

## Handy Doctor: End-to-end Application using AWS

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**Abstract**—In this Era, where the whole world is affected by a pandemic situation like corona , and viruses where the country is not ready for the situations that affect them badly ,this creates a problem in a whole world people can't go outside can't get food even its make the market unstable and create a economic crisis , the virus like corona can cause death as we have seen in this pandemic and it mostly affects the people who are childs and old , while in this pandemic our doctors focused on the medicine for corona and they can't focussed in the patients who needs daily treatment and regular consultancy of a doctor in a time , those patients feels a big issues because they can't get a treatment. Other things like lockdown also create a situation like where the people can't come out from home. so, to provide a solution for these we create a handy doctor where there is a situation of all the problems of this pandemic To provide the right advice and medicine from reports as well as an intelligent chatbot name doctor is used to provide a recommendation and in an emergency a call with a doctor but you have to fix your slot . You have to just scan your documents and you get a desired result as well as a real time doctor solution and you can use speech as well as text with our chatbots and many other features. Handy doctor means that treatment is in your hand even if you can't go outside. This means now you can even have treatment and consultancy in your hand. Keywords— Vue ,javascript , NLP , Python , Aws , Cloud , IAAS , Machine learning , AI .

1.

### INTRODUCTION

Nowadays, cloud services have taken a huge role in every aspect whether it is any kind of work we usually prefer cloud services or providers like amazon , azure or oracle to run software reliable and fast as cheap cost and provide the best services to user because cloud like amazon provides scalability to server which divides the traffic very less time as compare. So we have come up with amazon web services in handy doctors so that every patient or user will become nonchalant about any kind of health issues in their organization. The most basic way to check the health of a patient regularly is by getting a regular check up or proper consultant . As today's condition we have to be convenient in every aspect so , the doctors of every problem type should be there or even a proper calling and other features should be there to provide . In Handy doctor you can get your treatment reports when you don't have a network. It uses amplify and sam services, it can provide you a virtual environment while you are talking with a chatbot , users feel like then this process could be very tedious and time consuming. Mostly today's world follows the same old manual technique for treating patients, that is you have to go to the doctor for treatment you don't have to wait you can fix the schedule at your own comfort.As we already know that there are various software systems available in the market i.e. practo and some other video call softwares and also web application systems. But, this scanning of a report and based on that provide a treatment is real and not come now if we take some previous recent years. Image processing is one of the most crucial areas of study in today's world. One of the most popular domains of image processing is text recognition, and speech recognition Although there are many algorithms for text recognition technique, the main ones are Naive bayes algorithm for text classifier and NLP that is natural language processing incloud you don't have to work on algorithm more you have to work on cloud services and objects so that the code or object should work properly you have to focus on cloud three service saas , paas and iaas Therefore for this particular algorithm the time consumption and speed is very efficient. The only limitation is that this algorithm only works in conditions where text or voice is english. In this research paper we will be using an NLP algorithm for our application.

There has been much research in this context and it has been agreed by many doctors that a handy doctor is one of the most superior and advanced ways of treating the patients by doctor and the most advanced features of scanning the reports and recommended treatment or medicine as per your report . Scanning reports or talking to a doctor can now be easily done by software and there is no need to go outside the home. You can get your treatment at home . Our application has the potential to automatically detect, recognize and provide consultancy and treatment . Our application uses a pre - trained model for recognizing the text or speech that is used by a patient while talking to a chatbot. It uses an NLP algorithm to understand the speech and text by using amazon lex and polly services models available. The main objective

of this research paper is to develop a cloud software application which will provide ease of talking to doctors, so that the users can get a regular treatment in any pandemic and this paper includes Literature survey, proposed algorithms and scope and result of this application.

## I. LITERATURE SURVEY

Over the past few years there has been much research in various fields to find ways to identify text and speech. Firstly they had given a video call based treatment system which takes the calling between doctor and patients but limited doctors. But, the only problem with this kind of. A variety of research done on using video calls or scanning of reports to identify and figure out the meaning from it.. The researchers developed an application video as well as the new types of scanning using different different approaches but there are many limitations, some of them like doctors not free timing issues and some really feel that it is not like the real one.

Some types of scanner is also creates by many researchers to work so that the scanner analysis and translate it in meaningful way and provide the medicine and prescription to patients but this is not possible somehow because that time mi is not in scope as well as some limited technologies we have as well as we can't provide a offline access to users

Now, compared to all methods for handy doctor systems researchers came across the concept of real time analysis as well as real time doctor on virtual as well as calling feature is enhanced method and much more security oriented instead of other methods. This method was more reliable and secure as it uses ML techniques or algorithms for recognizing and translating the reports from paper automatically. In this there has been a pre trained model for more accuracy and efficiency and this method is now started applying by various areas.

## II. METHODOLOGY

The proposed model works in four phases i.e. Scanning of report ,Chatbots, Downloading and offline access and serverless architecture The Fig.1 shows the flowchart of the whole Handy Doctor.



**Fig. 1 Flow Chart**

A. *Scanning of report* system was that while calling to the patients the doctor is not available or they can't see the reports properly the patients and doctors may get some disturbance while doing the call and even the places the network is limited those users can't use it properly or take proper advantage of application is not possible for them The scanning of newsconsists of the scanning of newswhich is given through the patients. It scans the file and ml algorithms after evaluation recommends the medical doctorin addition toremedythis iswanted or have totake delivery of to the patient . The evaluation takes a secondafter whichaffords you the rightremedyregarding an amazon internetcarrierthis is amazon textractofferings which automates report processing with ai. It is a systemgaining knowledge ofcarriers that automatically handwriting and facts from scanned documents is goingpasteasy optical individual recognition (OCR) to identify, understand, and extract facts from bureaucracy and tables.

The second service that is used in this is used to design the frontend and backend to deploy the resources The services used is amazon sam and amazon amplify , Amazon amplify service is a set of tool and service that can be used together on their own to help frontend web development AWS

Amplify is a hard and fast collection ofequipment and offerings that may be used collectively or on their own, to assist front-stopnet and cellbuildersconstruct scalable complete stack applications, powered through AWS. With Amplify, you may configure app backends and join your app in minutes, install static net apps in some clicks, and without difficultymanipulate app content materialoutside the AWS console.

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Amplify supports popular web frameworks including JavaScript, React, Angular, Vue, Next.js, and mobile platforms including Android, iOS, React Native, Ionic, Flutter, we are using vue in handy doctor

Aws sam The AWS Serverless Application Model (SAM) is an open-supply framework for constructing serverless packages. It affords shorthand syntax to explicit functions, APIs, databases, and occasion supply mappings. With a few traces in accordance to the resource, you may outline the utility you need and version it the use of YAML. During deployment, SAM transforms and expands the SAM syntax into AWS CloudFormation syntax, permitting you to construct serverless packages faster.

AWS Lambda is a serverless compute provider that shall run code without provisioning or handling servers, creating workload-conscious cluster scaling logic, preserving event integrations, or handling runtimes. With Lambda, you may run code for simply any form of software or backend provider - all with 0 administration. Just add your code as a ZIP file or field image, and Lambda robotically and precisely allocates compute execution energy and runs your code primarily based totally on the incoming request or event, for any scale of traffic. You can install your code to robotically cause from one hundred forty AWS offerings or name it at once from any net or cell app. You can write Lambda capabilities on your favourite language (Node.js, Python, Go, Java, and more) and use each serverless and field tools, inclusive of AWS SAM or Docker CLI, to build, test, and set up your capabilities.



**Fig. 2. System Architecture**

Technologies to synthesize herbal sounding human speech.

With dozens of reasonable voices throughout a large set of languages, you may construct speech-enabled packages that paintings in lots of extraordinary countries.

In addition to Standard TTS voices, Amazon Polly offers Neural Text-to-Speech (NTTS) voices that deliver advanced improvements in speech through a state-of-the-art system getting to know approach.

Polly's Neural TTS generation additionally helps talking patterns that let you higher healthy the transport fashion of the speaker to the application: a Newscaster analyzing fashion, this is tailor-made to information narration use cases, and a Conversational talking fashion that is right for -man verbal exchange like telephony applications.

Amazon API Gateway is a totally controlled provider that makes it easy for builders to create, publish, maintain, monitor, and secure APIs at any scale. APIs act as the "the front door" for programs to get entry to data, enterprise logic, or capability out of your backend services. Using API Gateway, you may create RESTful APIs and WebSocket APIs that allow real-time two-manner communication programs. API Gateway helps containerized and serverless work-loads, in addition to internet programs.

API Gateway handles all of the obligations concerned in accepting and processing as much as loads of concurrent API calls, which include visitors management, CORS support, authorization and get entry to control, throttling, monitoring, and API model management. API Gateway has no minimal prices or startup costs. You pay for the API calls you get hold of and the quantity of statistics transferred out and, with the API Gateway tiered pricing model, you may lessen your value as your API utilization scales.

### **B. Chatbots (Text & Speech)**

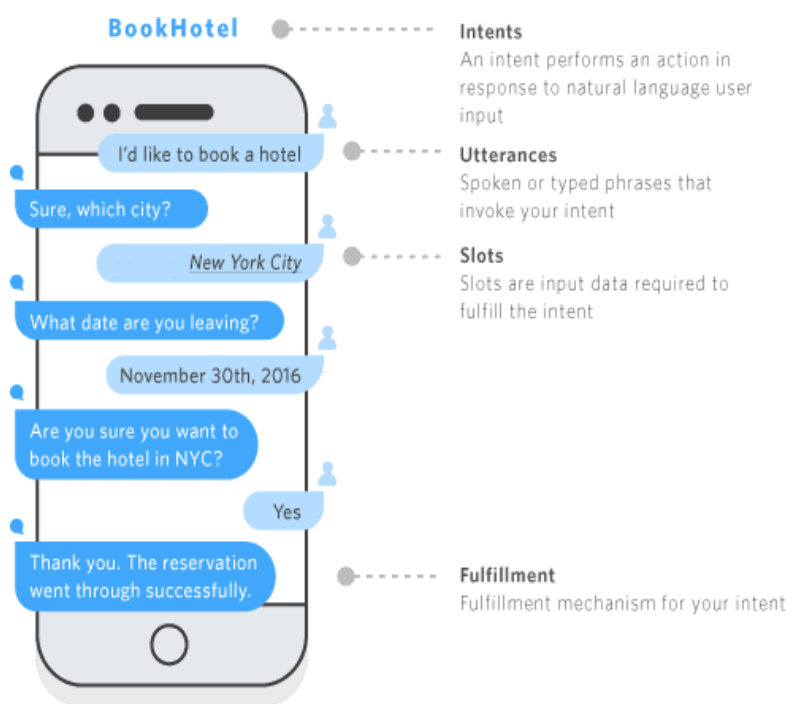
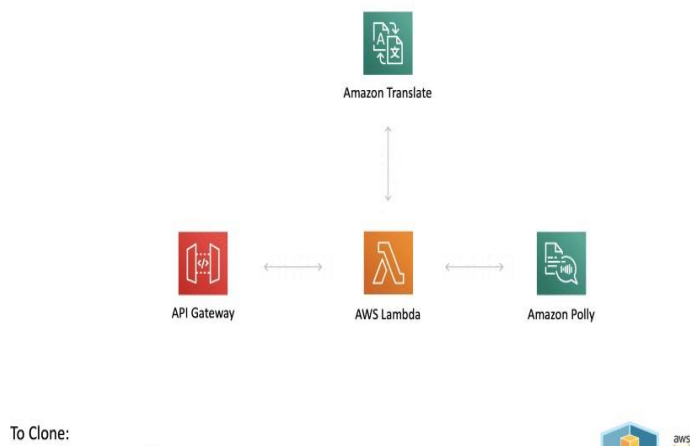
Amazon net offers the best offerings for developing chatbots within the cloud: you don't need to write code, you need to simply claim an instance & object.

Amazon internet carrier the use of amazon lex and amazon polly carrier this is used to create a chatbot that can offer each textual content in addition to speech reputation the use of device gaining knowledge of and ai.

Amazon Lex is a provider for constructing conversational interfaces into any software the use of voice and text. Amazon Lex presents the superior deep gaining knowledge of functionalities of automated speech recognition (ASR) for changing speech to text, and herbal language understanding (NLU) to understand the cause of the text, to permit you to construct packages with rather attractive person stories and real-looking conversational interactions. With Amazon Lex, the identical deep mastering

technology that strength Amazon Alexa at the moment are to be had to any developer, allowing you to speedy and effortlessly construct sophisticated, herbal language

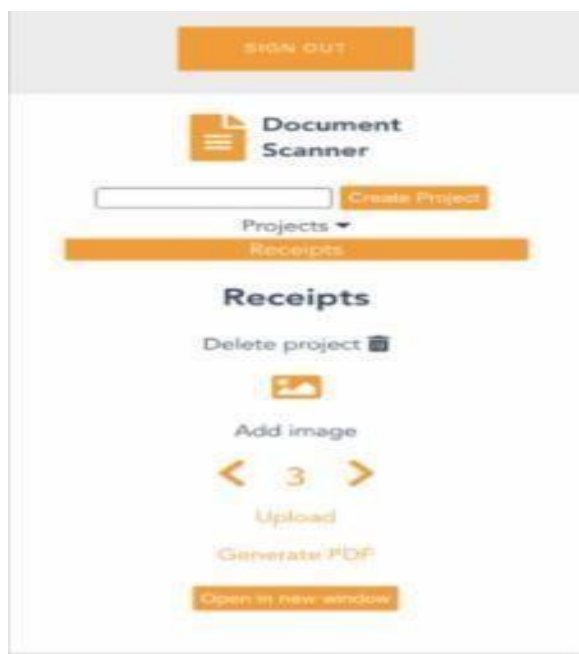
## Polly



**Fig.3. Chatbot with text using lex&polly**

With Amazon Lex, you can build bots to increase contact center productivity, automate simple tasks, and drive operational efficiencies across the enterprise. As a fully managed service, Amazon Lex scales automatically, so you don't need to worry about managing infrastructure.

Now, for speech reputation we've pinnacle used amazon polly carrier that allows us to understand speech even as affected person dont need to write down he can without difficulty communicate then Amazon Polly is a carrier that turns textual content into real looking speech, permitting you to create programs that talk, and construct completely new classes of speech-enabled products. Polly's Text-to-Speech (TTS) carrier makes use of superior deep learning .



**Fig.4 Download and offline access**

### C. Download and of line access:

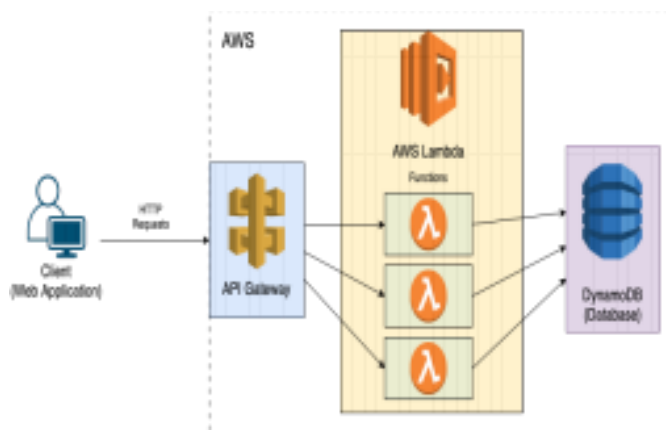
To download the reviews and keep it in database amazon dynamo db and amazon cognito ,aws dynamo db is used for garageofferings and awscognito for offline access.

Aws dynamo db is a key-price and report database that can provide single-digit millisecond overall performance at any scale. Itsa totally managed, multi-region, multi-active, long lasting database with integrated security, backup and restore, and in-remembrance caching for internet-scale programs. DynamoDB can take care ofextra than 10 trillion requests in step with day and mayhelp peaks of extra than 20 million requests per second.

Many of the world's quickestdevelopingcorporationsconsisting of Lyft, Airbnb, and Redfinin addition tobusinessesconsisting ofSamsung , and Capital One rely uponthe size and overall performance of DynamoDB to help their mission-vital workloads.

Even this reachablehealth practitioner is absolutelyprimarily based totally on serverlessstructurethis issuggestnow no longer that your device is serverlesshowever it used the aes lambda To run the utility we wantaws lambda in addition totheir numerousbenefits like scalable , elasticity , reliability and fast.

Serverless structure is a manner to explain the offerings, practices, and techniques that allow you to construct extra agile programs so that you can innovate and reply to extrade faster. With serverless computing, infrastructure control obligations like capability provisioning and patching are dealt with via means of AWS, so that you can pay attention to the most effective writing code that serves your customers. Serverless offerings like AWS Lambda include computerized scaling, integrated excessive availability, and a pay-for-price billing model. Lambda is an event-pushed compute carrier that allows you to run code in reaction to occasions from over 150 natively-integrated AWS and SaaS sources - all without managing any servers.



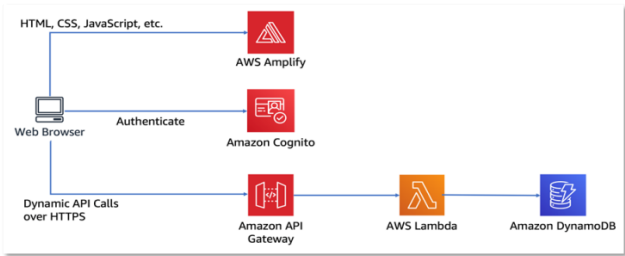


Fig 5 Serverless Architecture

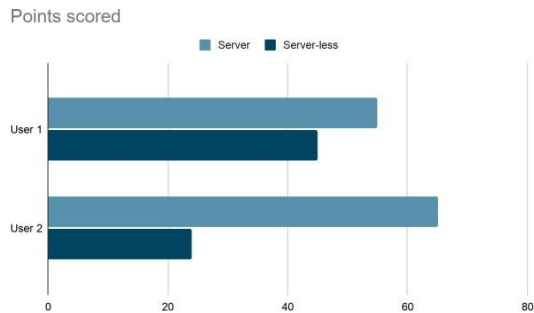
IV. ANALYSIS

In hospitals for treatment the handy doctor provides you a hassle free environment Many want to continue to go to hospital regularly in pandemic situations also rather than shifting to an automated handy doctor. We did an analysis of various patients to know whether they like to go outside in a

Hundreds of hundreds of AWS clients have selectedDynamoDB as their key-fee and report database for mobile, web, gaming, advert tech, IoT, and differentprograms that want low-latency statisticsto get entry at any scale. Create a brand newdeskto yoursoftware and permitDynamoDB to take care of the rest.

Amazon Cognito helps you touploadpersonal sign-up, sign-in, and get entries tomanipulatefor yourinternet and cellular apps quickly and easily. Amazon Cognito scales to hundreds of thousands of customers and helps sign-in with social identificationcarriers, including Apple, Facebook, Google, and Amazon, and organizationidentificationcarriersthrough SAML 2.zero and OpenID Connect. D) Serverless :-

Serverless Is a part of the handy doctor where we have to use a cloud service like lambda to make our system architecture as we used cloud one of the best features is elasticity that provides you the pay you go model to provide your budget we are also experiments the users who used the server as well as server-less, we find the server-less comes in trend slowly



pandemic situation to hospital or they want to use a handy doctor for their safety 84.2%. Say yes to handy doctor and other for hospitals .The major drawback of manual is that it is not suitable

In a pandemic situation. Because it's not safe for people.

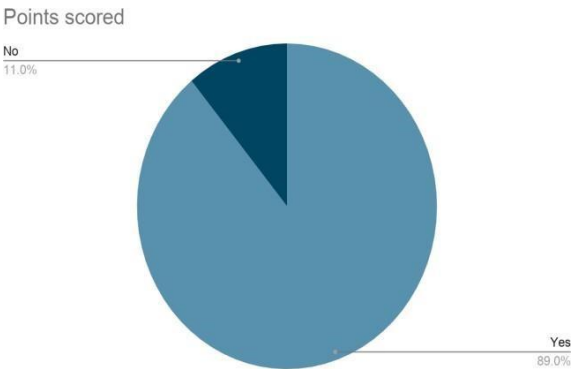
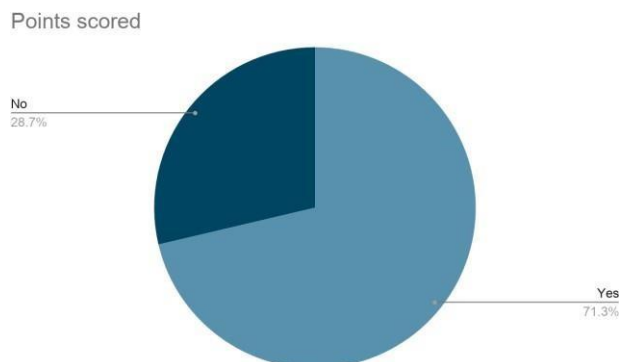


Fig.6 Handy doctor

An analysis for the automated handy doctor was also



economically stable. done and 89.5% were in favour of it. These patients also expressed their interest and need for a handy doctor system which will save a lot of time and effort on their as well as the doctor side.



**Fig.6.1 Percentage of handy doctor**

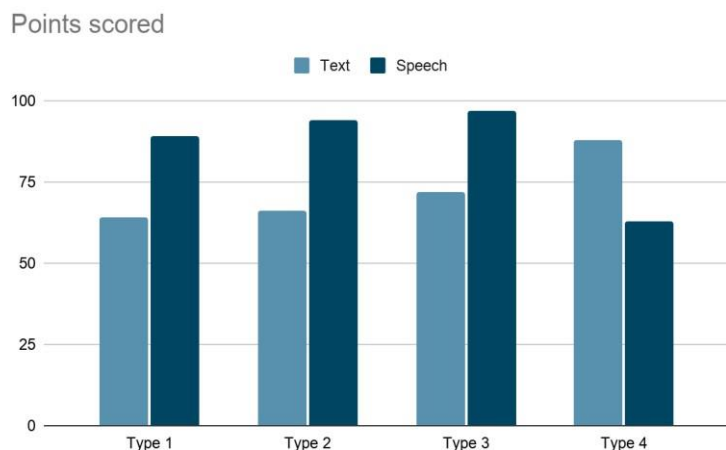
## V. RESULTS

During the primary segment of trying out there has been a bit of a hassle in detecting the reviews whilst scanning due to the fact we targeted at the cloud and we don't have a great one in ml. So there have been a few upgrades required within the software program through enhancing the recognizer version after which the trying out for the very last segment turned into done. The gadget identified all of the pattern reviews with 99.97 accuracy. This quantity of accuracy proves that the gadget could be very dependable and secure. The scanning functions need to usually be clean and obscured. The gadget works flawlessly great and is straightforward to apply and problem free. We carry out many exams on the accuracy of speech and textual content reputation of chatbots. In this hundred customers are acting on the textual content and speech reputation of the chatbots for accuracy.

we divide hundred people into four type of users the graph shows the accuracy of text and speech by the observations averages

Result = observation of user types / 100

$$AM = \frac{1}{n} \sum_{i=1}^n a_i = \frac{1}{n} (a_1 + a_2 + a_3 + \dots + a_n)$$



### A. Aws textract :-

The awstextract service scans the paper properly and gives the proper prescription from reports.



B. Reports:- :



C. Dataset Trainer Module :

This module mainly focused on training the meaningful report and analyzing the data.

D.ScannerModule :

This module is the primary part of our utility and with this we got here to the belief that we had implemented the precise cloud provider which goes in each circumstance and after trying out numerous reviews we concluded that it has greater performance compared to different techniques.



E. Analysis :



VI. LIMITATIONS & SCOPE

- The first drawback that was detected in this system was that if the Report is not Clear while Scanning it then it is unable to detect the data . and hence unable to Give any suggestions.
- While Chatting to the Bot if you make lots of spelling mistakes then it would not be able to understand your query..



- While Scanning the report if the report is in the frame but far from the camera then also it will be unable to Scan the data the .
- In case the light is dim or dull then the system fails to extract the features properly and hence is not able to Scan the data.
- Many People hesitant to use this system as they are not aware of the advanced technology.
- Now, coming to the scope of this application we can say that we can make a modification in dataset creation by adding and deleting datasets.
- Also, we can introduce one more feature in our application for SMS alerts that will send SMS to The Patient for Verification..

## VII. CONCLUSION

This application has been made to solve the problem that in the Corona Pandemic many People avoid visiting a hospital, it might be dangerous to the patient whose immunity is lower than average. Based on this, „Handy- Doctor“ is useful to all the people who have different kinds of diseases and have to visit Hospital Regularly, This Application will be very useful to those who have any physical disability or to the People who are old or to Someone who is living alone. Thus, the aim of this paper is to Help the People by Scanning the Report or Taking the quarry by the chat-bot and give medical advice or help them to Consult the doctor . It is an evolution to the Medical industries As we are now facing the 2nd wave of Corona in India and the 3rd wave is also predicted and This Application will be Easy and Simple to Use .The pre-trained model also focuses on training the datasets very efficiently and thus achieving a very good rate of accuracy.

## VIII.ACKNOWLEDGMENT

On the submission of our venturerecord on “Handy Doctor”, we would really like to specific our honest gratitude and way to our mentor Prof Heena, who helped us notwithstanding being busy , spare time for steerage and hold us at thepropercourse and allowed us to undergo our thoughts and perform this ventureon thiseducational session. We recognize and cost his steerage and aid from starting to give up on this venture. This venturemightnow no longerbeviabewithout his aid and help. We are especially obliged to him for having helped us and sort supervision in finishing touch of our venture. We would really like to specify our honestway to our Galgotias University, partner professors for this venture who guided us to finish this venture and Dean of School of computing Science and engineering. Last but not least we would really like to thank everyone who'srelatedwithout delay or circuitously to make this venture successful.

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