part of modern life. Nowadays, users are flooded with options, and much information is available for anything from finding a hotel to making intelligent financial decisions [1]. Hence, companies have created recommendation systems to help users deal with the information explosion. Research regarding these has been going on for many decades because they can be applied in different areas, which is being used everywhere. As a result, many companies are interested in recommender systems to offer personalized options that meet users' preferences. The users accept the recommendations at their own risk and provide, immediately or later, implicit and explicit feedback. The users' activities and feedback can be stored in the recommender database and later used to provide new recommendations in the subsequent user-system interactions. In order to improve the user experience, personalization

is a crucial method to facilitate. Recommendation Systems are prevalent in many web domains, including e-commerce or media sites, and have significantly enhanced business and decision-making in various information access systems.

Based on the types of input data, recommendation models generally fall into collaborative filtering, content-based recommender systems, and hybrid recommender systems. Recommendation systems have historically been developed across many fields for various machine-learning applications. Social networking sites like Facebook illustrate this, where user connections are suggested via recommendation systems; for music and media services like iTunes and Spotify, the same machine and recommendation logic are used to recommend various tunes to users based on their previous selection and preferences [2]. In keeping with this basic concept, the proposed system recommends food to users which puts it one step ahead of current recommendation applications.

Food recommender systems are software applications that provide personalized recommendations and suggestions for food items based on users' preferences, dietary needs, and other relevant factors. With the increasing availability of diverse food options, it can be overwhelming for users to navigate through the vast selection and make informed decisions. Food recommender systems are one of the best solutions in this environment by analyzing user preferences, dietary needs, and other relevant factors to generate tailored recommendations.

The proposed food recommender systems recommend food to users based on food name, food id, cuisine type, diet type like veg or non veg in the case of content based filtering recommendation. For recommending the food with help of collaborative filtering we have used user id, food id and rating as an attributes.

The paper is organized as follows: Section 2 provides related work that is relevant to our proposed approach. In Section 3, we introduce our proposed approach for generating recommendations. Section 4 details the computational experiments conducted and presents the corresponding results. Lastly, in Section 5, we present the conclusion of our work along with

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Advances in Information Communication Technology and Computing Vishal Goar,Manoj Kuri,Rajesh Kumar,Tomonobu Senjyu,2023-05-29 The book is a collection of best selected research papers presented at the International Conference on Advances in Information Communication Technology and Computing AICTC 2022 held in Government Engineering College Bikaner Bikaner India during 17 18 December 2022 The book covers ICT based approaches in the areas of ICT for Energy Efficiency Life Cycle Assessment of ICT Green IT Green Information Systems Environmental Informatics Energy Informatics Sustainable HCI or Computational Sustainability **DNA Techniques to Verify Food Authenticity** Malcolm Burns,Lucy Foster,Michael Walker,2019-10-14 The food supply chain needs to reassure consumers and businesses about the safety and standards of food Global estimates of the cost of food fraud to economies run into billions of dollars hence a huge surge in interest in food authenticity and means of detecting and preventing food fraud and food crime Approaches targeting DNA markers have assumed a pre eminence This book is the most comprehensive and timely collection of material from those working at the forefront of DNA techniques applied to food authenticity Addressing the new field of analytical molecular biology as it combines the quality assurance rigour of analytical chemistry with DNA techniques it introduces the science behind DNA as a target analyte its extraction amplification detection and quantitation as applied to the detection of food fraud and food crime Making the link with traditional forensic DNA profiling and describing emerging and cutting edge techniques such as next generation sequencing this book presents real world case studies from a wide perspective including from analytical service providers industry enforcement agencies and academics It will appeal to food testing laboratories worldwide who are just starting to use these techniques and students of molecular biology food science and food integrity Food policy professionals and regulatory organisations who will be using these techniques to back up legislation and regulation will find the text invaluable Those in the food industry in regulatory and technical roles will want to have this book on their desks **Web Intelligence and Human-Machine Interaction** R Vasanthi,Ramaswamy Palaniappan,Kanthavel Radhakrishnan,2025-10-31 This book gathers selected research papers presented at International Conference on Web Intelligence and Human Machine Interaction ICWIHI 2025 held during 8 9 April 2025 in Salem Tamil Nadu India This book presents a collection of state of the art research work involving cutting edge technologies in the field of web intelligence and human machine interaction It presents original papers that explore the integration of intelligent web technologies with human cantered design focusing on areas such as semantic web web data mining user interface design natural language processing and the development of adaptive context aware systems *ICT for Intelligent Systems* Jyoti Choudrie,Parikshit N. Mahalle,Thinagaran Perumal,Amit Joshi,2023-09-08 This book gathers papers addressing state of the art research in all areas of information and communication technologies and their applications in intelligent computing cloud storage data mining and software analysis It presents the outcomes of the Seventh International Conference on Information and

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Resources in Education ,1976   *Boosting Collaborative Networks 4.0* Luis M. Camarinha-Matos,Hamideh Afsarmanesh,Angel Ortiz,2020-11-16 This book constitutes the refereed proceedings of the 21st IFIP WG 5 5 Working Conference on Virtual Enterprises PRO VE 2020 held in Valencia Spain in November 2020 The conference was held virtually The 53 full papers were carefully reviewed and selected from 135 submissions They provide a comprehensive overview of major challenges and recent advances in various domains related to the digital transformation and collaborative networks and their applications with a strong focus on the following areas related to the main theme of the conference collaborative business ecosystems collaborative business models collaboration platform data and knowledge services blockchain and knowledge graphs maintenance compliance and liability digital transformation skills for organizations of the future collaboration in open innovation collaboration in supply chain simulation and analysis in collaborative systems product and service systems collaboration impacts boosting sustainability through collaboration in Agri food 4 0 digital innovation hubs for digitalizing European industry and collaborative networks for health and wellness data management   *Recent Trends in Computational Sciences* Gururaj H L,Pooja M R,Francesco Flammini,2023-11-17 This book is a compilation of research papers and presentations from the Fourth Annual International Conference on Data Science Machine Learning and Blockchain Technology AICDMB 2023 Mysuru India 16 17 March 2023 The book covers a wide range of topics including data

mining natural language processing deep learning computer vision big data analytics cryptography smart contracts decentralized applications and blockchain based solutions for various industries such as healthcare finance and supply chain management The research papers presented in this book highlight the latest advancements and practical applications in data science machine learning and blockchain technology and provide insights into the future direction of these fields The book serves as a valuable resource for researchers students and professionals in the areas of data science machine learning and blockchain technology   **FAO Documentation: Current Index** Food and Agriculture Organization of the United Nations. Documentation Center,1971   The American Archivist ,1997 Includes sections Reviews of books and Abstracts of archive publications Western and Eastern Europe   New York Court of Appeals. Records and Briefs. New York (State).,   **Environment Abstracts** ,1985   *Quick Frozen Foods* ,1962   *Nutrition Index, 1945-1966* Food and Agriculture Organization of the United Nations. Documentation Center,1968   Documentación de la FAO; Bibliografía Corriente Food and Agriculture Organization of the United Nations. Documentation Center,1976   **Yearbook of the United Nations** United Nations,1987   **International Labour Documentation** International Labour Office. Central Library and Documentation Branch,1992   Documentación de la FAO. ,1976   Meat Business Magazine ,1994   Resources in Education ,1997

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