

Smart Use of Alexa with Lambda Function in Hospital

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Abstract - This paper presents a different ideas of Amazon Alexa 's custom skills. Amazon alexa is a virtual personal assistant, also called AI assistant or digital assistant, is an application program that understands voice commands and completes that commands for the user. There are so many skills are available and here we discuss such custom skills ideas. Alexa skills are nothing but the apps that give Alexa even more abilities, letting her speak to more devices even websites. In this paper, we discuss emergency call service for patients in hospital system with SNS dashboard. This services can implement with help of alexa with lambda function and describe how it works with alexa.

Keywords - Lambda function, Amazon alexa, SNS dashboard

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I. INTRODUCTION

Alexa is Amazon's cloud based service available on different devices from Amazon. With the help of Alexa, you can commands in natural conversational language and Alexa fulfill that commands by using Amazon skill kit and lambda function. The Alexa Skills Kit consists of the APIs, tools, and documentation to create these new skills, powered by your own services running as Lambda functions. By using lambda function, we can manages compute operation such as balance of memory, CPU, network, and other resources. When patient or guardian of patient ask alexa to call doctor in emergency then alexa send message to that doctor. Because of this direct communication happens between doctor and patient, hence it is time efficient. Normally middle man communicate between patient and doctors which is time consuming. And it is cost efficient since use of lambda function.

The structure of this paper is presented as: Section 1 discusses the basic concepts and methods about Voice Service APIs, lambda function, dynamoDb. Section 2 presents diagram of process of emergency call using Alexa and lambda function. The conclusion and future work is included in Section 3.

Section I - UNDERSTANDING BASIC CONCEPT AND USED SERVICES

A. Alexa voice service :

The Alexa Voice Service (AVS) allows developers to voice-enable connected products with a microphone and speaker to access the built in capabilities of Alexa like speech recognition, audio playback, and volume control.

B. Alexa skill kit

The Alexa Skills Kit is a collection of APIs, tools, documentation used for creating custom skills. It enables user to access this skills through easy and natural language voice. All of the skill bound code executes on the Amazon cloud and nothing is on any user device, Echo or Mobile Apps.

C. DynamoDb :

It is non relational a fully managed cloud database and supports both document and key-value store models. Its flexible data model, reliable performance, and automatic scaling of throughput capacity make it a great fit for mobile. In database, saves the doctor's contacts so that it can send message to particular doctor.

D. Lambda function :

AWS Lambda standard runtime environment and resources provided by Lambda. Lambda function provide management of compute operation such as balance of memory, CPU, network, and other resources. AWS Lambda is cost efficient since it is executes your code only when needed and scales automatically. You pay only for the compute time you consume - there is no charge when your code is not running.

Section II - DIAGRAM OF FLOW OF EMERGENCY CALLING FROM PATIENT TO DOCTOR



In emergency situation, patient or patient's guardian ask alexa to send message to doctor with providing ward number and bed number, doctor name. Alexa enable device record that voice and forwarded to alexa APIs. Lambda function contain functions that collects informations which is send by user such has ward no., doctor name. It cooperate with dynamoDb to match record with information. When doctor name matches then lambda function forward this information to SNS dashboard. SNS dashboard handles sending message service and send SMS to that particular doctor. When Sms send successfully then appropriate message send to user/patient.

Lambda function -

```
switch (event.request.type) {
  case "drCall":
    var ward = event.request.intent.slots.ward.value;
    var drname = event.request.intent.slots.drname.value;
    var bednumber = event.request.intent.slots.bednumber.value;

    lambda.invoke({
      FunctionName: 'drdetail',
      Payload: JSON.stringify({"drname":drname})
    }, function(error, data) {
      if (error) {
        status=false;
        console.log('error', error);
      } else {
        console.log(data.Payload);
        status=true;
      }
    }); context.succeed(
      generateResponse(
        if(status){
          buildSpeechletResponse("Dr will call soon", true), {}
        } else {
          buildSpeechletResponse("sorry dr not available please call receptionist", true), {}
        }
      )
    );
    break;
}
```

Section III - CONCLUSION AND FUTURE WORK

We believe that our idea help to patients to call doctor directly through message which is helpful. And doctor also get notify immediately and according to it take next step which is very helpful in emergency situation. In future work we can enable alexa skill on emergency button press such as lights on off with alexa works. Also if particular doctor is busy with some other work then that message send to other doctors accordingly by using customize develop application.

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