COVID-19 Screening Tool

Project Idea

A conversational AI (Chatbot) built with python and natural language processing models to address the COVID-19 pandemic problems faced by patients and doctors.

Detailed Description:

Basically this Chatbot idea solves two problems

1. Before the patients come to the hospital, let them take an appointment going to this website - Let the Chatbot asks a question like - Why the patient is visiting? What symptoms does he have? Like cough, cold or fever? Basically this app will decide what patients have to be really tested with COVID-19 sample kit So this solves the problem of COVID-19 kits shortage going on right now.

2. To reduce the workload to the doctor, let Chatbot answer the patient queries instead of a Doctor for all repetitive questions. If Chatbot couldn't answer then let's give an option to a patient to go to Doctor or Wait for the doctor to answer your question.

The bot will take care of conversation and triggering messages automatically between hospital members. The chatbot can suggest the nearby clinics or hospitals that can be consulted and the timings when the doctor is available. Will modify the requirements as and when needed while developing the application.

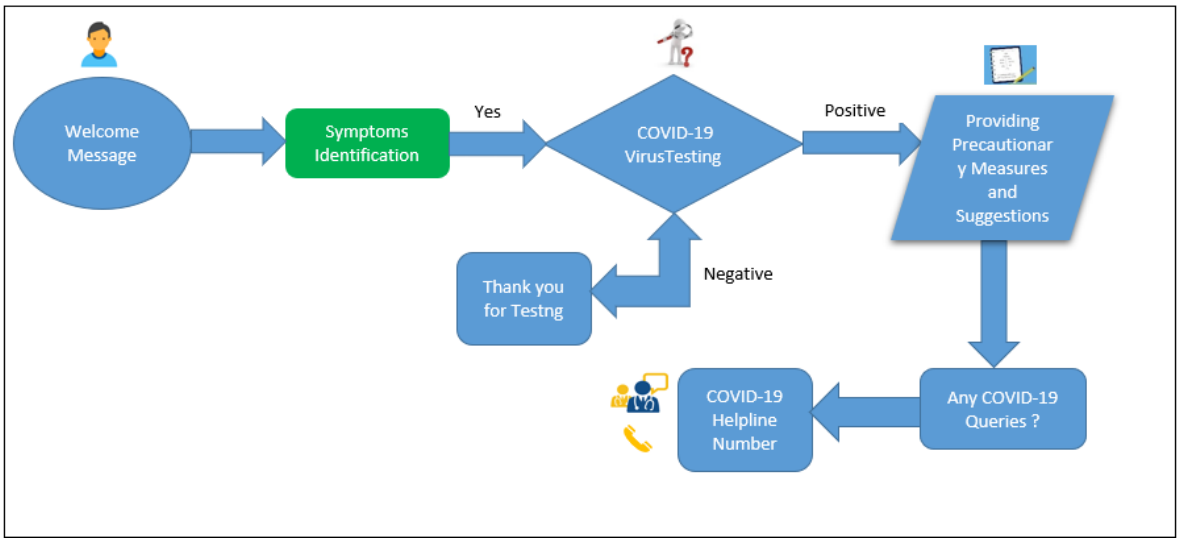
Implementation:

There can be two ways to implement Chatbot:

1.Rule-based approach and 2. Self-learning bots.

We are planning to create self-learning bots that involve machine learning concepts since the Rule-based approach addresses only simple queries and fails to manage complex ones. We would like to decide the approach based on time. We are trying to avoid NLTK as much as possible since it has all pre-built methods and try to use Natural Language processing models like Language Models and Hidden Markov Principles. But we would like to keep as simple as possible.

Project High Level Architecture Diagram



Project Source Code

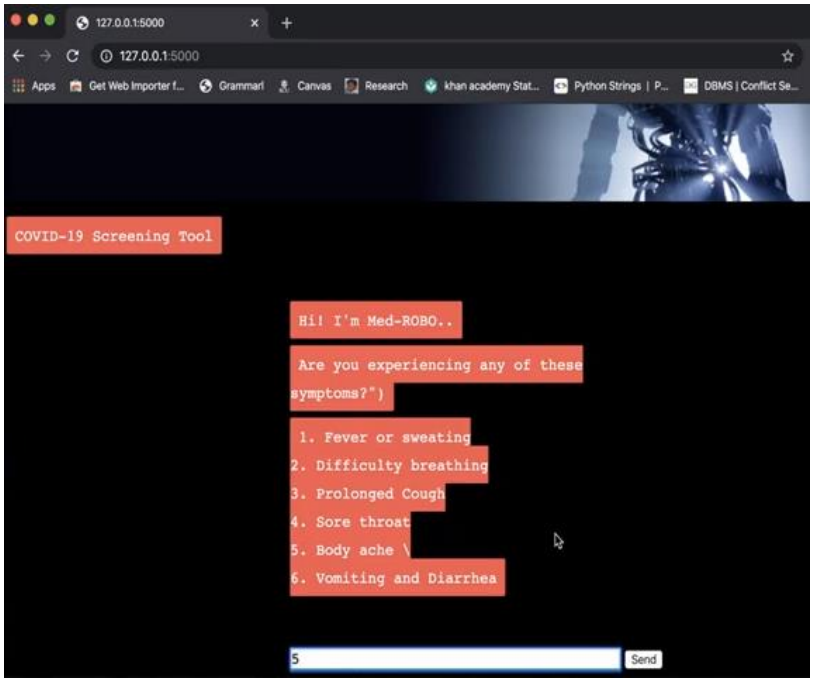
Application.py

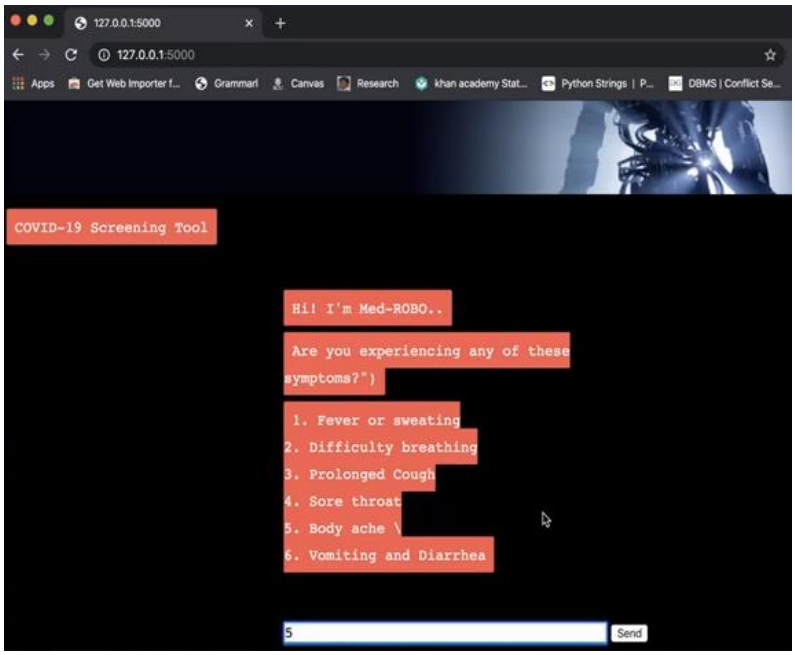
```
from flask
import Flask,
render_template
, request
                    import nltk
                    #import numpy as np
                    import random
                    import string # to process standard python strings
                    from sklearn.feature_extraction.text import TfidfVectorizer
                    from sklearn.metrics.pairwise import cosine_similarity
                    import warnings
                    warnings.filterwarnings("ignore")

                    app = Flask(__name__)

                    f=open('covid.txt','r',errors = 'ignore')
                    raw=f.read()
                    raw=raw.lower()# converts to lowercase
                    nltk.download('punkt') # first-time use only
                    nltk.download('wordnet') # first-time use only
                    sent_tokens = nltk.sent_tokenize(raw)# converts to list of sentences
                    word_tokens = nltk.word_tokenize(raw)# converts to list of words

                    lemmer = nltk.stem.WordNetLemmatizer()
```

```
#WordNet is a semantically-oriented dictionary of English included in
NLTK.
def LemTokens(tokens):
    return [lemmer.lemmatize(token) for token in tokens]
remove_punct_dict = dict((ord(punct), None) for punct in
string.punctuation)
def LemNormalize(text):
    return
LemTokens(nltk.word_tokenize(text.lower().translate(remove_punct_dict
)))

GREETING_INPUTS = ("hello", "hi", "greetings", "sup", "what's
up","hey",)
GREETING_RESPONSES = ["hi", "hey", "hi there", "hello", "I am glad!
You are talking to me"]
def greeting(sentence):

    for word in sentence.split():
        if word.lower() in GREETING_INPUTS:
            return random.choice(GREETING_RESPONSES)

def response(user_response):
    robo_response=''
    sent_tokens.append(user_response)
    TfidfVec = TfidfVectorizer(tokenizer=LemNormalize,
stop_words='english')
    tfidf = TfidfVec.fit_transform(sent_tokens)
    vals = cosine_similarity(tfidf[-1], tfidf)
    idx=vals.argsort()[0][-2]
    flat = vals.flatten()
    flat.sort()
    req_tfidf = flat[-2]
    if(req_tfidf==0):
        robo_response=robo_response+"I am sorry! I don't understand
you. Want to try something else?"
        return robo_response
    else:
        robo_response = robo_response+sent_tokens[idx]
        return robo_response


@app.route('/')
def home():
    return render_template("index.html")

@app.route("/get")
```

```
def get_bot_response():
    flag=True
    while(flag==True):
        user_response = request.args.get('msg')
        if(user_response=='1' or user_response=='2' or
user_response=='3'):
            return "Med-ROBO: Have you travelled internationally in
last 14 days? Yes or No"
        elif(user_response == 'yes'):
            return "Med-ROBO: Consult Doctor Immediately..CORONA
(COVID 19) HELPLINE: 011-23978046 OR 1075"
        elif(user_response == 'no' or user_response == '4' or
user_response == '5' or user_response == '6'):
            return "Take general tablets, wait for some more days. If
symptoms persists, Contact Doctor. <br> Do you have any queries on
COVID-19?"
        else:
            return str(response(user_response))


if __name__ == '__main__':
    app.run()
```

Project Output

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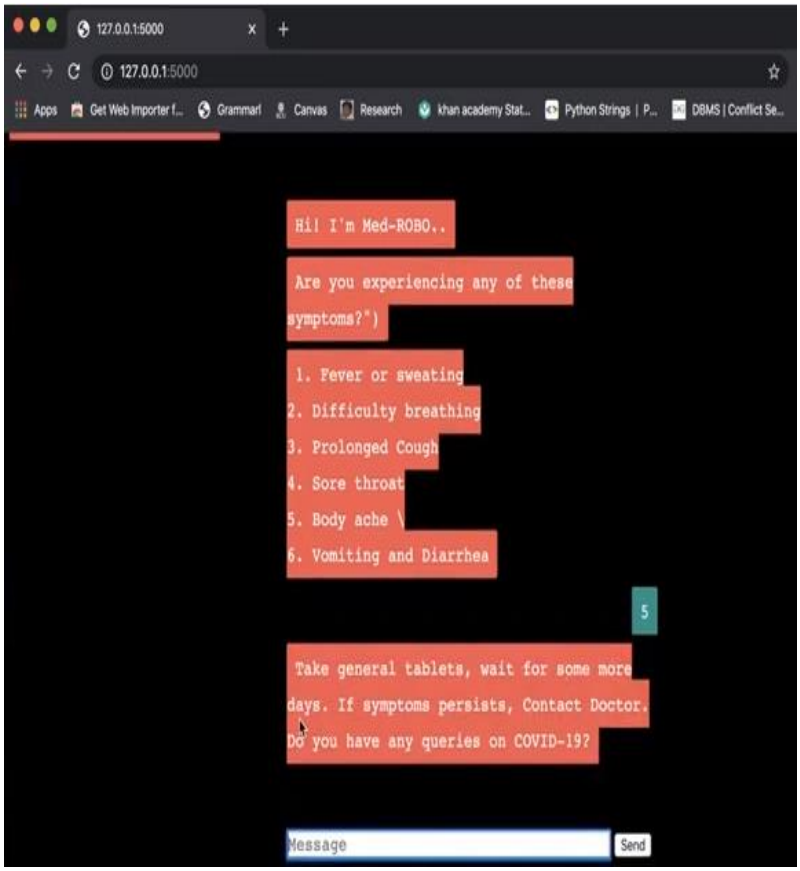
COVID-19 Screening Tool
Hi! I'm Med-ROBO..
Are you experiencing any of these symptoms?")
1. Fever or sweating
2. Difficulty breathing
3. Prolonged Cough
4. Sore throat
5. Body ache \
6. Vomiting and Diarrhea
5
Send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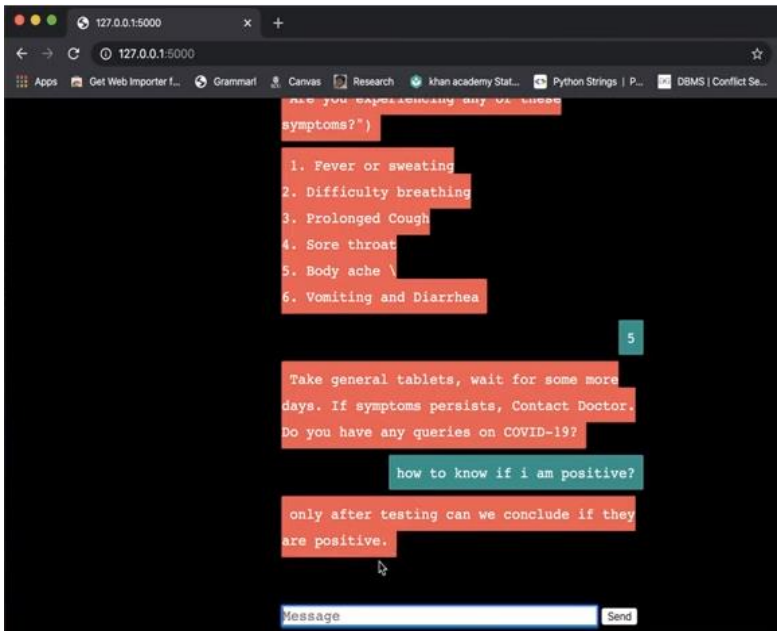
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how to know if i am positive?
only after testing can we conclude if they are positive.
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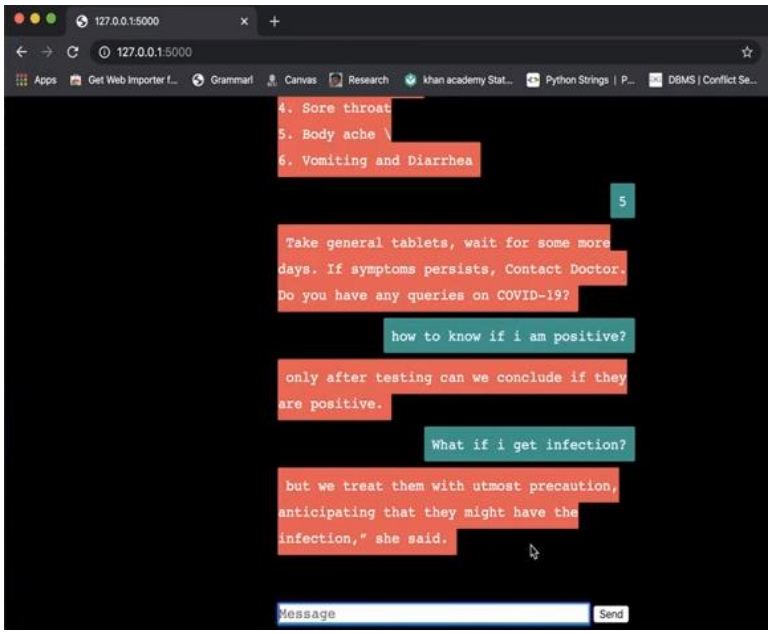
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What if i get infection?
but we treat them with utmost precaution, anticipating that they might have the infection," she said.
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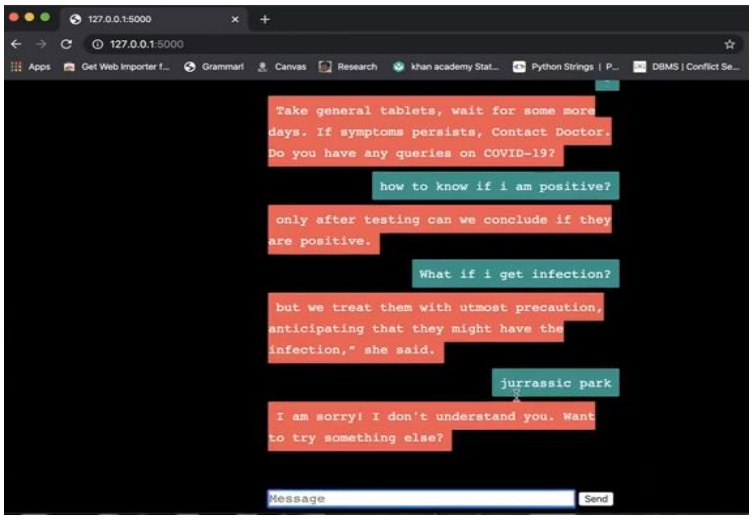
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but we treat them with utmost precaution, anticipating that they might have the infection," she said.
jurrassic park
I am sorry! I don't understand you. Want to try something else?
Message
Send