

Project Report on
Virtual Interview

for

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CANDIDATES' DECLARATION

We, Disha Papneja, Mayur Jori, Shashank Shivam, Snehal Kenjale, students of MS (CS) hereby declare that this Project Report which is submitted by us to Professor Sambit Sahu, Department of Computer Science, Tandon School of Engineering, NYU in partial requirement for the Course CS GY-9923 “Cloud Computing” for Fall 2019, has not been previously formed the part of any other work, nor contains parts or whole of any other concurrent submissions in the same batch.

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ABSTRACT

A virtual interview would allow people to conduct an interview in an automatic manner by conducting it online. The user would wear VR glasses for the settings of a real interview. The setup of the interview would be designed using Amazon Sumerian. The interview would be conducted by a virtual interviewer, the questions would be asked by the interviewer based on the Resume of the user. IoT devices and healthcare analyzer device are used to monitor the response of the user, based on the questions asked by the interviewer. This would be done by measuring the pulse of the user.

The interviewers use a virtual interview as a standard way of assessing the potential of the candidate initially. It would also allow people to participate in an interview which they may have missed earlier for not reaching the place of interview on time. It also helps in discovering better talents by using a more efficient process of their recruitment. The organizations can also evaluate their candidates online by using virtual interview techniques.

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Chapter 1

INTRODUCTION

1.1 Introduction

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Chapter 2

DESIGN AND METHODOLOGY

2.1 Overview

Our Implementation methodology comprises of a scalable architecture built using AWS Cloud and Raspberry pi and Heartbeat Analyzer:

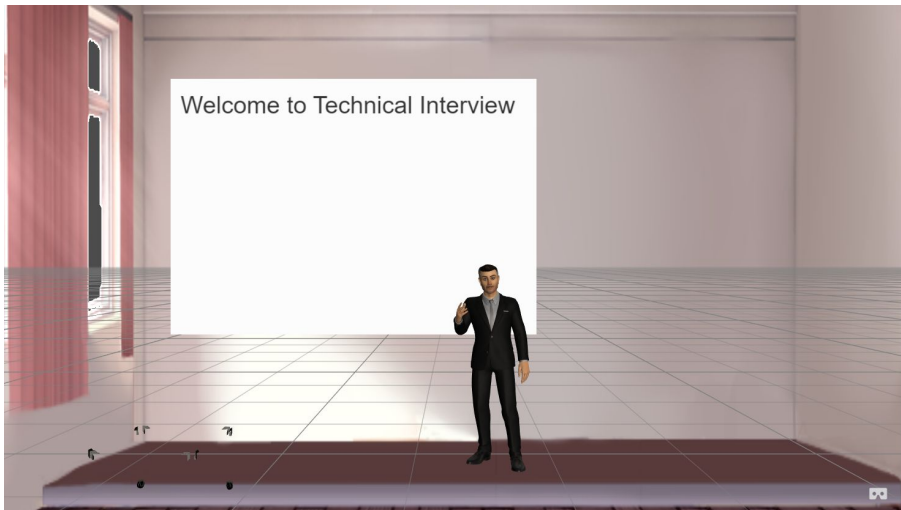


Fig 2.1 : Interview VR Screen

2.2 Anatomy of the Project

A. Components

1. User Dashboard

In information technology, a dashboard is a user interface that, somewhat resembling an automobile's dashboard, organizes and presents information in a way that is easy to read. Behind the scenes, a dashboard connects to your files, attachments, services and API's. A data dashboard is the most efficient way to track multiple data sources because it provides a central location for businesses to monitor and analyze performance. Real-time monitoring reduces the hours of analyzing and long line of communication that previously challenged businesses.

2. Raspberry Pi 3

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games

3. Amazon DynamoDB

Amazon DynamoDB makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching and backups. It frees you to focus on your applications so you can give them the fast performance, high availability, security and compatibility they need.

4. Amazon Sumerian

Bring a new dimension to your web and mobile applications with Amazon Sumerian. 3D immersive experiences are breathing new life into user experiences on the web, increasing customer engagement with brands and improving productivity in the workplace. Amazon Sumerian makes it easy to create engaging 3D front-end experiences and is integrated with AWS services to provide easy access to machine learning, chatbots, code execution and more. As a

web-based platform, your immersive experiences are accessible via a simple browser URL and are able to run on popular hardware for AR/VR.

5. Amazon Polly

Amazon Polly is a service that turns text into lifelike speech, allowing you to create applications that talk, and build entirely new categories of speech-enabled products. Polly's Text-to-Speech (TTS) service uses advanced deep learning technologies to synthesize speech that sounds like a human voice. With dozens of lifelike voices across a variety of languages, you can select the ideal voice and build speech-enabled applications that work in many different countries. In addition to Standard TTS voices, Amazon Polly offers Neural Text-to-Speech (NTTS) voices, delivering advanced improvements in speech quality through a new machine learning approach, offering customers one of the most natural and human-like text-to-speech voices on the market. Our Neural TTS technology also supports 2 speaking styles, a Newscaster reading style that is tailored to news narration use cases and a Conversational speaking style which can be used for many use cases including telephony applications.

6. Amazon Lex

Amazon Lex is a service for building conversational interfaces into any application using voice and text. Amazon Lex provides the advanced deep learning functionalities of automatic speech recognition (ASR) for converting speech to text, and natural language understanding (NLU) to recognize the intent of the text, to enable you to build applications with highly engaging user experiences and lifelike conversational interactions. With Amazon Lex, the same deep learning technologies that power Amazon Alexa are now available to any developer, enabling you to quickly and easily build sophisticated, natural language, conversational bots ([“chatbots”](#)).

As a fully managed service, Amazon Lex scales automatically, so you don't need to worry about managing infrastructure. With Amazon Lex, you pay only for what you use. There are no upfront commitments or minimum fees.

7. Amazon S3

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. This means customers of all sizes and industries can use it to store and protect any amount of data for a range of use

cases, such as websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics.

8. Amazon Lambda

AWS Lambda lets you run code without provisioning or managing servers. You pay only for the compute time you consume - there is no charge when your code is not running.

9. Amazon SNS

Amazon Simple Notification Service (SNS) is a highly available, durable, secure, fully managed pub/sub messaging service that enables you to decouple microservices, distributed systems, and serverless applications. Amazon SNS provides topics for high-throughput, push-based, many-to-many messaging.

2.3 Architecture

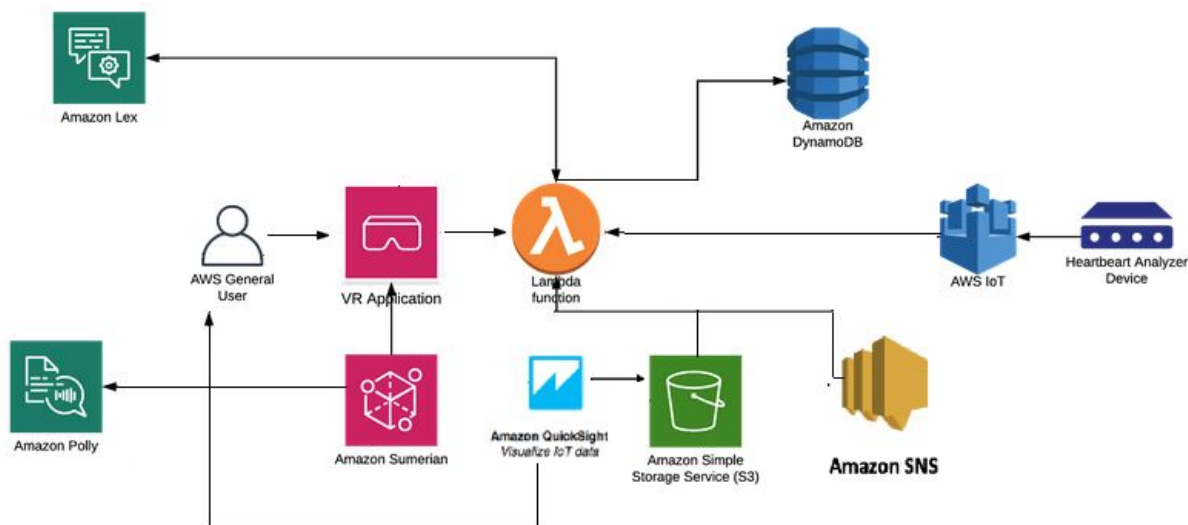


Fig. 2.2: The Architecture overview of the system.

2.4 Flow of Control

We have divided the application flow in two parts:

- 1) User Dashboard flow:
 - a) User starts the interview in virtual environment
 - b) VR host interacts with the person and proceeds the interview round by asking questions and storing user response
 - c) At the end of the interview, report of the interview is generated and It is sent to the user's email address

- 2) Raspberry Pi Flow:
 - a) Before starting the interview, user is instructed to connect the Heartbeat analyzer device to the body
 - b) The device will continuously send the user's heartbeat data to AWS IoT service
 - c) The IoT service is connected to AWS Sumerian which considers User's heartbeat for each response, which is used further for the Next question and for the report generation

Chapter 3

CHALLENGES AND LIMITATIONS

3.1 Sumerian configuration

AWS Sumerian being a service used for industrial applications, has a lot of features which allows interaction between different other AWS services. First challenge was to connect the VR host to AWS lex and polly for smooth functioning of the host. A Cognito pool setup was required for the same, which took a lot of steps to configure. Again, same cognito is supposed to be used for user authentication, hence, in future, modifying the same cognito pool for new services will require a thorough understanding of the setup.

Also, multiple states are present during the interview round. Each state requires different understanding of the environment and corresponding host actions should be activated. Due to a complex interconnection between these states, initially it was difficult to setup the states of the system.

Chapter 4

CONCLUSION AND FUTURE SCOPE

4.1 Conclusion

A virtual interview would allow people to conduct an interview in an automatic manner by conducting it online. The user would wear VR glasses for the settings of a real interview. The setup of the interview would be designed using Amazon Sumerian. The interview would be conducted by a virtual interviewer, the questions would be asked by the interviewer based on the Resume of the user. IoT devices and healthcare analyzer device are used to monitor the response of the user, based on the questions asked by the interviewer. This would be done by measuring the pulse of the user.

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4.2 Future Scope

- Personalized dashboard for every user with authentication.
- Personalized interview types for employers.
- Create a mobile application as well for this project.
- Using Sentimental Analysis to detect human emotions through their speech and using that data to carry out modifications in the difficulty level of the questions and also including that data to prepare the report for candidate.
- Using Rekognition to detect the facial expressions of the candidates to change the difficulty levels of questions for the candidates.