

Building a Simple Recommendation System for Health Tips

Context: You are tasked with building a simple recommendation system that suggests personalized health tips based on user profiles (age, gender, medical conditions, etc.).

Task Overview:

1. **Dataset Creation:**
 - Use platforms like Kaggle or Hugging Face to either simulate or find a suitable dataset containing user profiles with attributes such as age, gender, medical history, and a list of recommended health tips.
 - Ensure the dataset has at least 1000 rows of data with a variety of health conditions and user demographics.
2. **Model Building:**
 - Build a Content-based Recommendation System using Cosine Similarity or k-Nearest Neighbors (k-NN) in Python.
 - The system should suggest the top 3 health tips for each user based on similar profiles.
3. **Model Evaluation:**
 - Provide a brief evaluation of how well the recommendations align with common health advice, using real-life examples if possible.
 - Suggest ways to improve the recommendations by incorporating more user data or using collaborative filtering.
4. **Theoretical Task:**
 - Explain the basic principle behind Cosine Similarity or k-NN and why it is suitable for this type of recommendation task.

Deliverables:

- **Code:**
 - Submit a Python notebook (.ipynb) with all your code, from data preprocessing to model evaluation.
 - Make sure the notebook is well-documented, with comments explaining each step.
- **Report (Max 2 Pages):**
 - A brief report covering:
 - Key preprocessing steps taken.
 - Model choice and the rationale behind it.
 - Performance metrics of the model.
 - Theoretical explanation of the chosen model and how it translates mathematical formulas into algorithms.
 - Suggested improvements to your model and why they might work.

Bonus (Optional, but encouraged):

- If you're familiar with cloud platforms (AWS, Google Cloud, etc.), try deploying your model on a cloud service and provide a URL where we can see it in action. A simple API endpoint is sufficient.