# Drug Recommendation Chatbot Report

**Ayşe Lara GÜNEŞ 206001008**

**Enes KALECİ 206001021**

**Zehra KOLAT 206001007**

**Emir BOZKURT 206001005**

**Furkan BİTİK 206001053**

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**Instructor:** Alper ONER



Istinye University

Faculty of Engineering and Natural Sciences

Mathematics Department

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# Contents

# 1 Introduction

Fast and accurate access to information in the field of health is important for individuals to make informed health decisions. Access to accurate information, especially on critical issues such as medication use, plays a vital role in preventing risks such as drug interactions or age incompatibility. In this context, in our project, we aim to develop an AI-powered chatbot that can recommend appropriate medications. We want to give a solution for human health. This project aims to develop an AI-based healthcare assistant that enables users to receive meaningful, safe, and data-driven answers to their medication-related questions. Our reason to choose this problem was help people who want to check medicine according to their health condition. Therefore, we aim to build a system that can recommend suitable medications for a given condition, check drug compatibility and interactions, and assess age appropriateness of drugs. The chatbot system we will develop for our project focuses on two basic scenarios:

1) The user requests information about a specific medication.

2) The user requests a medication recommendation that is appropriate for a disease they are experiencing.

In both scenarios, age-appropriateness of drugs, possible side effects, and interactions between drugs are evaluated based on users' information. Our project uses a dataset. This system aims to facilitate access to health information and support users in making informed choices.

The main motivation of this project is to support users' decision-making processes.

## 2  Dataset Description

The dataset used in this project contains information about medications, including their medical conditions, recommended age ranges, food and drug interactions, and potential side effects. The dataset is in .csv format and includes the following main columns:

- **drug_name:** The name of the drug. This is used to match user input and provide relevant drug information or suggestions.

- **medical_condition:** The medical condition or illness the drug is typically used for. The system matches this field with user-stated symptoms or conditions to suggest appropriate medications.

- **recommended_age_range:** The minimum recommended age for using the drug. This is checked against the user's age to determine suitability.

- **drug_interactions:** A list of other drugs that may interact with the selected drug. This is used to warn users if there is a potential interaction when combining two medications.

- **food_interactions:** Information about the drug's possible interactions with food. Presented to the user for awareness.

- **side_effects:** Known side effects of the drug. Displayed when providing detailed drug information.

## 3  Technologies Used

- **Python:** Main programming language for chatbot development.

- **Pandas:** For loading and processing the CSV dataset.

- **Regular Expressions (re):** To extract numeric age data from text.

- **CSV:** Dataset format for structured data storage.

- **Command-Line Interface (CLI):** User interaction via terminal inputs.

## 4  Method and Approach

The development of our AI-based drug recommendation chatbot follows a step-by-step methodology:

**User Input Processing:**  The user interacts with the system through a command-line interface (CLI). The system asks the user for the following required information: age, the name of a medication used, or the condition it is trying to treat. The user can choose to receive detailed information about a single drug or see drug recommendations based on the medical condition they are experiencing.

**Drug Matching Based on user input:**

If a drug name is provided, the system searches the dataset for a matching entry. If a medical condition is provided, the system filters the dataset to find drugs commonly prescribed for that condition.

**Age Check:** The system checks if the user's age is within the recommended age range specified in the dataset for the selected drug(s).

If the age is not within the recommended range, a warning is displayed to the user.

**Interaction Analysis:**  If the user administer multiple medications, the system checks for interactions. If there is a known interaction between two drugs, the user is warned. Otherwise, information is provided that the drugs can be used together. This feature is important for early detection of possible drug interactions; it also checks for food interactions and displays them for

awareness.

**Side Effect Notification:** When a medication is selected, the chatbot displays possible side effects so the user is aware of common reactions.

**Response Generation:** After all checks are performed, the system generates a summary response to the user.

## 5   Chatbot Conversation Flow

The chatbot follows a structured and user-friendly conversation flow designed to guide the user through drug-related queries in a step-by-step manner. The interaction process is as follows:

- **Greeting and Age Input**  The system welcomes the user and prompts them to enter their age. This information is used to assess the suitability of drugs based on age restrictions.

- **User Intent Selection** The chatbot offers two options:

  - **Drug-Based Inquiry:** The user can enter the name of a drug to receive detailed information about it.

  - **Condition-Based Suggestion:** The user can enter a medical condition to receive a list of recommended drugs.

- **Drug Information Display** If a drug name is provided, the system presents:

  - Medical usage (condition it treats)

  - Age suitability check

  - Food interaction details

  - Known side effects

**Medical Condition Lookup** If a condition is provided, the chatbot searches the dataset and lists drugs commonly used to treat that condition.

- **Drug Interaction Check (Optional)** After receiving drug or condition-related suggestions, the user is asked whether they would like to check if two drugs can be safely used together. If so, the chatbot evaluates potential interactions using the dataset.

- **Conversation End** The system ends the conversation with a polite message, encouraging safe and informed medication use.

## 6    Conclusion

In this project, we aimed to present an AI-powered chatbot prototype that can provide drug recommendations and information about drugs. In fact, our aim was to provide users with fast access to reliable and personalized health information, especially on topics such as drug use, drug interactions, and age-appropriateness. In our project, we focused on two basic scenarios: A user requesting information about a specific drug or requesting a suitable drug recommendation for a health problem they are experiencing.

In the development process, we created a chatbot system that works via the command line (CLI) using Python and Pandas. The dataset we used in the project was in a structured format that included drug names, diseases it treated, recommended use information according to age, drug-drug and drug-food interactions, and possible side effects. The system will process the inputs it receives from the user, match them with the dataset, and provide meaningful and safe feedback to the user accordingly. This chatbot allows users to question whether the medication is suitable for them, especially before starting the medication. Although our project does not aim to replace a doctor, it raises

awareness about conscious drug use and helps users make safer decisions.

## 7   Project Presentation Video

We prepared a presentation video. You can reach our presentation via link:

https://streamable.com/0xtsre