**A WEB APPLICATION FOR CV ANALYSIS**

**BY**

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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**DHAKA, BANGLADESH**

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# APPROVAL

This Project/internship titled **"A WEB APPLICATION FOR CV ANALYSIS"**, submitted by Md.Rafiqul Islam Rabbi, ID No: 191-15-2546 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfilment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on *30/01/2023*.
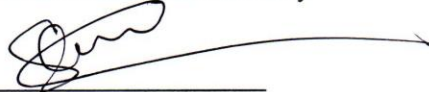
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# DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Amit Chakraborty Chhoton,** Sr. Lecturer, **Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.
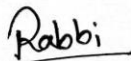
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We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

# ABSTRACT

The main thing of my web application is analysis the CV. In this application user just upload the CV and they will return what kind of skills are in the CV have. This application just detect the skills of CV and sand all the skills through email. I am creating this application for the multinational company .In here HR have to deal lots of CV and to process all those CV manually it is very much hard working and need many time to check all those CV. This application is very much helpful for the company. It can save time, money and works. HR doesn't have many times to read all those CV. Whit's why this application is very much important. To using my application (CV analysis) HR just upload the CV in to the web page then he will return the output of skills in his email. This system will focus not only in skills but also focuses on other important aspects which are required for particular job position. The application will help the human resource department to select right candidate for particular job profile which in turn provide expert workforce for the organization. To creating this web application I am using HTML, CSS, JS and PYTHON FLASK in my front end program and I am using AWS in my back end.

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## LIST OF FIGURES

# Chapter 1

# Introduction

## 1.1 Introduction

I am develop a application based website that analysis the skills of a CV. In this application we analysis the CV and detect skills of the applicant. The application system will make it simple for the HR department to narrow down the candidate pool based on the CV rating criteria. This approach will not only concentrate on talents but also on other crucial elements that are necessary for a specific employment role. The program will assist the human resources department in choosing the best candidate for a specific job description, resulting in the provision of a skilled workforce for the company. The purpose of the analysis is to explore the relationship between a set of variables and a response variable. Specifically, this analysis will use a variety of techniques to analyze the data and identify any correlations between the variables and the response variable. The analysis will also attempt to identify any potential outliers or trends in the data that may be of interest. Finally, the analysis will provide insights into the data that can be used to inform decisions and strategies.

## 1.2 Motivation

In the multinational company HR needs to press lot of CV. It's very hard to process multiple CV manually. That's why this application (CV Analysis) will help HR to automation multiple CV. This application can reduce time for HR.

## 1.3 Objectives

- To analysis the CV and detect skills.
- It reduces the time for HR.
- It can save money.

## 1.4 Expected Outcomes

A system that aids in producing an expected result based on the provided dataset is a part of my CV analysis system. In this system 1$^{st}$ drop the docx or pdf file of CV and the website will analysis the CV and find what kind of skills in the CV has and detect all the skills.

## 1.5 Project Management and Finance

My program is a web application based project. My application is created for the multinational company. I am selling this project to the company and earn money.

## 1.6 Report Layout

I am describes full implementation of this project "CV ANALYSIS "in the project report.

Chapter 1: In this chapter I descried introduction of my project and also added motivation, objectives, expected outcome of my project and project management and finance.

Chapter 2: In chapter 2 shows background processes.

Chapter 3: In chapter 3 here is requirement specification. In here I shows business modelling and description, Requirement Collection and Analysis, Use Case Modeling and Description and Logical Data Model.

Chapter 4: In chapter 4 there is Design Specification segment here I shows front end design, back end design and Interaction Design and User Experience (UX).

Chapter 5: In chapter 5 here I shows Implementation and Testing. Here I shows how to implement data, Implementation of Front-end Design, Testing Implementation, Test Results and Reports.

Chapter 6: In chapter 6 I read about Sustainability of my project.

Chapter 7: In chapter 7 there is Conclusion and Future Scope. Here I shows Discussion and Conclusion, Conclusion and Future Scope.

# Chapter 2

# Background

Authors of [1] worked Errors Associated with Resume and Restart in Android Applications. This app is for mobile devices. The main reason to creating this platform is to collect data and stored data .this application save smartphone to corrupted data though it could not crash the smart phone. This app finding the KR errors and removed it to save smartphone.

Authors of [2] is working on SEMENTIC ANALYSIS-BASED AUTOMATED TOOL FOR RESUME CLASSIFICATION. The design and implementation of a resume classifier application that uses an ensemble learning-based voting classifier to categorize a candidate's profile into an appropriate domain based on his or her interests, job experience, and competence specified in the profile are covered in this research. They employ Topic Modeling, Dynamic Classification, Machine Learning, Resume Classifier Application, and Ensemble Learning to create their project. Author of [3] worked Your preference on the market is revealed by your interview choice: to enhance job-resume matching using memory profiling. Here, they provide a competent and professional resume for the interviewer in order to enhance job-resume matching using memory profiling. To learn the latent preference representation by interacting with both the job and resume sides, we offer a profiling memory module in more detail. They also told the applier what kind of jobs are suitable for the applier. To finishing this project they use meshing learning and deed learning.

Author of [4] worked Guide and Best Practices for Resume Studies on Analyzing Discrimination in Recruitment. In here they analysis the cv and told the viewer what type of job are suitable for him. This is a very good application .It will help people a lot to identify his type of job. Despite this method's stability, organizational psychology and human resource management studies have not completely embraced it. They offer a summary of the best practices for resume studies based on a literature analysis and a step-

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by-step methodology to assist researchers. We also discuss difficulties encountered in the planning and execution of these investigations and how they could be overcome.

Author of [5] worked Using graphical resumes as resources for self-branding and self-analysis among students is discussed in the section on building your brand. The relevance of graphical resumes as useful tools for individual self-promotion, student reflection, and deliberate course curriculum integration is discussed in this article.

Authors of [6] had employed various well-known voice analysis as well as classification techniques in deep learning to extract emotions from signals. Deep learning, deep Boltzmann machine, convolutional neural network, recurrent neural network, and deep belief network were all employed. These methods elaborated emotions like happiness, joy, sad, neutral, disgust, surprise, anger, fear. They have certain disadvantages, such as a limited internal design, ineffective temporal input data verification, and excessive learning when memorization is used.

Authors of [7] proposed a system that addressing three valuable aspects , firstly suitable features for the speech recognition, secondly design an appropriate classification and last one was proper preparation that includes emotional speech database. They had some limitations which were the uses of vectors that were statistically independent. This intension was bad practice. They could improve the classification performance by using autoregressive models.

Authors of [8] developed automation analysis which could recognize human affective behavior.

 Authors of [9] proposed Hidden Markov models. They proposed two methods, first one was global statistics which was classified by Gaussian mixture models second one was increased temporal complexity. They only use 6 emotion as a result when we use other speech emotion it could not recognize. They might improve their research by using all other emotion.

Authors of [10] had worked the frequency, energy, duration of quiet, and voice quality of spoken messages. They also proposed a method that makes short time long frequency power coefficients to represent the speech signals and a discreet Hidden Markov model (HMM) as the classifier.

Authors of [11] had said that static or dynamic classification problem could be removed by using speech emotion recognition. They also explain a frame-based formulation that uses the least amount of speech processing possible. They should use convolutional neural network for getting better performance.

# Chapter 3

## Requirement Specification

### 3.1 Business Modeling and Description

In the multinational company lots of people apply different in category. It is very hard to maintain or select the right one. That's why this application will help the company to select the right person in the right position. My application helps them to reduce money and time. If the company select a person to process lots of CV, it is very hard working to process all the CV manually. It is very timable to process all the CV and company have to salary to the person in every month. My application will help the company to reduce time and money for the company.

### 3.2 Requirement Collection and Analysis

- HTML
- CSS
- JAVA SCRIPT
- PYTHON FLASK
- PYTHON
- AWS

HTML: Hyper Text Markup Language is known as HTML. The preferred markup language for building Web pages is HTML. HTML presents structural view of my home page.

CSS: CSS means Cascading Style Sheets. I use CSS for style my HTML structure of my web page.  CSS outlines the presentation of HTML components.

JAVA SCRIPT: A programming language called JS may be used to develop dynamic and interactive web apps and browsers. I am using JS to creating upload CV.

PYTHON FLASK: I am using PYTHON FLASK to create a template.

PYTHON: An object-oriented programming language is PYTHON. It has classes, dynamic typing, very high level dynamic data types, modules, exceptions, and dynamic typing. i am using python for back end program.

AWS: Amazon Web Services is known as AWS. It is the most complete and widely used cloud platform in existence. For my back end procedure, I use AWS.
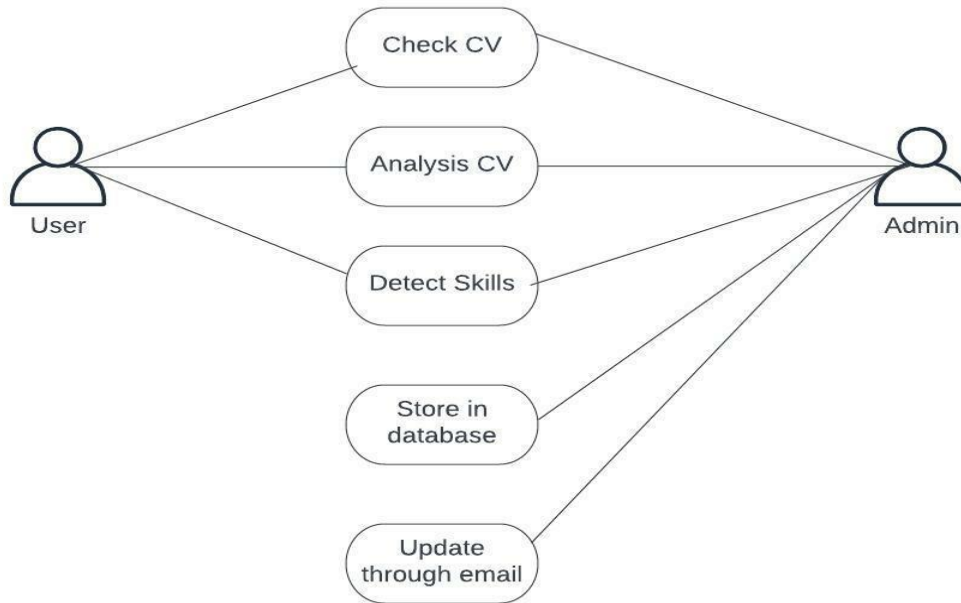
## 3.3 Use Case Modeling and Description



Figure 3.1: Use Case Model

In here user upload the CV in the website then the CV will check and analysis. Then detect all the skills and it store in the database. Then all the skills are upload through email to the admin.

## 3.4 Logical Data Model

After uploading CV, Optical Character Recognition (OCR) collect the text from the CV. Then collect the skills from the text. Then the skills send through email.

## 3.5 DESIGN REQUIREMENT

In design segment I have to know

- HTML
- CSS
- PYTHON FLASK

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- JS
- PYTHON
- AWS

To design my front end page I use HTML, CSS, JS, PYTHON FLASK. I have a proper knowledge about this language otherwise I could not create a web page. In HTML I use it to structural based on my page. In CSS I am using it to style my HTML structure. Like add colure, image or doing any other style. In JS I am using it to creating upload button. In here I am uploading my CV. PYTHON FLASK is using for creating for a empty page. In this empty page I use HTML CSS and JS code to finishing my home page.

# Chapter 4

## Design Specification

## 4.1 Front-end Design

HTML: Hyper Text Markup Language is a part of HTML. It serves as the default markup language for files intended to be viewed in a web browser. The documents are returned by the web browsers as multimedia web pages after being received as a file from a web server. HTML provides semantic signals that describe a web page's structure and content accessibility. Building html blocks has been made easier by using html elements. With HTML, you may create items like interactive forms and embed them into the page that is produced. HTML allows for the creation of text-based documents with structure, including headers, paragraphs, lists, links, quotations, and more. Numerous tags are used in HTML code, including image>, input>, b>, I br>, table>, p>, head>, body>, title>, h>, and others. HTML may set scripts in Java Script that can modify the way that web pages behave and what they include. CSS specifies how embedded material should look and be organized.

CSS: Cascading Style Sheets are known as CSS. It is used to describe how a document that has been authored in a markup language like html is shown. Colors and fonts may be differentiated in text and presentation thanks to CSS layout. This division could make stuff more expressible. The specification of presentation features provides more flexibility and control. Specifies relevant CSS separately and enables multiple webpages to share formatting. CSS files enable and reduce complexity and repetition in structured content. CSS files will be cashed to greatly improve the speed and layout of files sharing pages. Formatting separates the content of the same markup page into different rating. CSS has rules for alternative formatting if a mobile or device current is accessed. When an element meets more than one style rule, the cascading name is used to decide which rule should be applied, according to the precedence screen. This priority hierarchy is predictable.

JAVA SCRIPT: Along with HTML and CSS, JavaScript is a computer language and one of the core web technologies. By 2022, 98% of websites—including third-party libraries— use JavaScript on the client site for web page behavior. A dedicated JavaScript engine is available in every major web browser and is used to run code on users' devices. High-level

compiled language JavaScript complies with the ECMAScript standard. It has first-class functions based on dynamic typing prototypes and object orientation. For working with text, dates, regular expressions, common data structures, and the Document Object Model, JS includes application programming interfaces. Standard input-output features like networking storage and graphics capabilities are not included in ECMAscript. In reality, JavaScript I/O APIs are offered by web browsers or other runtime platforms. JS was originally solely used in web browsers, but it is currently also used in applications. Although JAVA and JS have a similar name and syntax, they are not interchangeable. Despite having a similar name and syntax, they are distinct from one another.

PYTHON FLASK: Python flask is a framework of Python. Because it falls under the micro framework category, no particular tools are needed. It lacks a database abstraction layer from validation or other components, which are often provided by already-existing third-party live functions. Extensions that can add application functionality already built into Flask are supported. Object Relational Matters Upload Holding Form Validation For various common interactions, there are numerous open authentication mechanisms and extensions available.

## 4.2 Back-end Design

I use AWS for the back-end application. Amazon Web Services is known as AWS. It is a platform for cloud computing. These cloud computing web services provide different services related to software through its servers form the malware IOT and other processing capabilities on networking computers. This frees up client hardware and operating system management from scaling and obsolescence. One of the fundamental features offered by Amazon Elastic Compute Cloud is the ability for users to create a virtual computer cluster with exceptionally high availability that can be reached via the Internet using the Reset API, CLS. The majority of a real computer's exterior parts, such as the hardware central processor unit and graphics processing unit, are simulated by AWS virtual machines. Local, RAM Memory, Hard Disks, SSD Storage, Networking, and Preloaded Application Software such as Web Servers are all available. Databases managing relationships with customers. Through a global network of AWS servers, AWS services are provided to

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consumers. AWS subscribers have the option of purchasing a single virtual AWS machine, a single physical computer, a cluster of either, or both. While certain security measures are prioritized for consumers by Amazon, others are the customers' responsibility. Seven AWS locations are in North America, and the company has locations all around the world. Amazon presents AWS as a speedier and more affordable alternative to installing a physical server for clients that need huge amounts of processing power.

Amazon API Gateway: REST, HTTP, and Web Socket APIs may be created, published, maintained, monitored, and secured at any scale with Amazon API Gateway, an AWS service. Developers of APIs can build APIs that connect to AWS or other web services. In API gateway all the data stored. User can make their app available in to the third party apps. API gateway is a HTTP based. It is enable for client-server communication. It is very managing very easy to make a developers to create, publish, maintain. It allows users to build Web Stop and Restful APIs that support apps for two-way real-time communication. Along with web applications, it enables containerized and serverless workloads. In order to receive and process hundreds of thousands of API, API Gateway manages traffic, cross-support, permission and access control, trading monitoring, and API version management. There is no charge to utilize it. With the API Gates Tiered pricing approach, you may lower your expenses as you utilize your API by only paying for the APIs you use and the quantity that is transmitted .
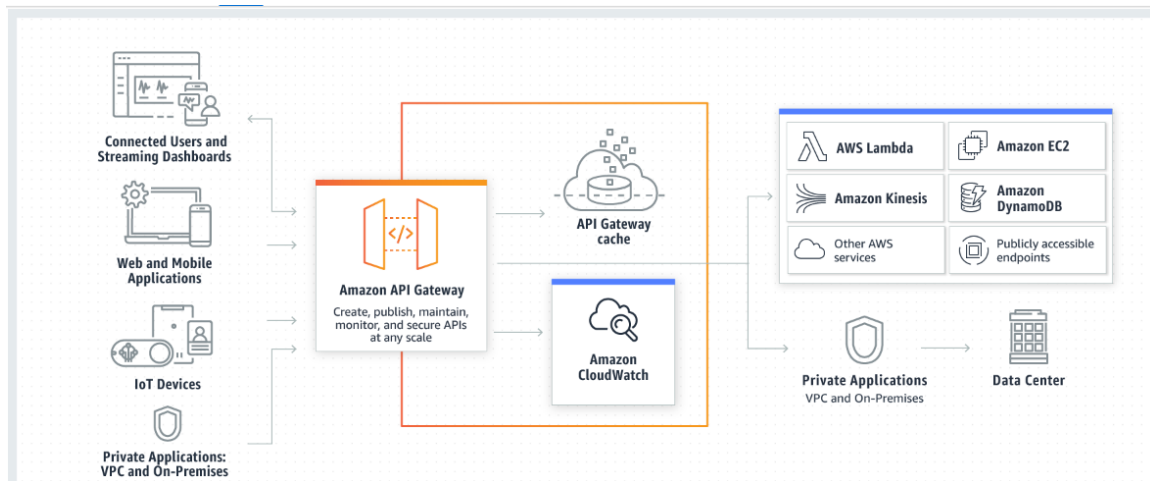
API GATRWAY is working like the sketch



Figure 4.1: API Gateway

AWS LAMBDA: Amazon offers a server-less computing technology called AWS Lambda. As part of Amazon Web Services, it exists. AWS Lambda is comput service that can run a computer program. November 13, 2014 AWS Lambda has been include. In 2018 NODE JS, PYTHON, JAVA, C are support officially in AWS Lambda. It permits calling from a supported runtime like node to run native Linux Expendables. js. AWS Lambda use cases are designed to respond to upload website uploads to Amazon street image diary tables or sensor readings from IOT devices. AWS Lambda can be used to automatically provide back end services triggered by custom HTTP requests and spin

When bespoke HTTP requests are made, back end services may be automatically provided via AWS Lambda and spun off when not in use to free up space. These unique HTTP requests are set up in AWS API Gateway, which works with AWS Cognito to manage authentication and permission. AWS Lambda has no minimum execution time and is metered to the closest millisecond, in contrast to Amazon EC2, which is charged by the hour but metered by the second. A feature announced by the AWS Lambda Provision Conference at the 2019 AWS Annual Cloud Computing Conference starts and keeps Hyper-Ready to react in ten milliseconds or less. The Lambda team conference, online tools like mobile banking and mobile banking were described as ideal for implementing

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latency-sensitive micro services. Instances are not directly initialized or controlled. The relevant tasks must then be assembled into a bundle and uploaded to an S3 bucket and instructed to run AWS when an event occurs. Such a process is executed in a new environment so it is not possible to express the context of previous and subsequent Iranian executions. As a result, instances are basically stateless because all incoming and departing data must be stored elsewhere. A Lambda packet can be up to 250 MB in uncompressed form and 50 MB in compressed form.

AMAZON S3: Through a web service interface, Amazon S3 provides object storage. The infrastructure that Amazon.com uses is also used by Amazon S3. Amazon S3 store any kind of object like applications, backups, disaster recovery, data archives etc. AWS launch S3 store 2006 in United State of America and in 2007 it is launch in Europe. An industry leader in terms of scalability, data availability, security, and speed is Amazon S3, a straightforward object service. Any user may utilize this service to safeguard their mobile apps, cloud-native applications, and any type of data. Customer can use this storage free of cost, organize. To satisfy certain commercial, organizational, and regulatory needs, data must be configured with precise access restrictions.



Figure 4.2: Amazon S3

EC2: EC2 means Amazon Elastic Compute Cloud. In using EC2 customer can To operate their computer programs, people rent virtual machines. Using EC2, a user may create, run, and terminate servers. On August 25, 2006,[4] Amazon launched EC2, providing first-

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come, first-served access. EC2 Instances Savings Plans and Compute Savings Plans. A company may commit to using EC2 and Fargate with the flexibility to modify the region, family, size, availability zone, OS, and tenancy over the commitment's lifetime thanks to compute savings plans.

## 4.3 Interaction Design and User Experience (UX)

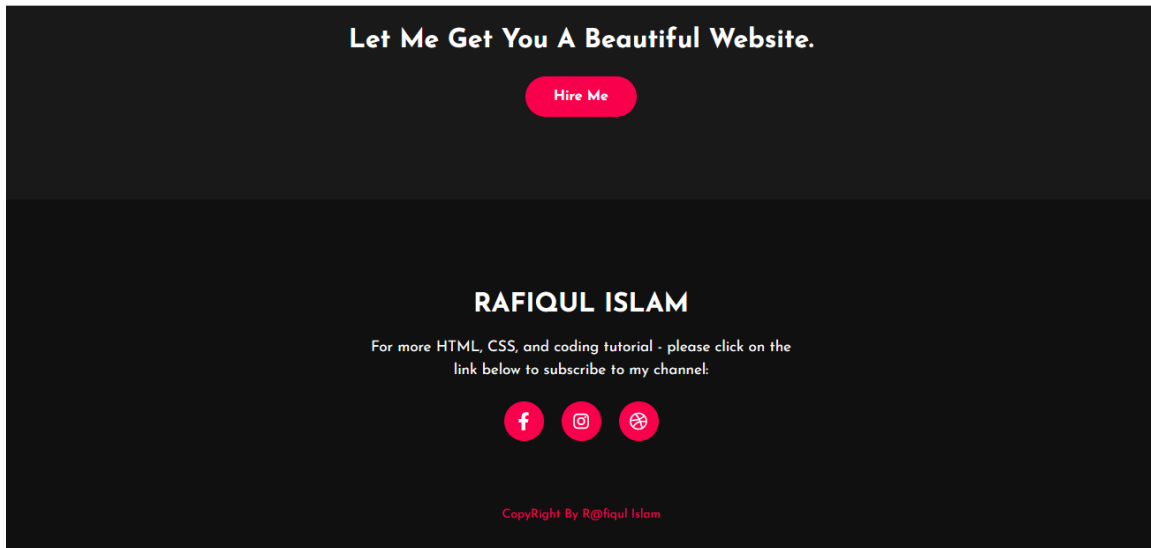I give all the details in my web page like Email, phone number, Facebook, Instagram .if user have any problem to using this application they have to contact me.



Figure 4.3: Contact

## 4.4 Implementation REQUIREMENT

I am using my front end program to using python flask and for back end program I use AWS.

CV upload API

Create token for upload CV on S3 bucket

Store users CV with meta data. meta data will be user email address

Users

Amazon API Gateway

AWS Lambda

bucket with objects

After uplod CV on S3 this function process CV

Amazon Simple Email Service (SES)
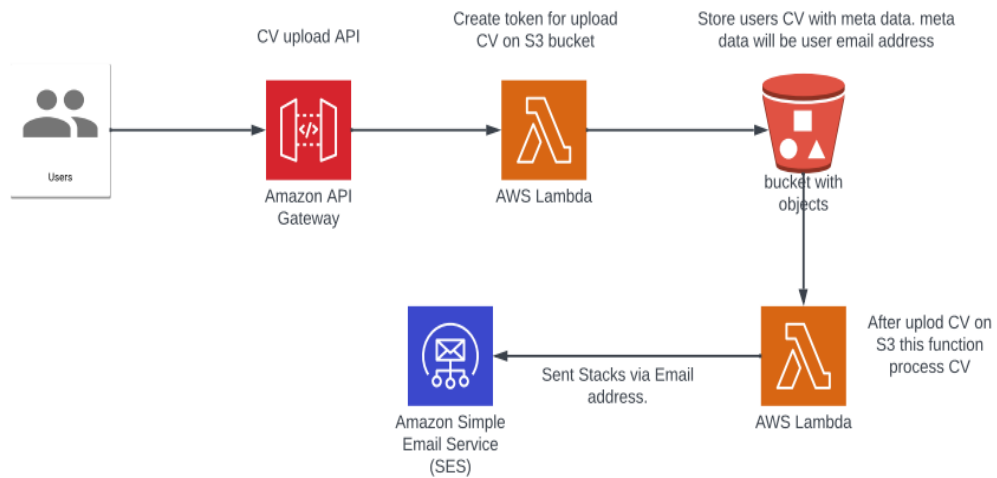
Sent Stacks via Email address.

AWS Lambda

Figure 4.4: Implement

This is the perfect picture how my back end program is work. In the picture shows user upload the CV then the CV go to Amazon API gateway and the CV in API Gateway. In API Gateway everything are stored. Then the CV go to the AWS Lambda. In here to create token for upload CV on S3 bucket. Then the CV goes to the S3 bucket and store meta data. Meta data will user email address. Then the data goes into the AWS Lambda. In here the final and finishing process has doing then detect the skills. And send the stack of skills into the email and finishing the whole process.

# Chapter 5

# Implementation and Testing

## 5.1 Implementation of Database

I make use of AWS. All data on AWS are kept in S3 buckets. An object storage service called Amazon Simple Storage Service (Amazon S3) provides performance, security, and scalability that are unmatched in the market. Every quantity of data may be stored and protected by customers of all sizes and sectors for practically any use case, including data lakes, cloud-native applications, and mobile apps. You may reduce expenses, organize data, and set up precise access controls to satisfy unique business, organizational, and compliance requirements using cost-effective storage classes and simple administration tools.
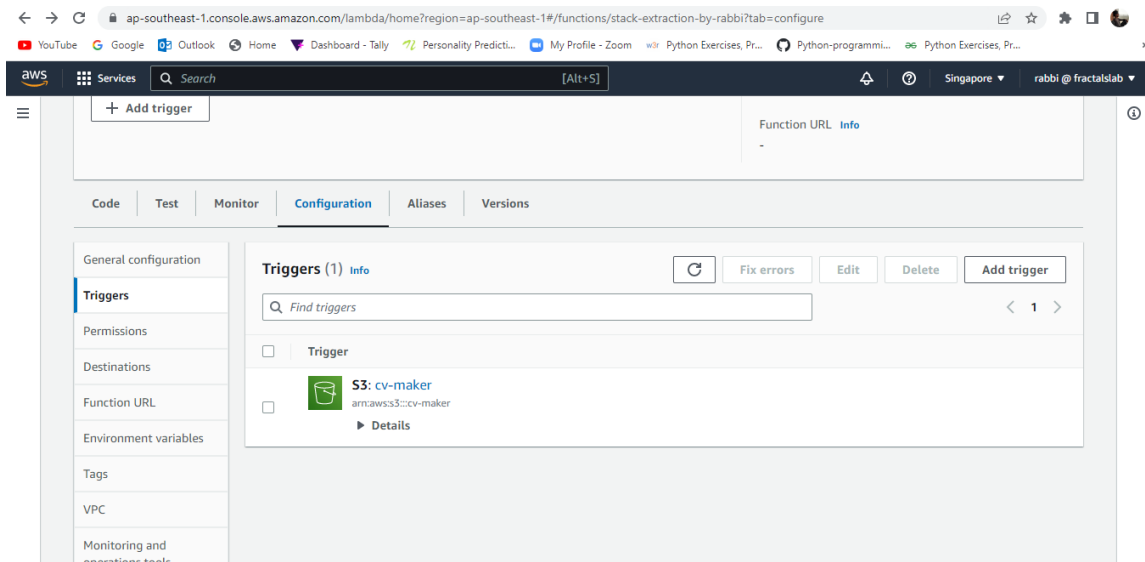


Figure 5.1: Database
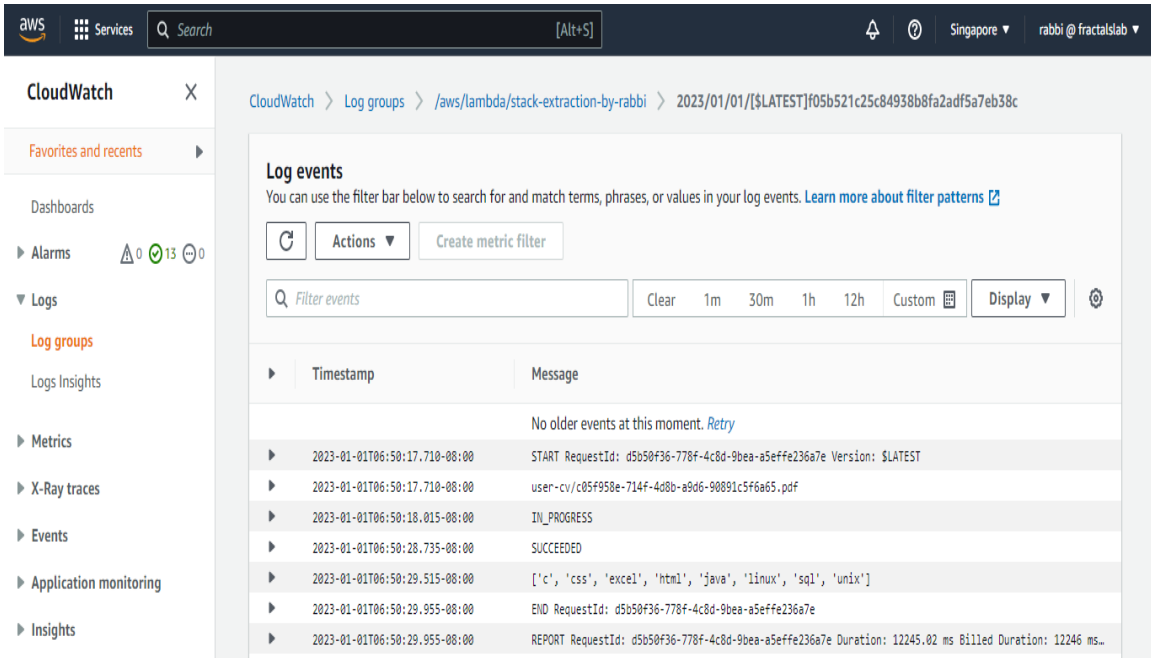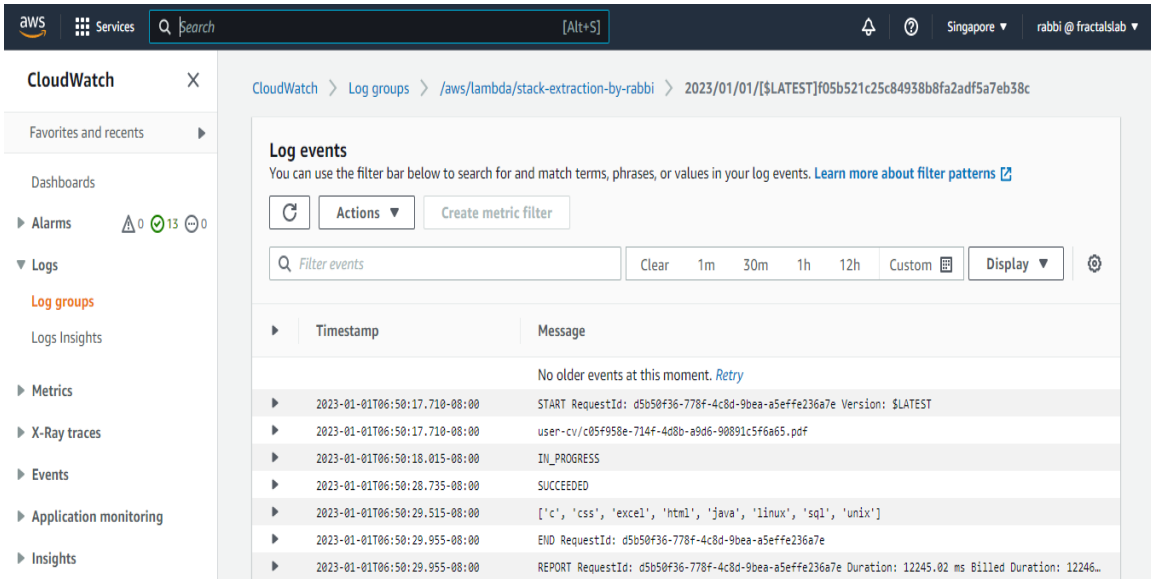
Figure 5.2: Database



Figure 5.3: Database

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## 5.2 Implementation of Front-end Design

I'm utilizing to implement my front end design:

- HTML
- CSS
- JS
- PYTHON FLASK

Here I given my all the front end design

This is my home page



Figure 5.4: Home page

Figure 5.5: Upload Page

This is the segment of uploading CV. In here HR can upload a CV to check what kind of skills under the CV. HR have to upload docx or pdf file of CV. Otherwise it did not accept the CV. So when upload a CV then it has go to the AWS and process the CV and detect all the skills. Then finally all the skills are upload a email.
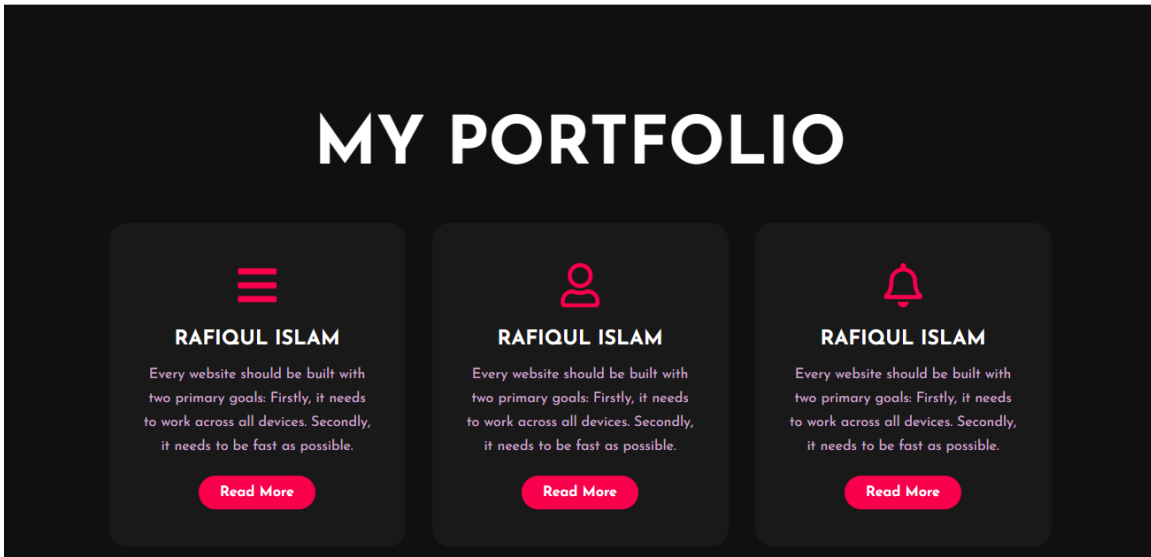
Figure 5.6: Portfolio page

This is the segment of my Portfolio. In here given all kind of information about me.
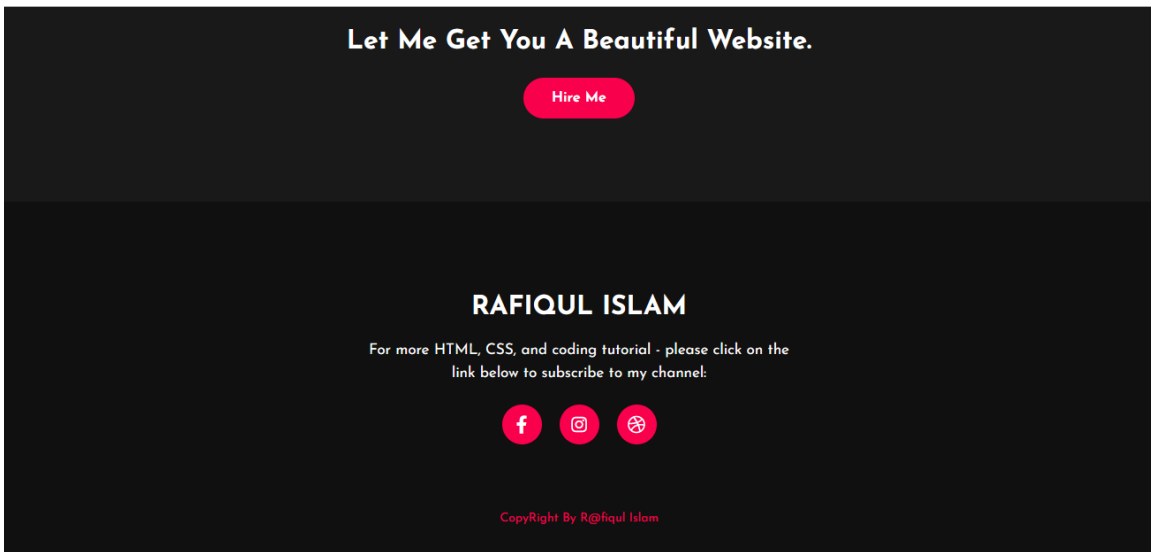


Figure 5.7: Contact Page

This is the last segment of my web page. This is the contact segment. If anyone want to contact with me they have all the details here to contact with me.

## 5.3 Testing Implementation
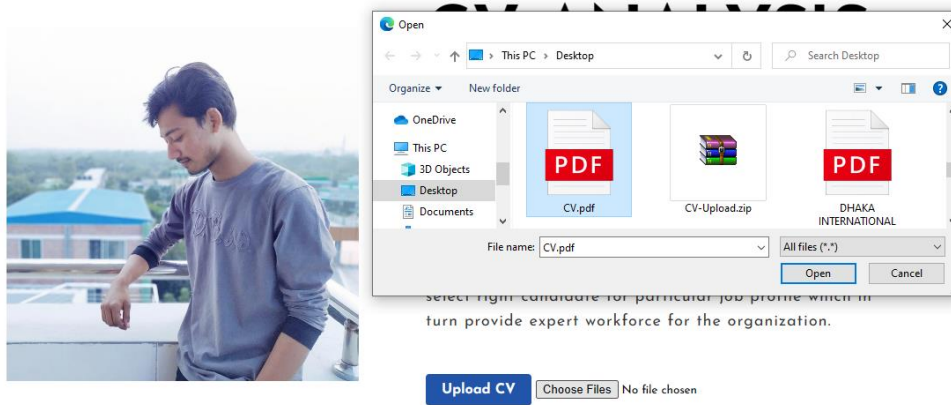
The 1st step is uploading a CV



Figure 5.8: Testing

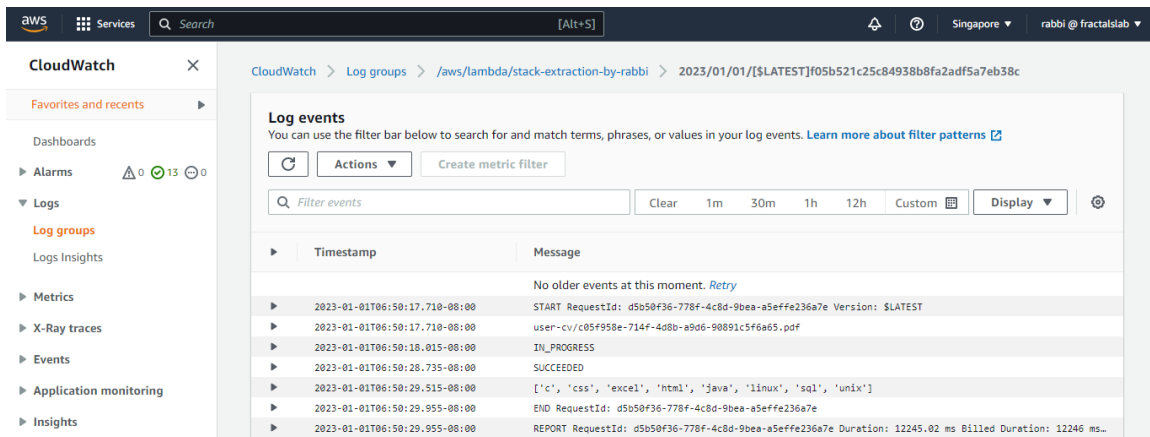When CV is uploaded then the data will store in S3 bucket



Figure 5.9: Store

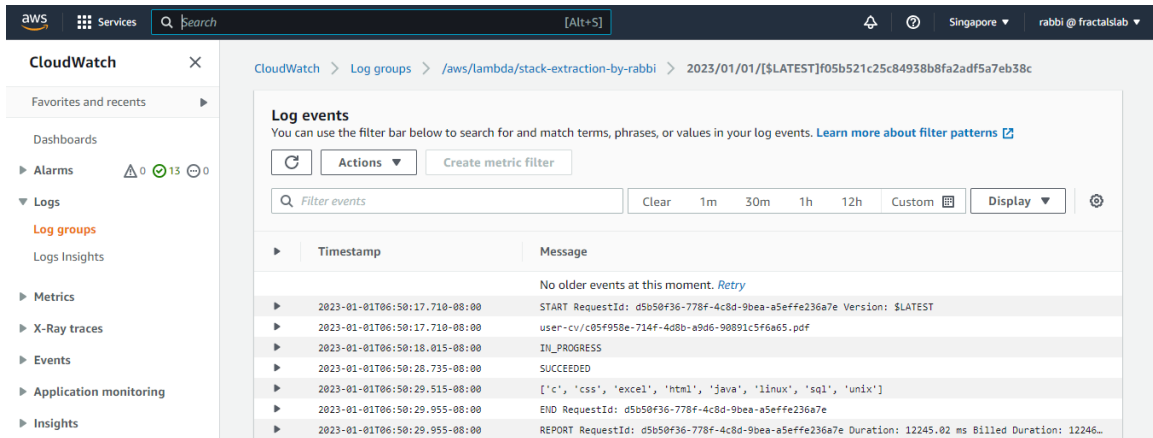Then Optical Character Recognition (OCR) collect the text from the CV.



Figure 5.10: Store

## 5.4 Test Results and Reports

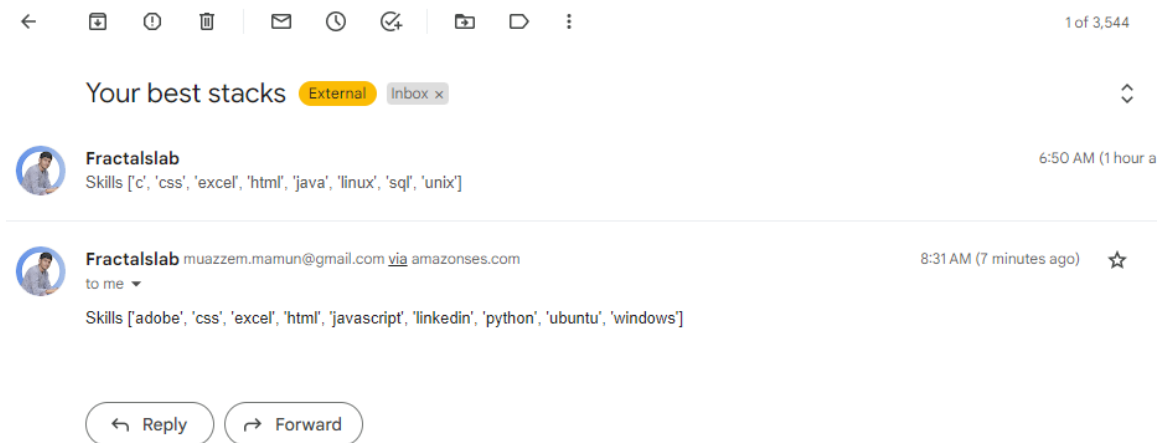When all the process are complete then the skills send through email.



Figure 5.11: Result

# Chapter 6

## Sustainability

My application is very much sustainable. Because this application is very much helpful for the company. It can reduce time and money for the company. This is also a flexible application. You can add new features when it needed. In near future I can update a lots of new features like the CV is stander or not, What percentage of CV is standard for the company .It has give the application much more sustainable. It was a very good experience and joy on working this project. I am study lots of CV analysis related project and think a new idea about this project CV ANALYSIS. This project will help the multinational company to managing lots of CV manually and this application reduce time and money for the company. It is very much easy application to use. Finally I am very much enjoying to working this project. The reasons people care about sustainability are frequently intricate, unique, and varied. Making a list of the factors why so many people, organizations, and communities are productive would be impractical. toward this objective. However, the majority of people believe that sustainability ultimately boils down to the future we are leaving for future generations. Many people and organizations share the concept of sustainability, and they show this value via their policies, routine actions, and behaviors. People have significantly contributed to the development of our contemporary social and environmental conditions. Future generations must develop answers and adapt, as must today's population.

# Chapter 7

## Conclusion and Future Scope

## 7.1 Discussion and Conclusion

It was a very good experience and joy on working this project. I am study lots of CV analysis related project and think a new idea about this project CV ANALYSIS. This project will help the multinational company to managing lots of CV manually and this application reduce time and money for the company. It is very much easy application to use. Finally I am very much enjoying to working this project. There are lots of features I will add in future. In this application I did not cover everything. I just working on the skills on the CV. There are lots of other area I am thinking and apply in future. My application is very much sustainable. Because this application is very much helpful for the company. It can reduce time and money for the company. There are lots of features I will add in future. In this application I did not cover everything. I just working on the skills on the CV. There are lots of other area I am thinking and apply in future. My application is very much sustainable. Because this application is very much helpful for the company. It can reduce time and money for the company.

## 7.2 Conclusion and Future Scope

There are lots of features I will add in future. In this application I did not cover everything. I just working on the skills on the CV. There are lots of other area I am thinking and apply in future. My application is very much sustainable. Because this application is very much helpful for the company. It can reduce time and money for the company. This is also a flexible application. You can add new features when it needed. In near future I can update a lots of new features like the CV is stander or not, What percentage of CV is standard for the company .It has give the application much more sustainable.

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