

LIBRARY MANAGEMENT USING ALEXA

Nikshita Shelare, Sushma Thakur, Ruchita Chandekar, Priya Likhar, Pratiksha Mohod,
Prerana Gowardhan

¹ Ms.Nikshita Shelare, Electronics and Telecommunication Engineering, S.B.J.I.T.M.R, Maharashtra,
India

² Ms.Sushma Thakur, Electronics and Telecommunication Engineering, S.B.J.I.T.M.R, Maharashtra,
India

³ Ms.Ruchita Chandekar, Electronics and Telecommunication Engineering, S.B.J.I.T.M.R, Maharashtra,
India

⁴ Ms.Priya Likhar, Electronics and Telecommunication Engineering, S.B.J.I.T.M.R, Maharashtra,
India

⁵ Ms.Pratiksha Mohod, Electronics and Telecommunication Engineering, S.B.J.I.T.M.R, Maharashtra,
India

⁴ Ms.Prerana Gowardhan, Electronics and Telecommunication Engineering, S.B.J.I.T.M.R, Maharashtra,
India

ABSTRACT

Ever since the introduction of Amazon's new intelligent personal assistant Alexa along with their Echo speaker counterpart, there has been a significant rise in interest and usage of smart-home products with over 10,000 Alexa skills currently available on the market for customers to use with their newfound Echo devices. The focus of our research is to make a library for the college to find the books accordingly as it will become for the students to get the book without taking help of librarian. Our evaluation shows us that it can be used very clearly with the user.

Keyword : - Amazon, Alexa, Echo

1. INTRODUCTION

Amazon Echo is a voice-enabled wireless speaker developed by Amazon. The device connects to the voice controlled intelligent personal assistant service Alexa, which response to the name "Alexa". The device is capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic, and other real-time information. It can even control several smart devices using itself as a home automation hub. Home automation could be a very expensive luxury that lots of individuals in India and other countries cannot afford. The target of our product is to supply an inexpensive and cheap solution to control the library and help to discover the book quickly by just saying the book name or the author's name. We use the Amazon echo skill to develop our project that's designed with the node.js.

2. RELATED WORK

Most of the state-of-the-art of the system are integrated with IFTTT recipes [1]. To provide some context to the reader, IFTTT is an acronym of If This, Then That. It's an initiative within the Internet of Things space where several services will be integrated to supply a strong solution. We tried to do groundwork on this project, seems that we weren't able to find enough of the related work towards the library Alexa but we were able to find a number of the papers which stated that the Alexa is been on a developing phase and lots of people are working towards it to

form an excellent AI for all the aim. It is mostly employed in the house automation wherein the person can talk with Alexa to turn on/off various things. So we are using it within the college premises.

3. TECHNOLOGY STACK

In this project, we have integrated many programming components and established a seamless functionality among them. Our technological stack is delineated as follows:

- **Physical Layer:** This layer comprises of the devices with which the user interaction takes place i.e. Amazon Echo which is a Smart Personal Assistant device that is present within the user's home. It's triggered using voice commands. On the basis of request made, a response is going to return to the user.

- **Application Layer:** This layer consists of the following subsequent:

Alexa Skills Kit (ASK) -It is a minimalist Software Development Kit (SDK) for developing" skills" for the Amazon Echo.

Amazon Web Services (AWS) Lambda - Functionality that runs programs when invoked instead of hosting programs on a server.

- **Programming Layer:** The source codes of all our programs are written in Node.js 4.3.

3.1 Devices

The input is given through Amazon's Echo. Echo's natural lifelike voices result from speech-unit selection technology. It's able to perceive what the users are saying using NLP algorithms built into the Echo's text-to-speech (TTS) engine. The Echo hardware complement includes a Texas Instruments DM3725 ARM Cortex-A8 processor, 256MB of LPDDR1 RAM and 4GB of space for storing. It connects to the net through Wi-Fi 802.11a/b/g/n.

3.2 Infrastructure

Alexa voice services powers Amazon Echo by converting speech into text and giving intelligent replies to user requests. Alexa is capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic and other real time information. Alexa can even control several smart devices using itself as a home automation hub. Amazon has released the three AVS API that permits Alexa to integrate with devices and applications. AWS Lambda is an event-driven, serverless computing platform provided by Amazon. It's a compute service that runs code in response to events and automatically manages the compute resources required by that code. As you'll see within the diagram user is communicating with Alexa. 1. User makes an invitation 2. Audio stream is shipped to the Alexa 3. It converts to TTS. 4. It sends customer intent to skill 5. Respond.

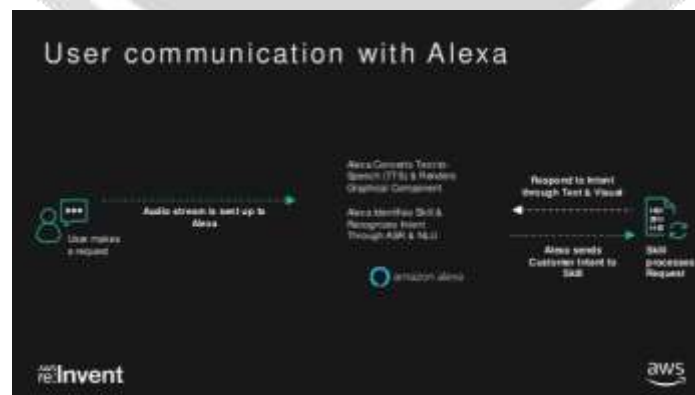


Fig -1: User communication with Alexa

3.3 Codebase

Node.js package system is named npm which comes with a lot of libraries making it an efficient and versatile choice for programming.

4. SYSTEM DESIGN

4.1 System overview

In this section, we are going to explain briefly about each component's role to form the system function.

4.2 Invocation name

We will be using an invocation name to invoke our skills it's to be called on every occasion whenever we want to call our library skills. Within the diagram you'll see where we will write the invocation name.



Fig -2: Snapshot of Invocation page

4.3 Intent

An intent represents an action that fulfills a user's spoken request. Intents can optionally have arguments called slots. The sample utterances are set of likely spoken phrases mapped to the intents we've got to make a variety of intent as there are various books with different authors kept at different places so we've used separate intent for every book.

4.4 Utterances

A set of likely spoken phrases mapped to the intents. This could include as many representative phrases as possible. This can be entered as: Name of Intent (from above) on right and therefore the phrase a user might speak to signal that intent on the right.

4.5 Coding page

Please refer the below diagram where we code with the help of node.js and make the program work

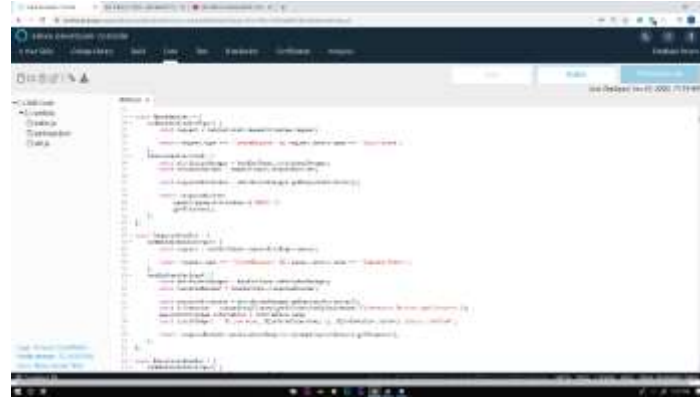


Fig -3: Snapshot of Coding page

4.6 Output

User start with the invocation name and then say the book name or the author name once the program recognizes the name it prompt with the question to confirm with the user is this the book he want with the author name if prompted yes the skill display the output where the book is kept else it closes. Please refer the below diagram.

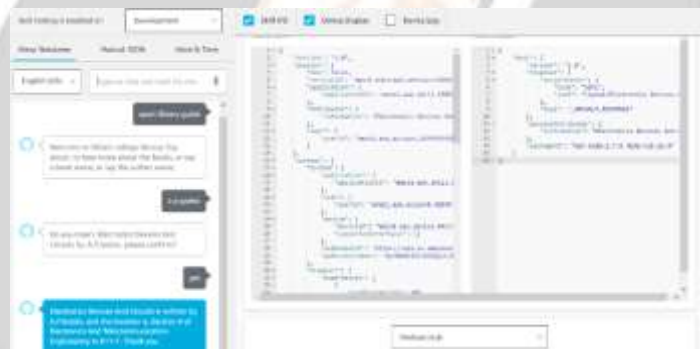


Fig -4: Output

5. TECHNOLOGY USED

We used **AWS** as a platform where we write the alexa skills and run it accordingly with the help of node js.

6.CONCLUSION

The library guide has a lot of interesting challenges to be solved. One of the very important we tried to address is that with the different authors of the book. We have used several intent's and included all the book in the library we tried to make it much more user friendly. We aim to build a prompter type of Alexa skills we believe that this a step towards making automation library with much simpler voice commands.

6. REFERENCES

- [1]. <https://ifttt.com/>
- [2]. <https://developer.amazon.com/alexa-skills-kit>
- [3]. <https://aws.amazon.com/lambda/>