

Voice Prescription Application Integrated with AIML Chatbot

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Abstract

Illegible handwriting of doctors in prescriptions causing difficulty for pharmacists in providing exact medicine to patients. Every year about thousands of patients losing their lives throughout the world due to doctors sloppy handwriting skills. The solution for this problem is a voice prescription application that uses speech-to-text technology to make flawless and legible prescriptions. The generated prescription can be shared with the patient either in a soft copy or hard copy format. This application also maintains the medical records of patients for future purposes and also provides the facility to book an appointment with a doctor. The integrated AIML (Artificial Intelligence Markup Language) chatbot suggests a patient determine the type of doctor to be consulted based on symptoms. And also it provides a diagnosis for minute health issues.

Key-words: AIML (Artificial Intelligence Markup Language), Speech-to-text Technology, Voice Prescription.

1. Introduction

It is difficult to understand the doctor's sloppy handwriting in the prescription for the pharmacists. The solution for this problem is a voice prescription application that uses speech-to-text technology to make flawless and legible prescriptions. We are using Web Speech API to convert voice to text. The text result is searched in the database to give relevant medicines list. From this list of medicines, the doctor can choose the appropriate medicine for the patient. Based on the medicines

selected by the doctor, the prescription is generated. We can have the resultant prescription in either hardcopy or softcopy. The integrated chatbot suggests a patient determine the type of doctor to be consulted based on symptoms. And also it provides a diagnosis for minute health issues. We are using AIML (Artificial Intelligence Markup Language) for Chatbot Development.

Existing System

Doctors give a handwritten prescription on paper. In that prescription, we can find details of the patient (Name, Age, Gender, and Phone Number) and the doctor's name. In general, a doctor uses it to provide details about the medicines and their dosage.

- As we know, it is difficult to understand the doctors' handwriting, which may lead pharmacists to give the wrong medicine.
- Every year about thousands of patients losing their lives throughout the world due to doctors sloppy handwriting skills.
- Another drawback is that the prescription can be lost or misplaced when it is in paper format.

Proposed System

With Voice Prescription, doctors can provide accurate and legible medicine prescription to the patient. In addition to providing accurate medicines, we provide some additional information like when a particular medicine should be taken and we also provide a website link of medicine so that the patient/doctor can check details about the medicine.

- Accurate medicine can be provided with this application.
- Additional information like details about the medicine and a website link of medicine will help the patient/doctor to understand why a particular medicine is used.
- Another advantage is that the patient personal details and medical history is used for long-lasting.

2. Methodology

Patient Registration

- The patient should register for getting an appointment with the doctor by providing his/her details.

The patient personal details and medical history is maintained in the database. So, the patient need not provide his/her details when they revisit the hospital.

Fig. 1 - Patient Registration Form

A screenshot of a patient registration form titled 'Patient Details' on a red background. The form contains five input fields: 'Name', 'Age', 'Select Gender', 'Email Address', and 'Phone Number', each in a white rounded rectangle. Below these fields is a 'Submit' button in a white rounded rectangle with red text.

Fig. 1 shows the patient registration form of the voice prescription application.

Voice Search

- A doctor can search for medicine using the voice search feature in the application. This voice is converted into text using Web Speech API.

Fig. 2 - Voice Search Result

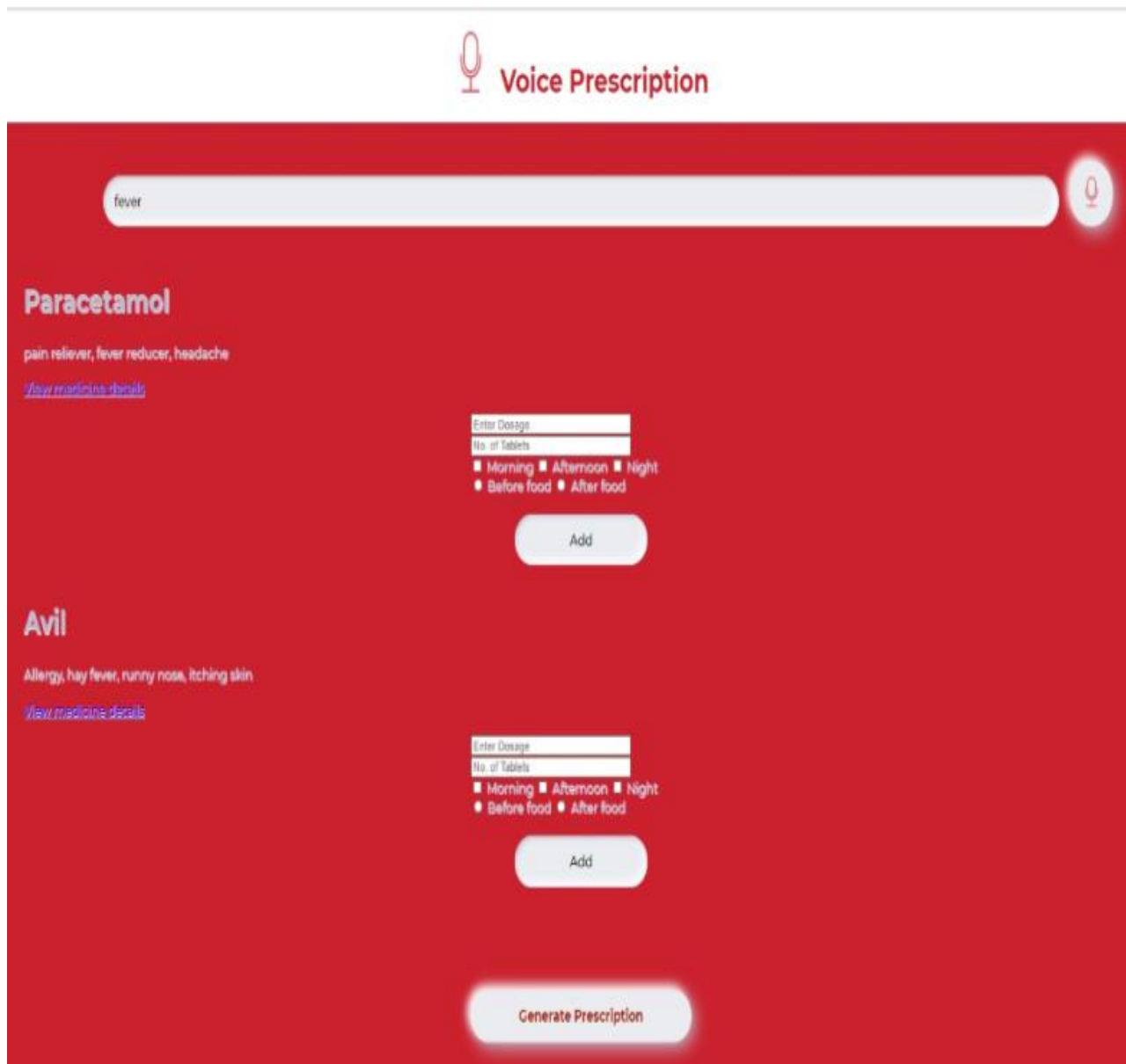


Fig. 2 shows the result obtained by performing a fever voice search.

- The text result is searched in the database to give relevant medicines list. From this list of medicines, the doctor can choose the appropriate medicine for the patient.

Fig. 3 - Control Flow of the System

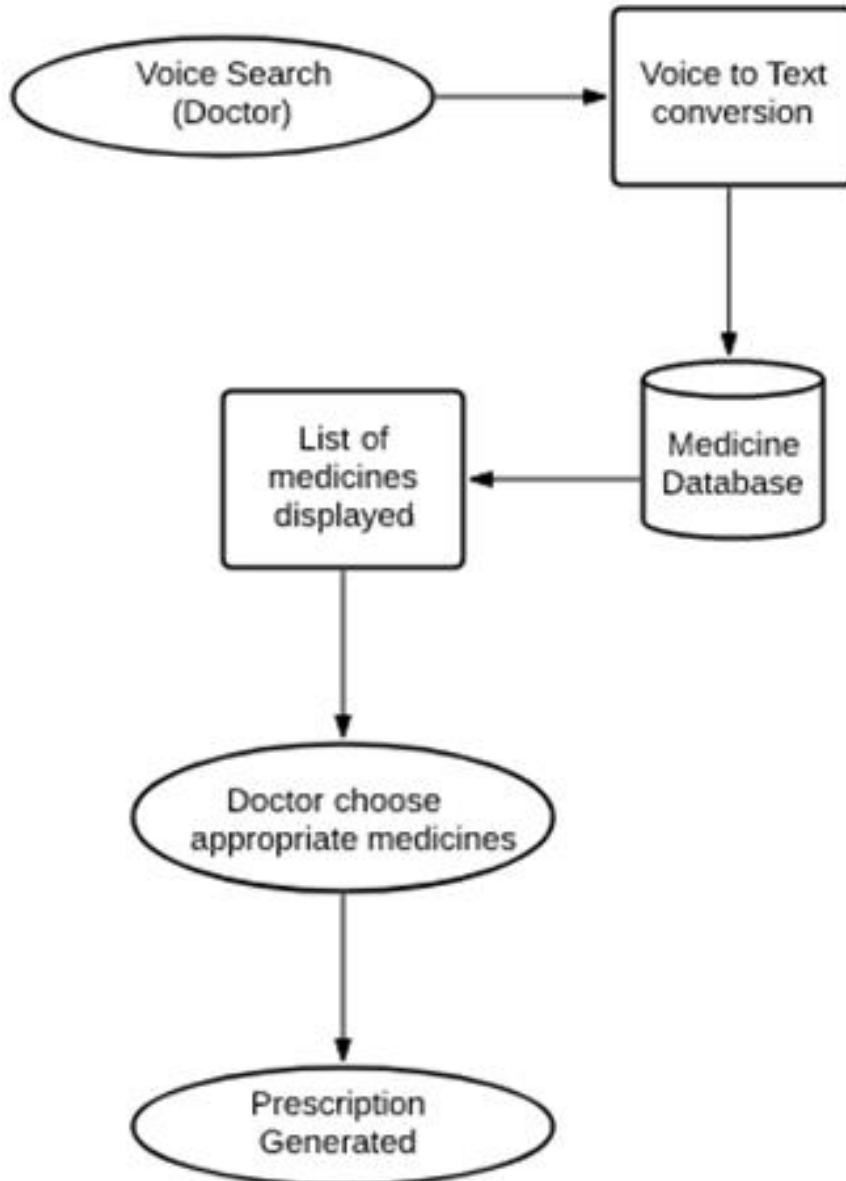


Fig. 3 depicts the control flow of the system.

- Along with the medicine name and dosage, the prescription also contains the usage of medicine and a reference website link of the medicine.

Fig. 4 - Prescription



Medical Receipt

Patient Id: Rav98899
Name: Ravi
Gender: Male
Age: 23
Email: ravi@gmail.com
Phone_No: 9988998899

Title: Paracetamol 500mg
Symptoms/Uses: pain reliever, fever reducer, headache
Link: <https://www.drugs.com/paracetamol.html>
No. of Tablets: 10Tablets
Morning Night
After having food.

Title: Crocin 500mg
Symptoms/Uses: Headache, Period Pain, Aches & Pains, Cold, Flu, Earache
Link: <https://www.crocin.com/>
No. of Tablets: 5Tablets
Morning Night
After having food.

Title: Vicks 500mg
Symptoms/Uses: cold, cough, flu, sinus, Nasal Congestion, Sore throat, Chest Congestion
Link: <https://vicks.com/en-us/vicks-history>
No. of Tablets: 10Tablets
Morning Afternoon Night
After having food.

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Fig. 4 shows the generated prescription by the application.

- Based on the medicines selected by the doctor, the prescription is generated.
- We can have the resultant prescription in either hardcopy or softcopy.

Database

- We are using MySQL database for storing information like patient details, medicine details, and doctor appointment details.
- We are using phpMyAdmin to perform most administration tasks, including creating a database, running queries, and adding user accounts.

Fig. 5 - Database

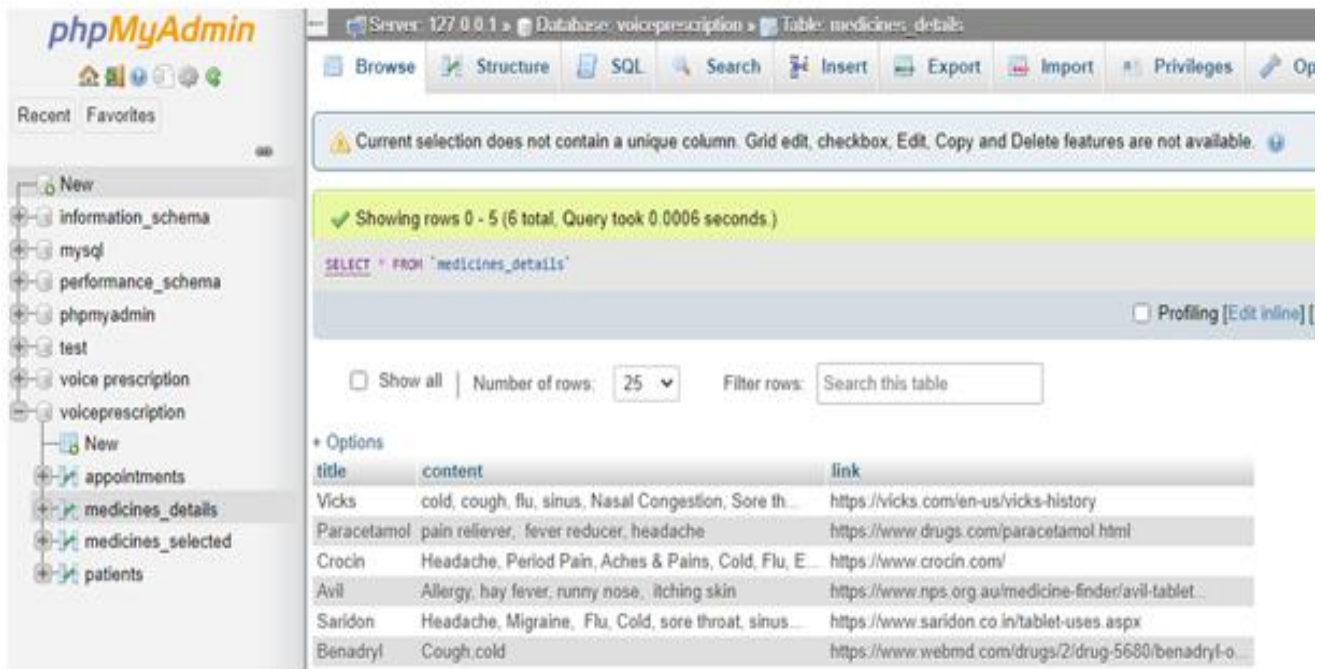


Fig. 5 shows the database of the application.

Web Speech API

The JavaScript Web Speech API helps to convert speech to text. It is easy to add speech recognition to web pages using this API. It can support more than 50 languages for voice to text conversion.

Fig. 6 - Web Speech API



Web Speech API

Fig. 6 shows that Web Speech API helps to convert speech to text.

AIML Chatbot

The integrated AIML (Artificial Intelligence Markup Language) chatbot in this application collects information like symptoms from a patient and suggests the type of doctor to be consulted. The patient can book an appointment with a doctor suggested by the chatbot. And also the chatbot provides diagnoses for minute health issues. We are using AIML (Artificial Intelligence Markup Language) for Chatbot Development.

Fig. 7 - Chatbot

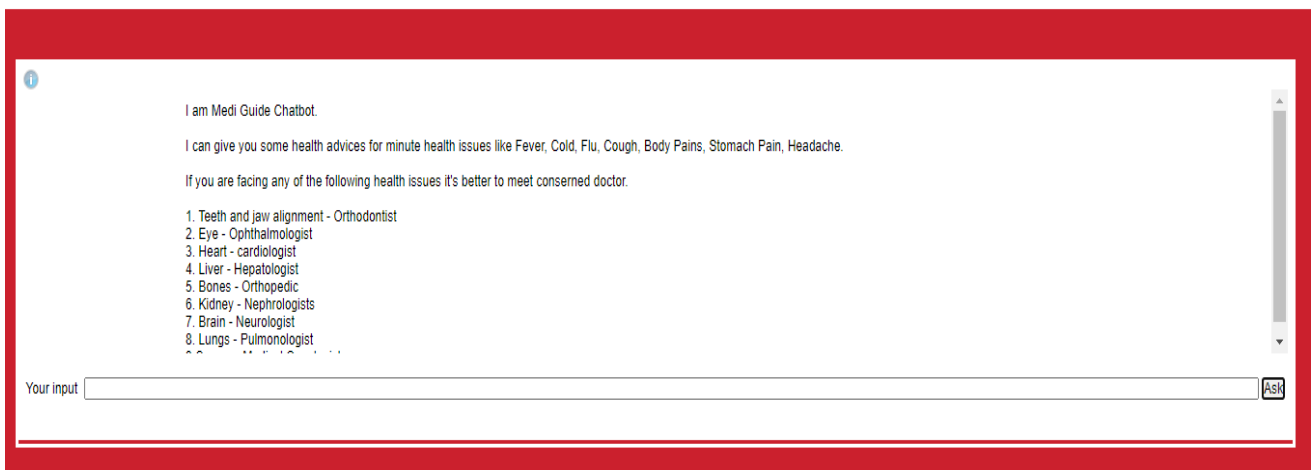


Fig. 7 shows the AIML Chatbot that is integrated with the application.

AIML

Artificial Intelligence Markup Language was created by “Dr. Richard Wallace”. And AIML is an open- source framework for developing chatbots. It is offered by the “ALICE AI Foundation” so that users can create intelligent chatbots for their use from scratch.

AIML is an extremely simple XML, just like Hyper Text Markup Language or HTML. It contains a lot of standard tags and tags which are extensible, which you use to mark the text so that the interpreter which runs in the background understands the text you have scripted.

Just like XML functions, AIML also characterizes rules for patterns and decides how to respond to the user accordingly. AIML has different elements like categories, patterns, and templates.

3. System Requirements

Software Requirements

- Operating System: Windows OS / Linux OS / Mac OS.
- Software: Xampp.
- Tools: phpMyAdmin.
- Browser: Chrome version 25 and later.

Hardware Requirements

- RAM: 1GB and above.
- Hard Disk: 10GB free space and above.

4. Result

The benefits of this application are as follows,

- Handwritten prescription flaws can be reduced. And exact medicine can be provided to the patient.
- Additional information like details about the medicine and a website link of medicine will help the patient/doctor to understand why a particular medicine is used.
- Another advantage is that the patient personal details and medical history is used for long-lasting.
- The integrated AIML chatbot suggests a patient determine the type of doctor to be consulted based on symptoms. And also it provides a diagnosis for minute health issues.

Fig. 8 - Prescription Result



The image shows a digital medical receipt titled "Voice Prescription". At the top left is a microphone icon. The receipt is enclosed in a red border and contains the following information:

Medical Receipt

Patient Id: Rav98899
Name: Ravi
Gender: Male
Age: 23
Email: ravi@gmail.com
Phone_No: 9988998899

Title: Paracetamol 500mg
Symptoms/Uses: pain reliever, fever reducer, headache
Link: <https://www.drugs.com/paracetamol.html>
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No. of Tablets: 10Tablets
Morning Night
After having food.

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Fig. 8 shows the resultant prescription generated by the application.

5. Conclusion and Future Works

Speech-to-text conversion helps us to generate legible prescriptions for the patient. So that we can able to reduce the deaths of people occurring due to doctors' sloppy handwriting. The further work is to make the web application mobile responsive and to add few more features to the application.

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