Personalized Isease Diagnosis And Health Guidence

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Abstract- *Access to timely and reliable healthcare services remains a challenge, especially in regions with limited medical infrastructure and linguistic diversity. Digital healthcare tools, such as Chatbot's, offer promising solutions by providing round-the-clock assistance and facilitating access to essential medical information. In this context, we present a multilingual medical Chatbot designed to bridge communication gaps and deliver healthcare support to users in both English and Kannada. The Chatbot incorporates artificial intelligence through a CNN-based model for skin disease diagnosis and integrates features such as emergency response, voice-based interaction, and blood donation assistance. By using modern APIs like Gemini, it further enriches the user experience with accurate and location-specific medical information. This project demonstrates how intelligent, accessible, and language-aware systems can support inclusive healthcare delivery in underserved communities.*

Keywords- Blood donation request and response, Chatbot, Emergency SOS, Healthcare assistant, Medical assistance .

I. INTRODUCTION

Quality healthcare accessibility is still a pressing issue in areas with low infrastructure and language limitations. AI-driven chatbots are becoming essential technologies to fill this gap by providing constant, accessible, and smart assistance to users.This project demonstrates a multilingual medical chatbot created with Python's Flask framework for delivering personalized disease diagnosis and healthcare advice in English and Kannada.

The chatbot utilizes artificial intelligence in the form of a Convolutional Neural Network(CNN) for precise detection of skin diseases from images. It also facilitates voice interaction with the help of Google's Speech-to-Text and Text-to-Speech API's, making it user-friendly for users with different levels of digital literacy. The system uses the Gemini API to give accurate and location based medical information, including symptoms, treatment and local hospitals. Other functionalities such as emergency SOS notification, blood donation request and response system. Through the combination of deep learning models and multilingual support, this chatbot is intended to be an inclusive and smart healthcare assistance that enables people in under-resourced communities.

II. LITERATURE SURVEY

1. Chatbot for disease prediction and recommendation using machine learning.
Author: Rohit Binu Mathew, Sandra Varghese , Sera Elsa Joy, Swantana Sushan Alex

This research proposes a chatbot using NLP and machine learning to identify symptoms, predict diseases and recommend treatments. It offers a quick ,accessible alternative to hospital visits , promoting the healthcare awareness and preventing care.

2. Advance NLP models for technical university information chatbot: Development and comparative analysis
Author : Suchet V. Koleker

This research develops NLP based chatbot to provide accurate, 24/7 information to students ,sequential modelling proved most accurate among tested approaches, enhancing real time query resolution for universities.

3. Voice based medical chatbot for efficient healthcare assistants.
Author: A Ramesh , G.Srinivasan, Etal

This paper investigate the role of voice based medical chatbot in enhancing healthcare delivery. The chatbot system utilizes google voice to text technology and NLP for processing voice input from user. By understanding and interpreting spoken queries, the chatbot can provide health information, symptom checking, and even emergency response functionalities.

4. Automized medical chatbot: year 2020 Author: Prakhar Srivastaava , Nishanth Sigh

This paper conversationally built with technology in mind with having the potential to reduce effort to healthcare cost and improve access to medical services . Build a

diagnosis bot that engages patient in the conversion for their medical query using machine learning and NLP.
5. Healthcare chatbot using NLP Flask 2022
Author: Kshitij Thakre, Dr. P.R Rothi, Sakshi Kukade, Pranali Shindhe ,Komal madame

AI chatbot provides 24/7 health care support by answer quaries and scheduling appointments and guiding patient. They use machine learning to adopt to response and widely used in hospitals improving care efficiently.

III. METHODOLOGY

The system is a multilingual medical chatbot developed using flask framework, it support Kannada and English and provides following features:

1. Health information quires: Integrate Gemini API to provide accurate health related information such as symptoms, treatment, nearby hospitals.
   Technology: NLP technology is used for this feature.
2. Voice interaction: Google's TTS and SST API for voice based input.
3. Emergency SOS: Enables the users to trigger SOS alert that send GPS location, emergency contact or services.
   Technology: use GPS(Google map API)and SMS/internet based notification.
4. Blood donation management: Allow user to register or respond blood donation request, with real time notifications.
5. Skin disease detection: Utilizes a conventional neural network(CNN) to identify skin condition from user uploaded images, providing diagnosis and treatment suggestion. Technology: Tensorflow, pyTorch.

Module training: Use conventional neural network for images classification.

Augment images to improve module robustness.

Facilitate real time notification and alert to ingrate services like telegram messaging to send alert related to SOS triggers and blood donation request. To access performance of chatbot, particularly the CNN model accuracy(targeting 91% or higher)and user feedback.

Integration:

1. Combine the all individual modules system
2. Ensure the seamless communication
3. Perform extensive testing to identify and fix the bug

IV. HARDWARE AND SOFTWARE REQURIMENTS

Hardware requirements are, processor of minimum intel i5 or equivalent, atleast 8GB of RAM for smooth operation, 500GB HDD or SDD for storage and GPU required for Training skin disease prediction module.

Software requirement are, system requires the frontend of programming language HTML, CSS, and JavaScript for user Interaction and Python for backend processing, the system uses framework and libraries are tensorflow or PyTorch and opencv for NLTK process and also uses a flask web framework.

V. SYSTEM ARCHITECTURE

This system follows a modular layered architecture with the fallowing components:

1.Client layer(frontend):

Web based application for user interaction feature include:

SOS button, ,image uploaded for skin diseases detection, chatbot interface and blood donation request.
Input handling: GPS access for location.

2.Middleware layer(API gateway):

Acts as a communication bridge between the frontend and backend.

3.Backend:Flask based API

Backend processes all user request, manages logic and interact with external system like deep learning.

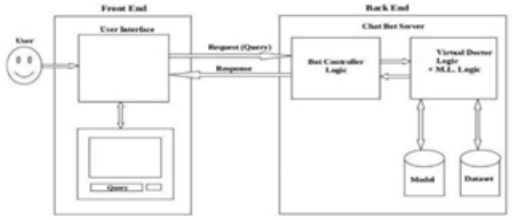

Fig1: Working module of proposed system

CNN model architecture:

The CNN model is designed with:

1. Convolutional layers: Extract features from input images.

2. Pooling layers: Reduce dimensionally and computational complexity
3. Fully connected layers: Classify skin diseases into predefined categories

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Training was conducted on labeled datasets of skin images, using data augmentation techniques so enhance model robustness.

The model achieve an accuracy of 91% on the validation set.

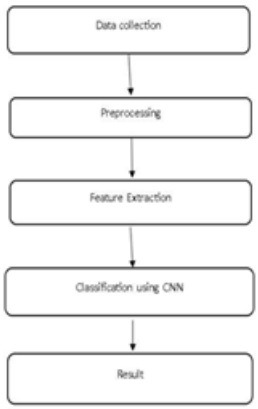

Fig2:CNN working module

VI. CONCLUSION AND FUTURE SCOPE

Conclusion:

The multilingual medical chatbot offers a powerful solution to improve healthcare accessibility. The chatbot can assist with skin disease detection, provide healthcare related information, handle emergency SOS alerts, and manage blood donation request. It supports both Kannada and English language making it accessible to a wider audience. The health system bridges the gap between technology and healthcare, offering users reliable diagnostic tools and critical assistance in emergencies. Through its integration of NLP technologies, it provides an easy-to-use interface that can support a variety of healthcare needs, ultimately making healthcare services more available to underserved populations.

Future scope

1. Expansion of language support: To reach a larger , more diverse audience, the chatbot can be expanded to include more regional languages, ensuring that language is no longer a barrier to accessing healthcare.
2. Enhaced Disease Detection: The CNN model for skin disease detection can be further improved by using a larger dataset, possibly incorporating other medical condition.
3. Integration with additional health APIs. The chatbot could benefit from integration more health- related APIs, such as those offering mental health support , drug database, or telemedicine , which would increases its ability to provide Comprehensive healthcare information.
4. Improved Emergency Response : Enhancing the SOS functionality with real time location tracking could ensure that .emergency responders reach users more quickly and efficiently, making the system even more reliable in critical situations.
5. Personalized health Insights: By analyzing user interactions and health data, the chatbot could offer personalized health tips, reminders, and recommendations, improving user engagement and providing tailored healthcare advice.
6. Integration with wearable Device: connecting the chatbot with wearable devices, such as fitness trackers or smartwatches, would allow for real-time health. Monitoring and proactive health management, helping users stay on top of their well being.
7. Improved Security and Privacy: Strengthening security features, susch as encryption and data protection measures, would ensure that users data remains safe and compliant with healthcare regulations, fostering trust in the system.

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[3] Flask Documentations Available at: https://flask.palletsprojects.com Flask is web famework used to build the backend API for the chatbot www.ijsart.com

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