

Vitrual Assistant for Healthcare

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Abstract—Hospitals most widely used means by which a sick person gets medical check-ups, disease diagnosis and treatment recommendation. This has been a practice by almost all a people over a world. People consider it as the most reliable means to check their health status. The proposed system is to create an alternative to this conventional method of visiting a hospital and making an appointment with a doctor to get diagnosis. This research intends to apply the concepts of natural language processing and machine learning to create a chatbot application. People can interact with the chatbot just like they do with another human and through a series of queries, chatbot will identify a symptoms of a user and thereby, predicts a disease and recommends treatment. This system can be of great use to people in conducting daily check-ups, makes people aware of their health status and encourages people to make proper measures to remain healthy. According to this research, such a system is not widely used and people are less aware of it. Executing this proposed framework can help people avoid a time-consuming method of visiting hospitals by using this free of cost application, wherever they are.

Keywords: Medical Chabot, Machine Learning, Disease Prediction, Treatment

I. INTRODUCTION

A prosperous society is when its entire people healthy. It is important to maintain a health if one wishes to be happy. Only a healthy body can have a healthy mind and it has a positive impact on performance of people. Nowadays, people are less aware of their health. In their busy life, they forget to take suitable measures to maintain air health and less aware of their health status. In the latest news by TOI we can see that people give no importance to air health and find it time consuming to undergo check-ups at hospitals. The busy-scheduled life has got no place for health.

Most people comprising the working section of a society claim that their hectic schedule gives them no time for periodic medical check-ups and that they disregard any uneasiness shown by air body until it is too severe.

In this proposed system, a medical chatbot is built to be a conversational agent that motivates users to discuss about their health issues and based on symptoms provided by them; chatbot returns diagnosis. This chatbot system will be able to identify symptoms from user interaction. Using these extracted symptoms, chatbot predicts a disease and recommends treatment

Medical chatbot has a high impact on a health culture of a state. It has improved reliability and is less prone to human errors. Today's people are more likely addicted to internet but not concerned about personal health. They avoid hospital treatment for small issues which may become a major disease in future. This proposed idea solves this problem. This idea focuses on creating a chatbot which is free of cost and available throughout the day. The facts that a

chatbot is free and can be accessed wherever a user is, be it air working environment, prompt a user to have it and use it. It saves the overhead involved in consulting specialized doctors.

Executing a proposed system can convey more among people regarding their health status and a need to take measures to remain healthy. With the new proposed system, there will be reduction in number of people disregarding air health because of tedious process of hospital appointments. People can interact with a chatbot just like do with another human and can continue with works. It ensures that their will be no disruption with their working and is user friendly. This provides a way to help people aware of their health by using the chatbot helps people with health, thus playing a bigger role in healthcare it.

II. OBJECTIVES AND PROPOSED INNOVATION

A. Objective

The main objective of a proposed system is to have importance of health in life reach out to people and encourage people to follow measures to maintain health by making a chatbot available to all. Chatbot and health have a history of working well together. It creates a good human-like conversational environment for interaction between a user and a system. In this system, the user talks about air health and it is a great way for the users to regulate healthy lifestyle.

An important aspect of this system is that talking with a non-human entity provides a sense of security especially when it comes to mental health as it remains as a confidential meeting with diagnosis being available only to a user. This system is meant to help and deliver immediate actions where humans cannot reach due to timing or budget as it is readily available and free of cost. It allows a user to have free medical check-up based on a symptoms where user's health issue is easily identifiable.

B. Proposed Innovation

Chatbot is helpful for anyone who needs to get hang of something about wellbeing. The user can interact with chatbot and can rely on them to get timely diagnosis. This framework helps users to present their symptoms that affect air wellbeing. A genuine of a chatbot is to encourage a general population by giving appropriate direction in regards to a great and sound living. The chatbot allows user to login to the system.

User registers on chatbot application. They need to submit some personal details which will be confidential. User interacts with a system and words recognized by a use of natural language processing system recognizes symptoms of a user.

There is an admin who control chatbot application. The admin views the details of all a users and can even manually add, delete or update symptoms and diseases. The chatbot is trained on symptoms-disease dataset. A system

recognizes a disease and finally recommends the suitable treatment needed for the same.

III. RELATED WORKS

In a paper by Rashmi Dharwadkar, a medical chatbots functioning depends on Natural language processing that helps users to submit their problem about a health. A user can ask any personal query related to health care through the chatbot without physically being available to a hospital by using Google API for voice-text and text-voice conversion. Query is sent to chatbot and a user gets related answer which is displayed on android app. This system mainly focuses on analyzing users sentiments.

The proposed idea of a paper „a novel approach for medical assistance using trained chatbot“ by Divya Madhu is to build up a model using artificial intelligence that can help people identify a proper treatment for air disease. Are it many treatments available for a particular disease and no one can possibly know a proper treatment which is best suited for their disease. In this proposed model, artificial intelligence takes up a main role of providing a list of available treatments based on a disease identified through a symptoms. A system can also list out a composition of medicines and their prescribed uses, thereby helping users to select proper treatment. This system helps people to have a basic idea of air health status, thus encouraging them to take proper treatment.

The proposed idea of a paper „a self-diagnosis medical chatbot using artificial intelligence“ by S. Divya is to build up a system using artificial intelligence that can help users to avoid consultation with a doctor. It is made to diagnose a disease of a user and provide necessary details about a disease. This is built to be a cost effective system with improved accessibility to knowledge about diseases. A chatbot is beneficiary to users only when it can diagnose any type of disease and provide necessary information. A proposed system is a conversational agent which interacts with users to retrieve knowledge about air medical conditions, by providing a proper diagnosis.

In a paper by Amiya Kumar Tripathy , it mentions a need of advanced technology that provides people with proper healthcare management system, where people can rely on it instead of a doctor. It emphasizes a need of such a system to be accurate and portable so that people can carry with a this reliable system. A proposed system consists of a mobile heart rate measurement where heart rate can be detected and based on this, a proper diagnosis will be provided with a click of button. A system also provides videoconferencing where one can connect with a doctor in case of urgency. The Doc-Bot which was developed for this purpose now being converted to a mobile platform and is to integrate the idea of providing diagnosis based on symptoms.

In a paper by S. du Preez, it proposes the idea an intelligent voice recognition chatbot. This proposes design of such a system and a necessary technology needed to develop a system. This is a web-service that allows any client to connect with a server from anywhere. This also uses a concept of black box approach to control a communication, to and fro from a web-service. This is accessible through an interface that allows seamless xml processing. By a use of an artificial brain, a web-based chatbot responds to a user

queries. If a question from users is not understood, it will be further processed using an online intelligent research assistant and a response will be saved so as to provide efficient responses in a future.

In a paper by B. R. Ranoliya it defines chatbots as programs that can mimic human conversation using artificial intelligence. It proposes the idea of chatbot as a virtual assistant or as a smart agent that can do tasks like giving proper responses to queries from users, controlling devices, providing routes during driving etc.

IV. DESIGN AND METHODOLOGY

The user chats with a chatbot application in a same way one chats with other humans. It is an android application where user first login to a system, once registered. It is through this chat, a chatbot finds symptoms of a user. A user sends messages and as a response a chatbot gives appropriate message. For this to happen smoothly, a chatbot will be trained with some possible questions and answers predefine, that a user can ask. When a user sends messages, text processing will be done. Text processing is done using natural language processing (NLP) tries to understand a natural language spoken by humans and classifies it, analyses it as well if required responds to it. When a question is received, chatbot tries to converge it that available in a dataset which it is already trained on.

V. IMPLEMENTATION CODE

```
<!DOCTYPE html>
<html lang="en">
  <!-- Basic -->
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible"
content="IE=edge">
  <!-- Mobile Metas -->
  <meta name="viewport" content="width=device-width,
initial-scale=1">
  <meta name="viewport" content="initial-scale=1,
maximum-scale=1">
  <!-- Site Metas -->
  <title>Life Care </title>
  <meta name="keywords" content="">
  <meta name="description" content="">
  <meta name="author" content="">
  <!-- Site Icons -->
  <link rel="shortcut icon" href="images/fevicon.ico.png"
type="image/x-icon" />
  <link rel="apple-touch-icon" href="images/apple-touch-
icon.png">
  <!-- Bootstrap CSS -->
  <link rel="stylesheet" href="css/bootstrap.min.css">
  <!-- Site CSS -->
  <link rel="stylesheet" href="style.css">
  <!-- Colors CSS -->
  <link rel="stylesheet" href="css/colors.css">
  <!-- ALL VERSION CSS -->
  <link rel="stylesheet" href="css/versions.css">
  <!-- Responsive CSS -->
  <link rel="stylesheet" href="css/responsive.css">
  <!-- Custom CSS -->
```

```
<link rel="stylesheet" href="css/custom.css">
<!--dropdown css-->
<link rel="stylesheet" href="css/dropdown.css">
<!-- Modernizer for Portfolio -->
<script src="js/modernizer.js"></script>
<!-- [if lt IE 9] -->
</head>
<body class="clinic_version">
  <!-- LOADER -->
  <div id="preloader">
    
  </div>
  <!-- END LOADER -->
  <header>
    <div class="header-top wow fadeIn">
      <div class="container">
        <a class="navbar-brand" href="index.html"></a>
        <div class="right-header">
          <div class="header-info">
            <div class="info-inner">
              <span class="icontop"></span>
              <span class="iconcont"><a href="tel:800 123 456">800 123 456</a></span>
            </div>
            <div class="info-inner">
              <span class="icontop"><i class="fa fa-envelope" aria-hidden="true"></i></span>
              <span class="iconcont"><a data-scroll href="mailto:info@yoursite.com">info@Lifecare.com</a></span>
            </div>
            <div class="info-inner">
              <span class="icontop"><i class="fa fa-clock-o" aria-hidden="true"></i></span>
              <span class="iconcont"><a data-scroll href="#">Daily: 7:00am - 8:00pm</a></span>
            </div>
          </div>
        </div>
      </div>
    </div>
    <div class="header-bottom wow fadeIn">
      <div class="container">
        <nav class="main-menu">
          <div class="navbar-header">
            <button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#navbar" aria-expanded="false" aria-controls="navbar"><i class="fa fa-bars" aria-hidden="true"></i></button>
          </div>
          <div id="navbar" class="navbar-collapse collapse">
            <ul class="nav navbar-nav">
              <li><a href="index.html">Home</a></li>
              <li><a href="aboutus.html">About us</a></li>
```

```
              <li><a href="Medical Library.html">Medical Library</a></li>
              <li><a href="Healthform.html">Symptom Checker</a></li>
              <li><a href="Disease.html" class="dropbtn">Diseases</a></li>
              <li><a href="medicine.html" class="dropbtn">Medicines</a></li>
            </ul>
          </div>
        </nav>
        <div class="serch-bar">
          <div id="custom-search-input">
            <div class="input-group col-md-12">
              <input type="text" class="form-control input-lg" placeholder="Search" />
              <span class="input-group-btn">
                <button class="btn btn-info btn-lg" type="button">
                  <i class="fa fa-search" aria-hidden="true"></i>
                </button>
              </span>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
  <div id="home" class="parallax first-section wow fadeIn" data-stellar-background-ratio="0.4" style="background-image:url('images/slider-bg.png');">
    <div class="container">
      <div class="row">
        <div class="col-md-12 col-sm-12">
          <div class="text-contant">
            <h2>
              <span class="center"><span class="icon"></span></span>
              <a href="" class="typewrite" data-period="2000" data-type="[ "Welcome to Life Care", "We Care Your Health", "We are Expert!" ]">
                <span class="wrap"></span>
              </a>
            </h2>
          </div>
        </div>
      </div>
    </div>
  </div>
  <!-- end row -->
</div>
<!-- end container -->
</div>
<!-- end section -->
<div id="time-table" class="time-table-section">
  <div class="container">
    <div class="col-lg-4 col-md-4 col-sm-12 col-xs-12">
      <div class="row">
        <div class="service-time one" style="background:#2895f1;">
```

```

        <span class="info-icon"><i class="fa fa-
ambulance" aria-hidden="true"></i></span>
        <h3>Emergency Case</h3>
        <p>Dignissimos ducimus qui blanditii sentium
volta tum deleniti atque cori as quos dolores et quas
mole.</p>
    </div>
</div>
</div>
<div class="col-lg-4 col-md-4 col-sm-12 col-xs-12">
    <div class="row">
        <div class="service-time middle"
style="background:#0071d1;">
            <span class="info-icon"><i class="fa fa-clock-
o" aria-hidden="true"></i></span>
            <h3>Working Hours</h3>
            <div class="time-table-section">
                <ul>
                    <li><span class="left">Monday -
Friday</span><span class="right">8.00 – 18.00</span></li>
                    <li><span
class="left">Saturday</span><span class="right">8.00 –
16.00</span></li>
                    <li><span
class="left">Sunday</span><span class="right">8.00 –
13.00</span></li>
                </ul>
            </div>
        </div>
    </div>
</div>
<div class="col-lg-4 col-md-4 col-sm-12 col-xs-12">
    <div class="row">
        <div class="service-time three"
style="background:#0060b1;">
            <span class="info-icon"><i class="fa fa-
hospital-o" aria-hidden="true"></i></span>
            <h3>Clinic Timetable</h3>
            <p>Dignissimos ducimus qui blanditii sentium
volta tum deleniti atque cori as quos dolores et quas
mole.</p>
        </div>
    </div>
</div>
</div>
<div id="about" class="section wow fadeIn">
    <div class="container">
        <div class="heading">
            <span class="icon-logo"></span>
            <h2>What We Do</h2>
        </div>
        <a href="https://web-
chat.global.assistant.watson.cloud.ibm.com/preview.html?re
gion=eu-gb&integrationID=d9c9ce48-0ff0-4b7d-bfae-
abb758d4f7db&serviceInstanceID=c04e502d-9ccf-42eb-
b323-c1b1490269c2">
            bot</a>
    </div>
</div>
</div>
</div>
</div>

```

```

<div class="col-md-6">
    <div class="message-box">
        
        <style="float:right;width:60%;height:120%;"><br>
    <br>
        <h2>Check Your Symptoms</h2>
        <p class="lead">At Life-Care you will be
provided with a unique platform for checking your symptoms
through our Symptom Checker regarding any disease.</p>
        <p>After symptom check, you will be
provided with useful suggestions and curing techniques to
tackle with that disease..</p>
        <p>
            <a href="#services" data-scroll class="btn btn-
light btn-radius btn-brd grd1 effect-1">Learn More</a>
        </div>
    <!-- end messagebox -->
</div>
<!-- end col -->
<div class="col-md-6">
    <div class="message-box">
        
        <style="float:right;width:60%;height:120%;"><br>
    <br>
        <h2>Get Information About Various Medicine
and Disease</h2>
        <p class="lead">At Life-Care we provide you the details of
various<a href="medicine.html">medicine</a>d common
diseases. Also you will get to know about their uses, side-
effects and causing symptoms.</p>
        <p>Our motive
is welfare of all beings. So join our family and know about
your health.</p>
        <p>
            <a href="Disease.html" data-scroll class="btn
btn-light btn-radius btn-brd grd1 effect-1">Learn More</a>
        </div>
    <!-- end messagebox -->
</div>
<!-- end col -->
</div><br>
<!-- end row -->
</div>
<div class="col">
    <div class="message-box">
        

```

```

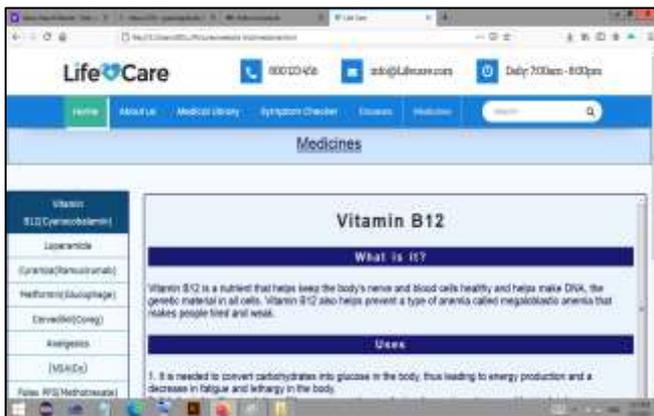
<style="float:right;width:60%;height:120%;">
    <h2>Get
Information About Diseases</h2>
    <p
class="lead">Read about symptoms, causes, treatment and
prevention for over 1000 diseases, illnesses, health conditions
and wellness issues Also you will get to know about their
uses, side-effects and causing symptoms.</p>
    <p>Our motive
is welfare of all beings. So join our family and know about
your health.</p>
    <p>
    <a href="#services" data-scroll class="btn btn-
light btn-radius btn-brd grd1 effect-1">Learn More</a>
    </div>
</div>
<!-- end service -->
</div>
<!-- end row -->
</div>
<!-- end container -->
</div>
<div id="getintouch" class="section wb wow fadeIn"
style="padding-bottom:0;">
    <div class="container">
        <div class="heading">
            <span class="icon-logo"></span>
            <h2>Get in Touch</h2>
        </div>
    </div>
    <div class="contact-section">
        <div class="form-contant">
            <form
                id="ajax-contact"
action="assets/mailer.php" method="post">
                <div class="row">
                    <div class="col-md-6">
                        <div class="form-group in_name">
                            <input type="text" class="form-control"
placeholder="Name" required="required">
                        </div>
                    </div>
                    <div class="col-md-6">
                        <div class="form-group in_email">
                            <input type="email" class="form-control"
placeholder="E-mail" required="required">
                        </div>
                    </div>
                    <div class="col-md-6">
                        <div class="form-group in_email">
                            <input type="tel" class="form-control"
id="phone" placeholder="Phone" required="required">
                        </div>
                    </div>
                    <div class="col-md-6">
                        <div class="form-group in_email">

```

```

        <input type="text" class="form-control"
id="subject" placeholder="Subject" required="required">
        </div>
    </div>
    <div class="col-md-12">
        <div class="form-group in_message">
            <textarea
id="message" rows="5" placeholder="Message"
required="required"></textarea>
        </div>
        <div class="actions">
            <input type="submit" value="Send
Message" name="submit" id="submitButton" class="btn
small" title="Submit Your Message!">
        </div>
    </div>
</form>
</div>
<div
id="googleMap"
style="width:100%;height:450px;"></div>
</div>
</div>
<footer id="footer" class="footer-area wow fadeIn">
    <div class="container">
        <div class="row">
            <div class="col-md-4">
                <div class="logo padding">
                    <a href=""></a>
                    <p>Locavore pork belly scen ester pine est chill
wave microdosing pop uple itarian cliché artisan.</p>
                </div>
            </div>
            <div class="col-md-4">
                <div class="footer-info padding">
                    <h3>CONTACT US</h3>
                    <p><i class="fa fa-map-marker" aria-
hidden="true"></i> PO Box 16122 Collins Street West
Victoria 8007 Australia</p>
                    <p><i class="fa fa-paper-plane" aria-
hidden="true"></i> info@gmail.com</p>
                    <p><i class="fa fa-phone" aria-
hidden="true"></i> (+1) 800 123 456</p>
                </div>
            </div>
            <div class="col-md-4">
                <div class="subscriber-info">
                    <h3>SUBSCRIBE</h3>
                    <p>Get healthy news, tip and solutions to your
problems from our experts.</p>
                    <div class="subscriber-box">
                        <form id="mc-form" class="mc-form">
                            <div class="newsletter-form">
                                <input type="email" autocomplete="off"
id="mc-email" placeholder="Email address" class="form-
control" name="EMAIL">
                                <button
class="mc-submit"
type="submit"><i class="fa fa-paper-plane"></i></button>
                                <div class="clearfix"></div>
                                <!-- mailchimp-alerts Start -->

```

VII. CONCLUSION AND FUTURE SCOPE

A. Conclusion

This paper explains a medical chatbot which can be used to replace conventional method of disease diagnosis and treatment recommendation. Chatbot can act as a doctor. The chatbot acts as a user application. A user of this application can specify their symptoms to a chatbot and in turn, chatbot will specify a health measures to be taken. General information about symptom and diseases it available in a dataset and thus a chatbot instance can provide information about disease and treatment to a user. After analyzing a symptoms of a different users, it finally predicts a disease to a user and provides with a link where details about a treatment is visible.

A smart medical chatbot can be useful to patients by identifying a symptoms as described by am, giving proper diagnosis and providing with suitable treatment for a disease. In a busy life, it is for people to frequently visit hospitals for check-ups. Chatbot is of great importance in such situations as ay provide diagnostic assistance with a single click of button. Chatbot doesn't requir help of any physician to give proper health measures to a users and this is one of a major advantages of chatbot. Moreover, a cost effectiveness in using chatbot is a major attractiveness to users. A chat with users is completely personal and this helps users to be more open with air health matters and paves way for chatbot to efficiently identify a disease.

B. Future Scope

The role played by chatbot can sometimes be beyond scope and user may require consulting a doctor for taking health

related tests. In such situations, chatbot can be helpful if it can be made to set up an appointment with an efficient doctor based on ir schedule. Also it will be beneficial if symptoms and disease identified by chatbot can be made into a report and automatically forwarded to an available doctor where he can assist user with more advices and future measures to maintain ir health. A video call with a specialized doctor can also be made depending on availability of user than based on the availability of doctors.

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