

Lex Bot

Aditya Rai*
Manish Kant*
Akash Awasthi*
Poornima Mehta*

ABSTRACT

It is an intelligent chat bot capable of responding and interacting with users. We have used Artificial intelligence and machine learning algorithm to make it proper working bot. We have enhanced its feature by enabling Alexa voice features, so voice command play part in it. We have secured it with SSL certificate so that our site is safe as it converts http request to https, HTTPS is HTTP with encryption and verification. We have response card. response card helps in showing several options to help user interact efficiently. It provides support for 26 languages, so user from Spain Germany can easily interact with our bot. We have Lambda as our backend as lambda is super-fast so user request can be delivered within seconds. We design our own app with future of AWS amplify. The platform comes with a plethora of tools and services that allow users to configure backends, connect apps, deploy static web apps.

I. Introduction

AWS Lex bot allows allow creation of intelligent bot. Our project consists of services like Dynamo db., Lex, Cognito, terraform, AWS Amplify, AWS Polly.

From time to time, humans have been trying to find more and more ways to make lives easier using technology. With the evaluation of services like AWS Lex, Dialog flow the dependency and need arise.

AWS Lex service provides customize bot for different purposes like for it industry or ecommerce. The efficiency and customization help in scaling it's demand, as it can support nearly 26 languages which break the language barrier.

A. What is chat-bot

A chat-bot is a computer program that simulates human conversation through voice commands or text chats or both. chat-bot, short for chatterbot, is an Artificial Intelligence (AI) feature that can be embedded and used through any major messaging applications. There are a number of synonyms for

chat-bot, including "talk Bot," "bot," "IM bot," or "interactive agent".

Services Used in LEX BOT

AWS Lambda - AWS Lambda is a serverless compute service that runs your code in response to the events and automatically manages the underlying compute resources for you.

Cognito - Cognito is identity management system using Cognito you can give access to users to AWS service.

AWS Polly - Amazon Polly is a cloud service that converts text into lifelike speech. You can use Amazon Polly to develop applications that increase engagement and accessibility.

AWS Amplify - What is AWS amplify?

AWS Amplify is a complete solution that lets frontend web and mobile developers easily build, ship, and host full stack applications on AWS.

*Computer science and engineering (Noida institute of engineering & technology) Greater Noida, India

B. Lambda the Backend

Lambda is a serverless function. The Lambda function can perform any kind of computing task, from serving web pages and processing streams of data to calling APIs and integrating with other AWS services.

B-1- Problem

Around 70-80% company depends or need bot, Zomato uses it's on bot for customer query and complains but the cost of a bot for one month can be around 4000 to 6000 as the bot need server to run and big company like Zomato Flipkart need server of higher configuration like t2.large which cost 7.69 rupee per hour which make monthly expense around 6000.

B-2- Why Lambda

If a small-medium company need bot, then this expense can seem to be large hence by using lambda bot expense and performance can be reduced.

Bot working function is built on Lambda, Lambda says that the bot will be in dead state means it is not attached to any server when user send message to bot then API call goes to Lambda and at that instance AWS provides server to bot and user mainly talk 5 minutes.

If a company of around 30 people is using bot and most they use it around 1-2 hour for per day so cost per month reduced from 6000 to around 400 which is very high reduction so using Lex with integration with Lambda is beneficial.

Working of LEX BOT

we are creating amazon lex bot that is talking to lambda that is using request library and in making call to third party API to get joke and facts.

It is not just jokes and facts it has version as Lex is for specific purpose only so this version if for fun and entertainment purpose and other versions are for specific purpose like pizza booking.

For storage of data, we use RDS.

we join chatbot with lambda function so that we

connect it to an API endpoint. then we use terraform for deployment, after the deployment we make it accessible to web site by integrating it to web sites then we integrate it to WhatsApp for ease and then secure it with SSL certificate and connect it with route53 domain.

Propelling Growth of Artificial Intelligence

The statistics of AI market that blankets all the major technologies such as Machine learning, Image recognition, and speech processing are predicted to hit a mark of \$5.05 billion by 2020 as per the studies released by Statista .

2.1 - API Service Used in LEX BOT

TWILIO it is messaging API where we can API send and receive message. when we put Twilio detail amazon lex generate call-back URL. this URL we have to put in Twilio so whenever Twilio will receive message from WhatsApp Twilio will know where forward message.

2.2 Hardware Specification

The Hardware specification is made simple as it can be accessed from mac, window, OS so this removes hardware barrier. User can view this from different hardware. The user can remotely use the web portal or the software in order to request about their service. The proposed system is implemented for the day-to-day conversation and entertainment purpose.

2.3 Software Specification

Operating System:

Windows, Linux or Mac. Server/DB: Amazon Lex. Front End: CSS, JAVASCRIPT, jQuery. Back End: Amazon cloud services.

2.4- Software Description

Amazon Web Services

Amazon Web Service is a cloud computing platform that provides a wide range of services and solutions for businesses and individuals. Having grown steadily in the 30-percent range the past few quarters, AWS is a frontrunner to other cloud computing platforms such as competitor Microsoft Azure. AWS can be broken into three main products: EC2, Amazon's virtual machine service, Glacier, a low-cost cloud storage service, and S3, Amazon's

storage system. AWS is so large and present in the computing world that it's far outpaced its competitors. As of February 2020, one independent analyst.

reports AWS has over a third of the market at 32.4%, with Azure following behind at half that amount 17.6%, and Google Cloud at 6%.

Amazon Lex

Amazon Lex is a service for building conversational interfaces into any application using voice and text. Amazon Lex's high-quality speech recognition and natural language understanding capabilities make it possible to build powerful interfaces to applications. You can add a voice or text chat interface to create bots on mobile devices that can help customers with many basic tasks, such as accessing their bank account, booking tickets, ordering food, or calling a cab. Amazon Lex integrates with 'Amazon Cognito' so you can control user management, authentication, and sync across all devices. Here we are excited about utilizing evolving speech recognition and natural language processing technology to enhance the lives of customers. In our project Amazon Lex represents a great opportunity to deliver a better service to customers at the right time and in the right place through Chat Bot with the help of 'Amazon Web Service' Cloud System

2.5- Benefits of using Amazon Lex

- Easy to use:

Amazon Lex provides an easy-to-use console to guide you through the process of creating your own chat-bot in minutes, building conversational interfaces into your applications. You supply just a few example phrases and Amazon Lex builds a complete natural language model through which your user can interact using voice and text, to ask questions, get answers, and complete sophisticated tasks.

- **Seamlessly deploy and scale:**

With Amazon Lex, you can build, test, and deploy your chat-bots directly from the Amazon Lex console. Amazon Lex enables you to easily publish your voice or text chatbots to mobile devices, web apps, and chat services such as Facebook Messenger, Slack, and Twilio SMS. Once published, your Amazon Lex bot processes voice or text input in conversation with your end-users. Amazon Lex is a

fully managed service so as your user engagement increases, you don't need to worry about provisioning hardware and managing infrastructure to power your bot experience.

Amazon Lex provides built-in integration with AWS Lambda, AWS Mobile Hub and Amazon CloudWatch and you can easily integrate with many other services on the AWS platform including Amazon Cognito, and Amazon DynamoDB. You can take advantage of the power of the AWS platform for security, monitoring, user authentication, business logic, storage and mobile app development.

Cost effective:

With Amazon Lex, there are no upfront costs or minimum fees. You are only charged for the text or speech requests that are made. Amazon Lex pay-as-you-go pricing and low cost per request make it a cost-effective way to build conversational interfaces anywhere. With the Amazon Lex free tier. You can easily try Amazon Lex without any investment.

- **Node.js**

As an asynchronous event-driven JavaScript runtime, Node.js is build scalable network applications. In the following "hello world" example, many connections can be handled concurrently. Upon each connection, the call-back is fired, but if there is no work to be done, Node.js will sleep.

Amazon Polly

It is a cloud service that converts text into life like speech. People can use Amazon Polly to develop applications that increase engagement and accessibility.

Functional Design

Functional Design is a paradigm used to simplify the design of hardware and software devices such as computer software and increasingly, 3D models. A functional design assures that each modular part of a device has only one responsibility and performs that responsibility with the minimum of side effects on other parts. Functionally designed modules tend to have low coupling.

AWS Amplify

It is complete solution that lets frontend web and mobile developers easily build, ship, and host full-stack applications on AWS.

It is Amplify that help in building application for the bot.

Integrating BOT with our Web Application

After configuring lambda function with our bot, we could integrate our bot in our concerned web application. We have created a website. In the back end we have a done a coding part we could easily integrate our bot. It just normally asks Access Id (This will be provided by amazon while purchasing amazon cloud services), Secret access key (This will be provided while creating a bot in amazon lex), Region (This is a server where we developed our bot), Name of the bot in amazon lex, alias name. After completing this form, we can directly integrate our bot profile. This is a step where our bot gets deployed in our web application.

Conclusion & Future Enhancement

Conclusion

AWS Lambda is a great service. It is fast and reliable and can help deploy code without managing the infrastructure. Nonetheless it can also be expensive both in terms of time and money if not understood to a certain level.

Future Enhancement

Lex can have a wide future as we will implement it for numerous sectors like food order, online shopping etc. The enhanced functionality of lambda helps in promoting the future of AWS Lex. Global scope is to make it optimize on mobile app and on site so that access become faster.

To explore, our expert panel and literature review showed us that there is a broad consensus that intelligent chat-bots bare great potential for creating value for companies in customer care.

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