

# Sthri Asthra: A Privacy-Focused Ai Platform for Women's Health, Safety, Emotional Support, And Awareness

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**Abstract**—In today's world, getting, accessing, searching true information is difficult in the areas like health, safety, and emotional well-being. Women are one of those who face difficulty and challenges of their life individually. This leads to increase in problems so we bought app called Sthri Asthra. This app is developed to act as backbone support for women and girls. It also a unique hybrid chatbot built using NLP and TF-IDF and some ML. TF-IDF used to detect tone of the text and emotions and this app can be executed locally in VS code to ensure privacy of user we have secret code that only user can know and she should not share with anyone. Finally, the app we built aims to provide instant helpful, supportive responses to control user emotions.

**Index Terms**—Artificial Intelligence, Women Safety, Natural Language Processing, Hybrid Chatbot, Recommendation System, TF-IDF, Cosine Similarity, Sentiment Analysis

## I. INTRODUCTION

### A. Background and Motivation

In today's society, women face multiple challenges related to health, family responsibility, and lifestyle. In many situations, they hesitate to seek help and instead they blindly believe advice from others. This can lead to misunderstandings, miscommunication.

In this developing era of AI, getting opportunity to provide better support system for women is rare so we are here with a system for women's physical and mental well-being. While several platforms already exist, our approach is unique and combining health awareness, safety, motivation, and emotional support through a chatbot.

### B. Role of AI in Social Impact Systems

In past few years, Artificial intelligence has become part of every field including medical and arts. In our system we understand and bring hand in hand solution to real world problem. One of the specialities of AI is interaction with humans. Instead of searching globally just have to login to one platform and place their problems. By user's text tone they can detect his/her emotions and respond accordingly.

However, these types of systems need to be developed carefully by keeping this in my mind they are not replacing humans instead they are helping humans.

### C. Scope of the Present Work

This work focuses on the design and development of Sthri Asthra, a platform that combines multiple types of support such as health awareness, safety guidance, and emotional support. The system is designed in a way that it can be used by different groups of users, including students, working women, and homemakers. It provides information in simple and easy to understand format so that the users can face any issue.

## II. PROBLEM STATEMENT

Girls and Women from birth to death face different types of problems some are solvable while some are not. They are not open to world and themselves, most of the problems are interconnected to each other. How the wound in the body grows bigger if not treated in the same way if women don't share their problems, burdens with other when it is small it can grow bigger and bigger and reach a stage where it is unsolvable.

Few of the issues faced by women's and girls and listed below:

#### *A. Limited Access to Structured Health Information*

Health is most important when we talk about humans. Women's health very sensitive than that of men. But the problem is lack of reliable and best health information. Both girls and women are not aware of their own health issues because they are busy with their work pressure.

The health includes menstrual health, diet, pregnancy and general wellness. Most of the cases we believe in informal sources that can be fake and fraud for health information.

#### *B. Emotional Stress and Mental Health Neglect*

One of the most important and dangerous symptoms to worsen the health is stress. In women's increase in stress can lead to several issues like hormonal imbalance, anxiety, mood swings, depression etc. When these symptoms are neglected can lead to both mental and physical issues so support from family and friends is must.

#### *C. Safety Risks and Lack of Immediate Guidance*

If we consider the current world women's and girls' below and above puberty are also not safe. There are several cases related to safety measure including rape cases, harassment (sexual and mental).

Learning how to protect themselves from those hungry men's and family-relatives should be taught from young age itself it is like proverb teach from womb.

#### *D. Social Pressure and Lack of Respectful Guidance for Men*

When we were doing our research, we found many unexpected reasons that why women's face so many issues in their life.

Problems occurs when someone crosses the border line of a person. Women should be respected in both personal and professional life and most of the sources teach only how to protect women but never teach how men should behave with a women or boy with a girl. As the saying goes value education, morality comes from family so everyone needs a lesson to take and give respect so that we can reduce number of cases in our country.

### III. LITERATURE REVIEW

This section discusses some of the existing work related to chatbots, recommendation systems and applications developed for women's safety and support. By studying these works, we were able to understand what has already been done and identify areas where improvements are needed.

#### *A. AI-Powered Chatbots for Health and Social Support*

One of the well-known chatbot systems in the field of mental health is Woebot, developed by Woebot Health. It is based on Cognitive Behavioral Therapy (CBT) and has shown positive results in reducing symptoms of anxiety and depression over time. However, since it is a cloud-based system, it may not be suitable in situations where internet access is limited. Also, it is not specifically designed considering different cultural or regional needs of women.

We also came across studies where rule-based chatbots were used for medical support. These systems work using predefined decision rules and can give accurate responses for specific queries.

During our problem statement study, we found out many issues faced by women and their reasons, with regard to assumptions we made and research about Woebot made us to understand that these rule-based techniques combined with machine learning can answer all the questions that are asked

#### *B. NLP Techniques in Women's Welfare Applications*

Natural Language Procession or NLP is a well-known present AI application that is used in chatbot to communicate and detect emotions of a person or the user.

In the chatbot we built this technique is highly used and helps the user to build a good communication with a system rather than a human.

NLP uses TF-IDF and tokenization techniques to detect the emotion and reply to it. For example, if user tells "hi how are you" then bot replies "hi user I am fine how are you?" emotion detected neutral.

#### *C. Recommendation Systems for Wellness Content*

These systems help the users to find trust able and reliable information. One commonly used approach is content-based filtering, where suggestions are made based on the similarity between user queries and

available content. Techniques such as TF-IDF and cosine similarity are often used in this approach because they are simple and efficient. These methods work well, especially when there is limited user data. From the studies we reviewed, we found that content-based systems are suitable for applications where user history is not available or is limited. This is useful in our case, as many users may be interacting with the system for the first time.

Based on these observations, we adopted a similar approach in Sthri Asthra to provide relevant and meaningful suggestions to users.

#### *D. Technology Platforms for Women's Safety*

In recent years several applications have been developed to improve women's safety. Many of these systems include features such as GPS tracking, emergency alerts, which are especially useful during

critical situations. These tools have generally been well reserved and have helped users feel secured.

#### *E. Research Gaps*

From the above studies we can observe different types of gaps in other systems. First, most systems focus on only one area instead of combining all features into one platform. Second, many systems depend on cloud services, which can create privacy concerns and limit accessibility in low-network areas. Third, emotional understanding in many systems is basic and limited to simple keyword detection. Finally, most platforms focus only on women and do not include awareness or guidance for men, which is important for long term social improvement.

Sthri Asthra is designed to address these gaps by providing a unified, intelligent, and locally deployable platform that supports health awareness, emotional well-being, safety guidance and social understanding

| System            | Domain         | Approach         | Local Deploy | Emotion-Aware | Recommendation |
|-------------------|----------------|------------------|--------------|---------------|----------------|
| Woebot [3]        | Mental Health  | Rule-based + CBT | No           | Partial       | No             |
| Vaidya et al. [4] | Medical Triage | Rule-based DT    | Yes          | No            | No             |
| Kavitha [10]      | Safety         | GPS + Alert      | Partial      | No            | No             |
| Rathi et al. [11] | Legal Aid      | Expert System    | Yes          | No            | No             |
| Sthri Asthra      | Multi-domain   | Hybrid AI        | Yes          | Yes           | Yes            |

### IV. OBJECTIVES

The development of Sthri Asthra is based on a set of objectives that focus on both technical design and social impact. These are explained below.

#### *Objective 1: AI-Based Awareness Platform*

The primary objective is to design an AI-based platform that brings together different types of support for women in a single system. Sthri Asthra should provide emotional support, safety measures and believable information. The system or app should be easy to use and minimal technology usage.

#### *Objective 2: Local AI Implementation Without External APIs*

Second objective is not to use any API keys just have to rely on datasets and NLP. It should be executed

locally so that user's privacy and policy will be maintained.

#### *Objective 3: Structured Content Delivery Across Domains*

The app should not include only one sector it should include medical, teaching, safety, legal, care, love, emotional support. Instead of user searching for the information in the other web sources like Google, YouTube or any other AI tools they should be able to search and get the answer inside this system itself.

#### *Objective 4: Emotional Sensitivity and Sentiment-Aware Responses*

For emotion sensitivity we want to add a chatbot that can talk like the user's friend she can share anything with it and nobody else should not be able to read whatever she shared with bot so setting a secret code is must and user have to remember it. All the seven

emotions will be detected it should be able to heal you and get you back on right path.

#### Objective 5: Hybrid Recommendation System

Hybrid is a combination of two or more species, our system should use TF-IDF and NLP to answer the queries that are asked to identify the tone and emotion with percent of confidence. Goal is to minimize the users' questions and to suggest meaningful advice and ideas for life.

### V. PROPOSED SYSTEM ARCHITECTURE AND METHODOLOGY

#### A. System Overview

Sthri Asthra has three layers mainly frontend, backend and database. The frontend uses HTML, CSS and React JS to create a beautiful working UI according to user opinions and surveys. The app is designed in such a way that it can work on both mobile and desktop. The backend uses Python along with TF-IDF and NLP models.

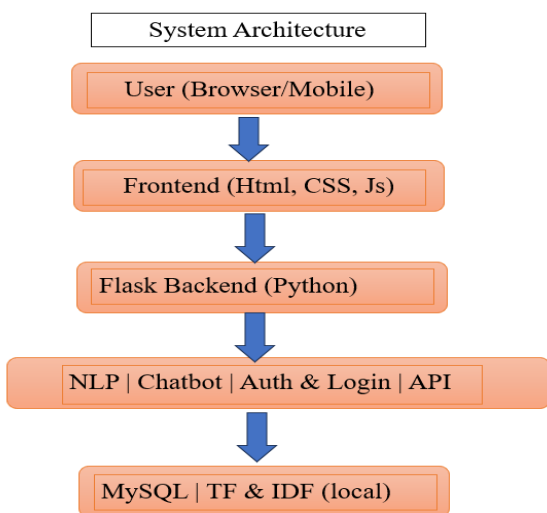


Fig. 1: High-Level System Architecture of Sthri Asthra

#### B. Module 1: Natural Language Processing Pipeline

The Natural Language Processing Pipeline starts when the user enters the input text. The text is then cleaned, polished into lowercase then they are divided into small pieces called NLTK. Unwanted words are removed and the remaining words are sent for lemmatization. Now the emotion is being detected and finally TF-IDF gives the response to user's questions.

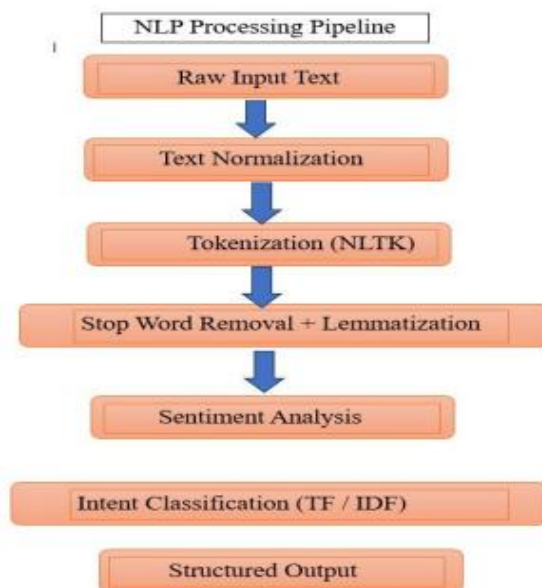


Fig. 2: NLP Processing Pipeline

#### C. Module 2: Hybrid Chatbot Framework

The Hybrid chatbot uses both rule based and ML techniques it can help the user to ask any kind of questions and get answer instantly without any delay. If we had used other systems then probably, we won't get accurate or instant answer so we chose Hybrid system.

Our chatbot can detect the emotions quickly and provide the answer in such a way that can control your emotions for example "hi I am feeling angry today that I could kill someone" if you observe the line carefully it used a word kill and your emotion is angry so danger detected.

#### D. System Workflow

We designed Sthri Asthra in such that way that can be accessed by user easily should be able to work smoothly. It starts with a logo enters to dashboard select home you get different options. If you want to open chatbot first you need to sign in then enter a secret code that only you can remember and can know after entering the chatbot you can chat freely.

### VI. IMPLEMENTATION DETAILS

#### A. Technology Stack

Our app is built using a local runner VS code that can help us code and run frontend and backend. The communication between frontend and backend is

handled by flask. The data stored in the database both frontend and backend run together so that chatbot works properly and all other objectives are satisfied.

#### B. Deployment Configuration

Our app Sthri Asthra was tested locally in VS code windows to ensure that it can be deployed externally.

#### C. Security and Privacy Design

While designing Sthri Asthra we were aware of user privacy because when we build a chatbot inside an app arises a question does it have safety how can you be so sure for that we set password or a secret code that only user know it she will never share it with anyone only their email can have that code. This method can help the user to keep his chats private.

### VII. RESULTS AND DISCUSSION

The result is bit similar what we expected and detailed in objectives. We tested the system in different applications like mobile, Desktop, tested app in different laptops as well. Even with some issues the app handled to answer most of users queries and had good communication and interactions with the user. We checked for response time and accuracy it was more than fifty percent a good result we received. It remained stable when multiple users started access the app at the same time and handled it carefully. Feedback from users such as students, teachers, working women, and homemakers was almost positive and users even commented the operation was smooth and easy to use. Overall, our app Sthri Asthra performed well and remarked positive by the user. Though few features were not up to expectation we tried to make them appear as a working feature.

### VIII. APPLICATIONS

Sthri Asthra can be used in different real-life situations where people are in need of help but could not ask nor reveal. This is a good platform to open themselves and gain some knowledge. Since this app works locally, it will be used by all women and girls and due to multilingual support, it can help people with all state and place.

It can help the social organizations to guide and provide some information about safety and legal advises. Not only that, users can access it anytime. So can be used by anyone especially girls and women.

### IX. FUTURE SCOPE

As we advantage and completed half of our objectives still some drawbacks are yet to complete that we want add in the future. We are one step away from developing a real time mobile application or desktop. Adding few more languages is one more dream and future scope, voice-based conversation like ChatGpt and other AI tools. If we add few more unique features this project will be on top. At the same time, all the improvements and goals should maintain local testing, privacy and performance.

### X. CONCLUSION

Sthri Asthra a legendary women AI powered app that support women rather than their caste and creed. Focuses on health, emotional support, safety, motivation, awareness. Along with these features having a hybrid chatbot feels fresh and unique. The chatbot is built using NLP and TF-IDF and some other techniques. App can be executed and deployed locally in VS code Windows 11. The result show that the system performs well, our goal was not just to give information instead to create a supportive backbone system for women and girls. With further improvements, the system can reach to lakhs of users and can have great impact on the worlds life system.

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