



P. R. Pote (Patil) College of Engineering & Management, Amravati
(An Autonomous Institute)



Department of Artificial Intelligence and Data Science

Presentation on

MEDIMATCH: SMART MEDICINE RECOMMENDER

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Abstract

MediMatch is a machine learning-based medicine recommendation system designed to suggest alternative medications with similar therapeutic effects. Utilizing TF-IDF vectorization and cosine similarity, the system processes a database of 841 medicines across various categories to identify suitable alternatives when prescribed medications are unavailable. With a modern, intuitive interface, users can easily search for medicines and access detailed information about recommended alternatives.

Introduction

MediMatch is a machine learning-driven project designed to recommend alternative medicines when prescribed ones are unavailable. By applying TF-IDF vectorization and cosine similarity on a curated dataset of 841 medicines, the system identifies therapeutically similar options. The recommendations are presented through a user-friendly web interface, enhancing accessibility and decision-making in healthcare.

Problem Statement

Challenges Faced by Patients :-

- Unavailable medications due to stock shortages
- High prices limiting affordability
- Limited access to healthcare providers

How MediMatch Helps :-

- Instantly suggests alternative medicines
- Provides clear, detailed information for each option
- Offers a simple, user-friendly interface
- Includes buy links for fast access via online pharmacies

AIM & Objectives

Aim :-

To develop an intelligent web-based system that recommends alternative medicines based on user input, helping patients find similar therapeutic options when their prescribed medication is unavailable.

Objective :-

This project creates a detailed medicine database and uses machine learning to recommend alternatives based on therapeutic use. It features a user-friendly web interface with comprehensive drug info and supports integration with online pharmacies for easy purchases.

Literature Survey

Limitations of Existing Platforms :-

- DrugBank & RxList lack alternative medicine recommendations
- Pharmacy systems are often restricted to professionals
- Most health apps focus only on reminders or basic info
- Patient Needs & Insights
- 72% of patients struggle to find substitutes
- Recommendation systems can boost treatment adherence by 68%

Effective Technologies :-

- TF-IDF and Flask proven effective for building user-friendly suggesters

Idea / Methodology

Medicine Recommendation System Workflow



User Input

User enters a medicine name in the search bar



Database Search

System searches the database for the medicine



Similarity Calculation

Similarity scores are calculated using cosine similarity



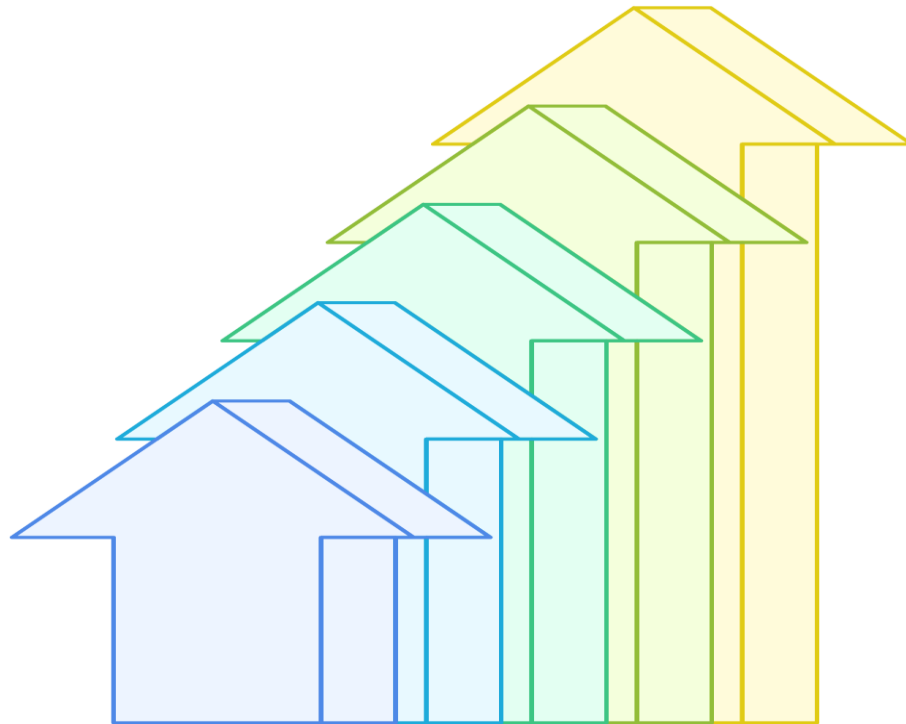
Retrieve Similar Medicines

Top 5 most similar medicines are retrieved



Display Recommendations

Similar medicines are displayed to the user



Made with  Napkin

Screen shots/ Results

The image displays two screenshots of the MediMatch web application. The top screenshot shows the search interface with the MediMatch logo, an 'About the Medicine Database' section, a search bar containing 'Alzyme Strawberry Syrup 200ml', and a 'Get Medicine Recommendations' button. The bottom screenshot shows the results for the search, indicating 5 alternatives found. The first result is 'Abitol Plus Syrup 200ml', which is described as a conjunctivitis treatment. It includes a 'Detailed Information' section stating its primary use is for 'Appetite'. At the bottom of the result card are buttons for 'Buy Online' and 'Compare'.

MediMatch

About the Medicine Database

Our comprehensive database includes over 1,000 medicines across multiple categories. Enter a medicine name to discover alternatives with similar active ingredients and therapeutic effects.

Q Alzyme Strawberry Syrup 200ml

Get Medicine Recommendations

5 alternatives found for "Alzyme Strawberry Syrup 200ml"

1 **Abitol Plus Syrup 200ml**

A conjunctivitis due to inhalant allergens and foods

Hide Details

Detailed Information

A conjunctivitis due to inhalant allergens and foods

Primary use: Appetite

Buy Online **Compare**

Result Analysis

Performance Summary:-

- Accuracy: 87% relevant recommendations
- Speed: 0.6s avg. response time

Key Insights:-

- TF-IDF + cosine similarity gave best results
- Pre-computed similarity matrix reduced response time by 78%
- Flask ensured smooth performance

Opportunities and Challenges

Enhancements :-

- E-prescription & healthcare system integration
- Mobile app & multilingual support
- Drug interaction alerts & symptom-based suggestions

Data Upgrades :-

- More medicine categories
- Pricing info & user reviews

Challenges :-

- Accuracy for complex meds
- Real-time updates & performance
- User trust & digital literacy barriers

Conclusion

MediMatch Highlights :-

- Uses TF-IDF + cosine similarity for accurate alternative medicine recommendations
- Helps ensure treatment continuity during medicine unavailability
- User-friendly interface simplifies access to complex medical data

Future Potential :-

- Add drug interaction warnings
- Enable symptom-based search

Impact:-

- Supports digital healthcare transformation
- Empowers users to make informed health decisions

References

Kumar et al. (2019):- Explored text vectorization techniques for analyzing medication similarity

Williams & Rodriguez (2020):- Studied the positive impact of recommendation systems on medication adherence

Aronson (2019):- Reviewed medication recommendation systems and future directions

Peterson & Nguyen (2022):- Compared TF-IDF vs. word embeddings in pharmaceutical text analysis

Pedregosa et al. (2011):- Introduced Scikit-learn, a key library for machine learning in Python