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**COURSE: CLOUD COMPUTING**

**FACULTY: SUDHA.M MAM**  
**DIGITAL ASSIGNMENT -2**

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**Question :**

- Host a website on a cloud infrastructure platform such as AWS, GCP, Azzure.
- Demonstrate step by step implementation of the same.

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1. Problem statement
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## Problem Statement:

### Digital Assignment - 1

#### Cloud Computing

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#### Problem Statement

In the digital age, recruitment processes face various challenges due to the sheer volume of applications. Companies may receive hundreds or even thousands of applications for a single job posting. The task of sifting through this information is labor intensive, time-consuming, and prone to human error. Additionally, manual resume screening can introduce bias, reducing the diversity and inclusivity of hiring practices. This problem addressed by this project is the inefficiency of traditional recruitment methods, which can lead to missed opportunities for both applicants and employers.

A Streamlined ATS aims to tackle these issues by automating the initial stages of candidate evaluation. This automation can save time, reduce human error, minimize bias, and ultimately ensure that the most qualified candidates are given due consideration.

#### Scope of the Project

The Scope of the ATS project includes developing a platform where applicants can submit their resumes, and hiring managers can efficiently filter and rank candidates based on relevant criteria. Here are some key functionalities the project seeks to incorporate:

## Scope of the Project :

### 1. Resume Submission & parsing :

- > The ATS should allow candidates to submit resumes in various formats (e.g., PDF, DOCX).
- > If resume parsing features will use algorithms to analyze the text and extract key information like contact details, education, experience, skills, and certifications.
- > This data extraction will populate a structured database, creating candidate profiles that can be easily accessed by recruiters.

### 2. Automated Screening :

- > Once candidate data is parsed, the ATS can compare it against job requirements.
- > A scoring or ranking algorithm will analyze factors such as experience level, educational background, & skills relevance, assigning each applicant a suitability score.
- > Hiring managers can quickly identify candidates who meet the job criteria, saving them from manually comparing each resume job requirements.

### 3. Applicant Ranking & filtering :

- > The ATS will implement filters that allow recruiters to view candidates based on specific attributes or scores.
- > Customizable filters enable the hiring team to focus on candidates with particular qualifications or prioritize applicants with certain skill sets.
- > By sorting candidates in this way, the ATS assists in quickly narrowing down the pool of applicants.



#### 4. User interface (UI):

- > A clean & intuitive dashboard will be created using Streamlit, an open source Python library that simplifies building web applications.
- > Recruiters can view candidate profiles, apply filters, and sort candidates by their scores, making it easy to identify potential hires.
- > The UI will be optimised for efficiency, ensuring that users can easily navigate through candidates and perform necessary actions with minimal clicks.

#### 5. Data Management and Security:

- > Since the system handles sensitive information, data management and security are key components of the project scope.
- > The ATS will ensure that applicant data is securely stored and only accessible to authorized users.
- > Implementing measures to comply with data privacy regulations, such as GDPR, is also essential.

1

## ADVANTAGES:

### Advantages of the ATS

1. Efficiency: Automating resume screening and ranking speeds up the recruitment process, allowing recruiters to fill positions faster.
  - > By reducing the time spent on manual tasks, hiring teams can allocate resources to other critical areas, like interviewing top candidates.
2. Reduced Bias:
  - > The system minimizes the risk of unconscious bias by evaluating applicants based on objective criteria.
  - > Automated Screening allows every candidate to be assessed in a fair & uniform manner, promoting diversity in hiring.
3. Enhanced Accuracy:
  - > The ATS leverages data to evaluate candidate qualifications, ensuring that hiring decisions are based on relevant experience and skills.
  - > This accuracy can lead to better hiring outcomes, as candidates selected are more likely to meet the job requirements.
4. Scalability:
  - > As a cloud-based system, the ATS can accommodate increasing numbers of applications as companies grow.
  - > This Scalability makes it suitable for companies of various sizes, from startups to large enterprises.

## TECHNICAL IMPLEMENTATION

### Technical Implementation with python and Streamlit

Python is an ideal language for the ATS's backend due to its flexibility, extensive libraries, and active development community. For the front end, Streamlit offers a rapid development environment to create interactive and customisable web applications.

#### 1. Python :

- > Python allows for smooth integration of data parsing libraries & machine learning algorithms.
- > Popular libraries like pandas and numpy can help with data manipulation, while spacy or NLTK can be used for natural language processing to parse resumes and extract data.

#### 2. Streamlit :

- > Streamlit is a framework specifically designed for building data science and machine learning web applications quickly.
- > By using Streamlit, the ATS will have an interactive & user friendly frontend, allowing recruiters to filter and view applicants in real-time without extensive web development.

#### 3. Hosting :

- > The ATS can be hosted on a cloud service such as AWS, offering scalability and reliability.
- > With AWS, the system can leverage services like EC2 for computing power, RDS for database management, & S3 for secure file storage.



## SETUP AND CONFIGURATION:

### SETUP AND CONFIGURATION :

Step 1 : Set Up an AWS EC2 instance

1. Log into the AWS Management Console and navigate to EC2.
2. Launch a new instance:
  - > choose Amazon Linux
  - > Select an Instance Type t3.micro
  - > Configure Security Group: Open port 80 (HTTP), port 443 (HTTPS), and port 22 (SSH) for Secure access and TCP with port 8501.
3. Key pair : Create a new key pair or use an existing one to SSH into your instance.
4. Launch instance & connect with EC2 instance connect.

Step 2 : login as root user with the command "Sudo su -"

Step 3 : Install python, pip, Git, and then clone the git repo  
git clone https://github.com/Vardhini299/ATS.git  
cd ATS

Step 4 : Set Up Virtual Environment and Install Dependencies

```
python3 -m venv venv
```

```
source venv/bin/activate
```

```
pip install -r requirements.txt
```

Step 5 : Set up a Reverse Proxy with Nginx

```
Sudo dnf install nginx -y
```

```
Sudo nano /etc/nginx/conf.d/streamlit.conf
```

Add the following configuration to route requests to Streamlit:

```
server {  
    listen 80;  
    server_name 13.60.44.70;  
    location / {  
        proxy_pass http://127.0.0.1:8501;  
        proxy_set_header Host $host;  
        proxy_set_header X-Real-IP $remote_addr;  
        proxy_set_header X-Forwarded-For $proxy_add -x -  
            forwarded-for;  
        proxy_set_header X-Forwarded-Proto $schema;  
    }  
}
```

Restart nginx with: `sudo systemctl restart nginx`

Steps: Run Streamlit in the Background

To keep Streamlit running after you log out, use `nohup`:

`nohup streamlit run app.py --server.port 8501`

access the website from public ip: `http://13.60.44.70:8501/`



## Conclusion

This ATS project aims to create a robust, efficient, and user-friendly recruitment tool using Python and Streamlit. With automation & objective evaluation, this ATS can minimize bias, enhance the efficiency of resume screening, and support Organizations in selecting the most suitable candidates. The project scope, technical implementation, & potential enhancements highlight its ability to address the common challenges in traditional hiring processes, ultimately contributing to a fairer and more effective recruitment system.

aws

Services

Search

[Option+S]

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Name and tags

Info

Name

ATS

Add additional tags

Application and OS Images (Amazon Machine Image)

Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Recents

Quick Start

Amazon Linux

macOS

Ubuntu

Windows

Red Hat

SUSE L

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI

ami-02db68a01488594c5 (64-bit (x86), uefi-preferred) / ami-04f0be422f752077f (64-bit (Arm), uefi)

Virtualization: hvm    ENA enabled: true    Root device type: ebs

Free tier eligible

Description

Amazon Linux 2023 is a modern, general purpose Linux-based OS that comes with 5 years of long term support. It is optimized for AWS and designed to provide a secure, stable and high-performance execution environment to develop and run your cloud applications.

Summary

Number of instances

Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.6.2...read more

ami-02db68a01488594c5

Virtual server type (instance type)

t3.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Cancel

Launch instance

Preview code

CloudShell

Feedback

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Services

Search

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Instance type

Info | Get advice

Instance type

t3.micro

Family: t3    2 vCPU    1 GiB Memory    Current generation: true

On-Demand Ubuntu Pro base pricing: 0.0143 USD per Hour

On-Demand RHEL base pricing: 0.0396 USD per Hour

On-Demand SUSE base pricing: 0.0108 USD per Hour

On-Demand Linux base pricing: 0.0108 USD per Hour

On-Demand Windows base pricing: 0.02 USD per Hour

Free tier eligible

All generations

Compare instance types

Additional costs apply for AMIs with pre-installed software

Key pair (login)

Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

ec2-key

Create new key pair

Network settings

Info

Network

Info

vpc-0f8ebef35b8a6a87a

Subnet

Info

No preference (Default subnet in any availability zone)

Summary

Number of instances

Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.6.2...read more

ami-02db68a01488594c5

Virtual server type (instance type)

t3.micro

Firewall (security group)

New security group

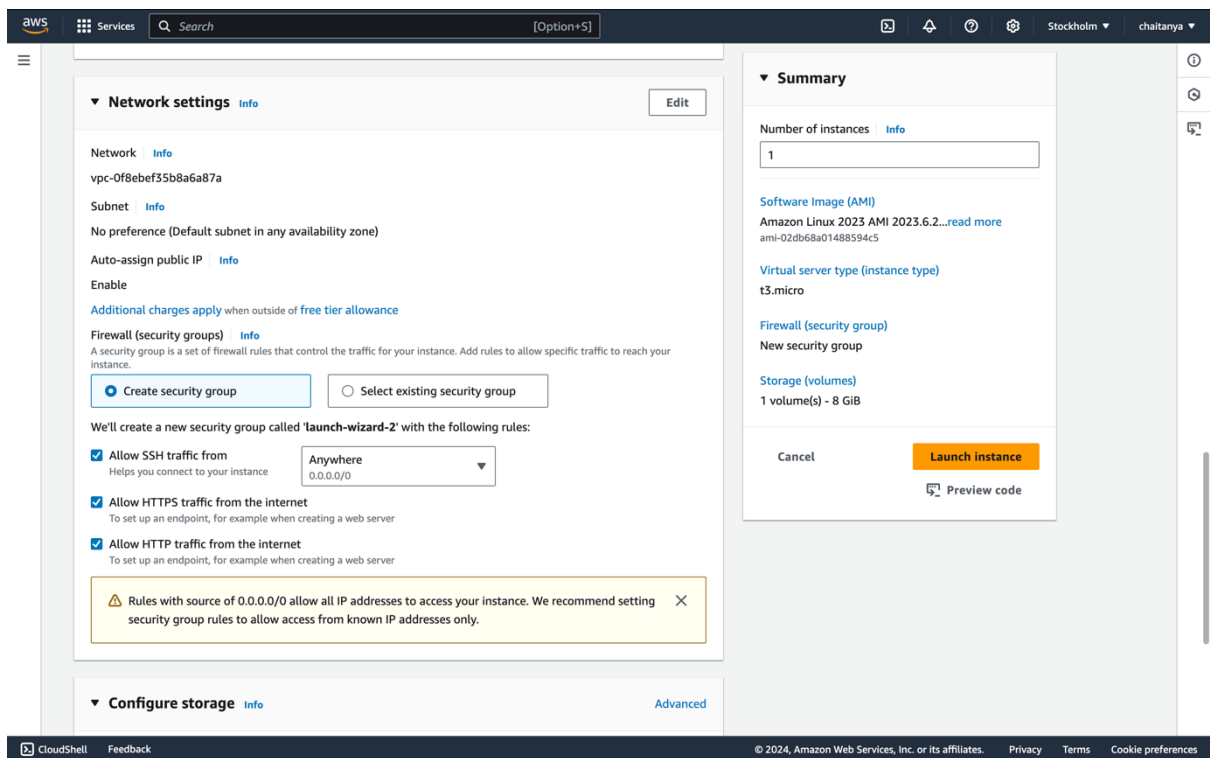
Storage (volumes)

1 volume(s) - 8 GiB

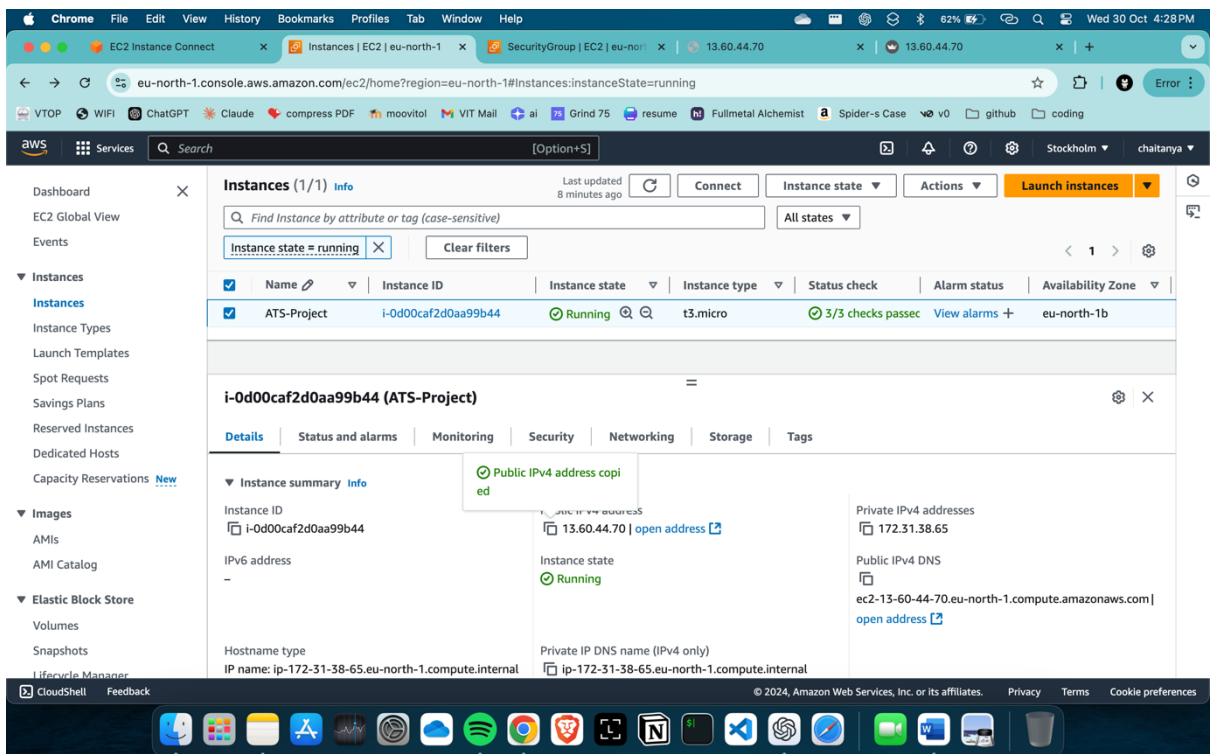
Cancel

Launch instance

Preview code



After launching instance:



launch instance and connect with EC2 instance connect :



aws

Services

Search

[Option+S]

EC2 > Instances > i-0d00caf2d0aa99b44 > Connect to instance

# Connect to instance Info


Connect to your instance i-0d00caf2d0aa99b44 (ATS-Project) using any of these options

EC2 Instance Connect

Session Manager


SSH client

EC2 serial console

**Port 22 (SSH) is open to all IPv4 addresses**

Port 22 (SSH) is currently open to all IPv4 addresses, indicated by **0.0.0.0/0** in the inbound rule in [your security group](#). For increased security, consider restricting access to only the EC2 Instance Connect service IP addresses for your Region: 13.48.4.200/30. [Learn more](#).

Instance ID

 i-0d00caf2d0aa99b44 (ATS-Project)

Connection Type


☒ **Connect using EC2 Instance Connect**

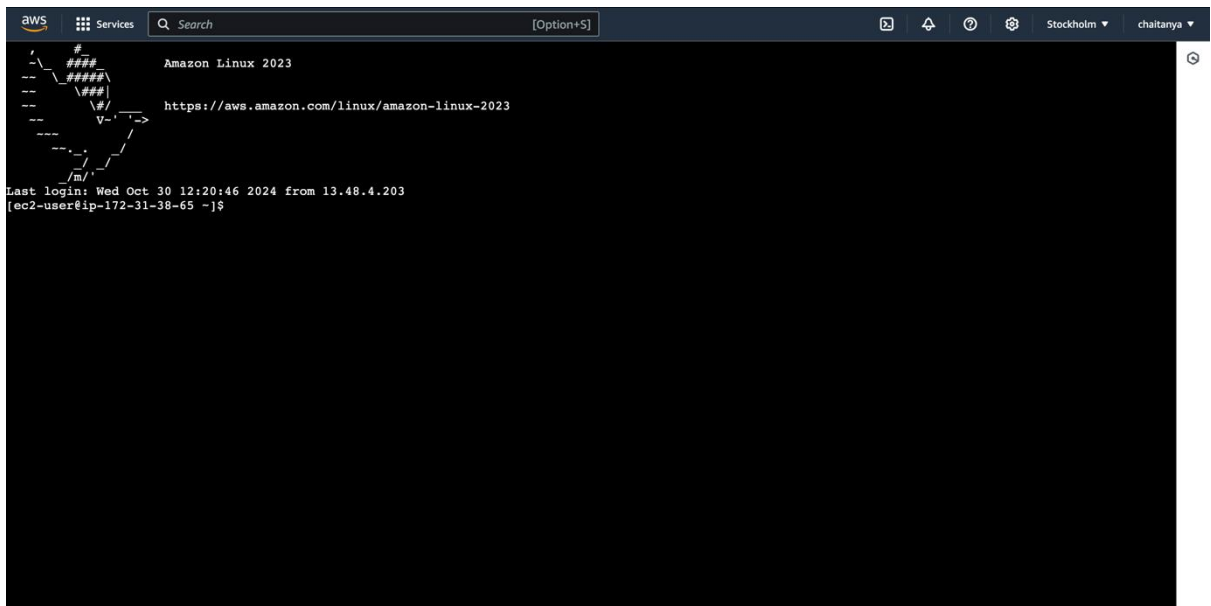
Connect using the EC2 Instance Connect browser-based client, with a public IPv4 or IPv6 address.

☐ **Connect using EC2 Instance Connect Endpoint**

Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.

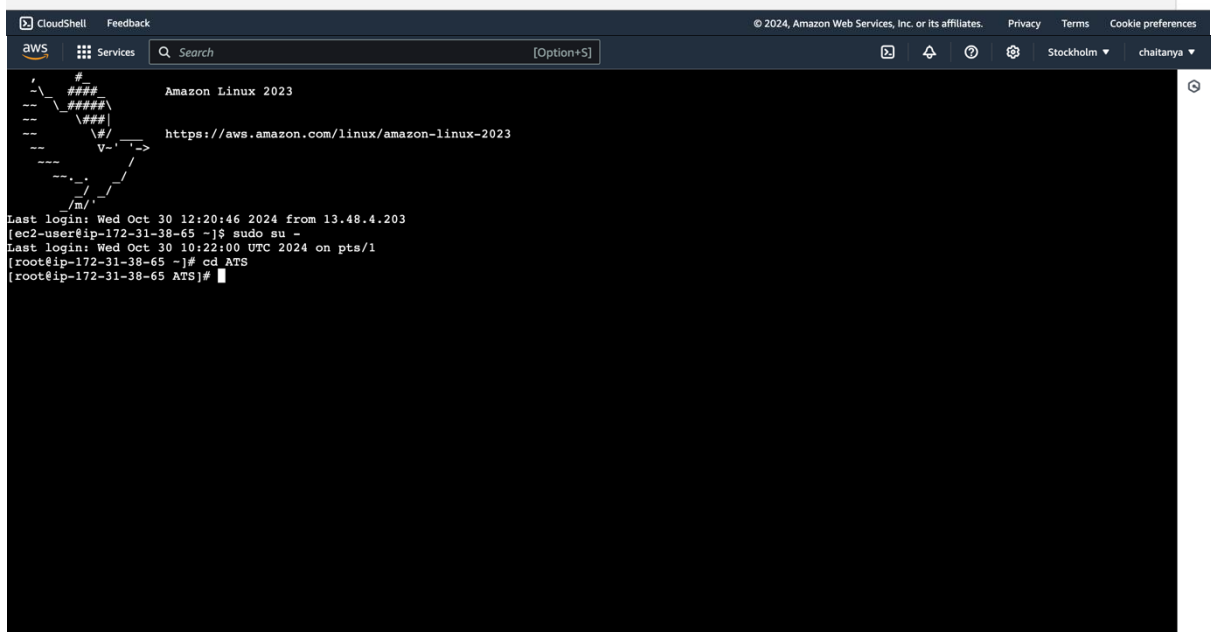
☒ **Public IPv4 address**

 13.60.44.70



i-0d00caf2d0aa99b44 (ATS-Project)

PublicIPs: 13.60.44.70 PrivateIPs: 172.31.38.65



i-0d00caf2d0aa99b44 (ATS-Project)

PublicIPs: 13.60.44.70 PrivateIPs: 172.31.38.65





```
aws Services Search [Option+S]

[root@ip-172-31-38-65 ATS]# sudo dnf install nginx -y
Last metadata expiration check: 1 day, 13:30:07 ago on Tue Oct 29 03:59:56 2024.
Package nginx-1:1.24.0-1.amzn2023.0.4.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-38-65 ATS]# sudo systemctl enable nginx
[root@ip-172-31-38-65 ATS]#
```

aws Services Search [Option+S]

```
[root@ip-172-31-38-65 ATS]# sudo systemctl start nginx
[root@ip-172-31-38-65 ATS]# sudo systemctl status nginx
● nginx.service - The nginx HTTP and reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; preset: disabled)
   Active: active (running) since Wed 2024-10-30 10:24:42 UTC; 7h ago
     Process: 95351 ExecStartPre=/usr/bin/rm -f /run/nginx.pid (code=exited, status=0/SUCCESS)
     Process: 95352 ExecStartPre=/usr/sbin/nginx -t (code=exited, status=0/SUCCESS)
     Process: 95353 ExecStart=/usr/sbin/nginx (code=exited, status=0/SUCCESS)
  Main PID: 95354 (nginx)
    Tasks: 3 (limit: 1059)
   Memory: 3.1M
      CPU: 125ms
  CGroup: /system.slice/nginx.service
          └─95354 "nginx: master process /usr/sbin/nginx"
              └─95355 "nginx: worker process"
                  └─95356 "nginx: worker process"

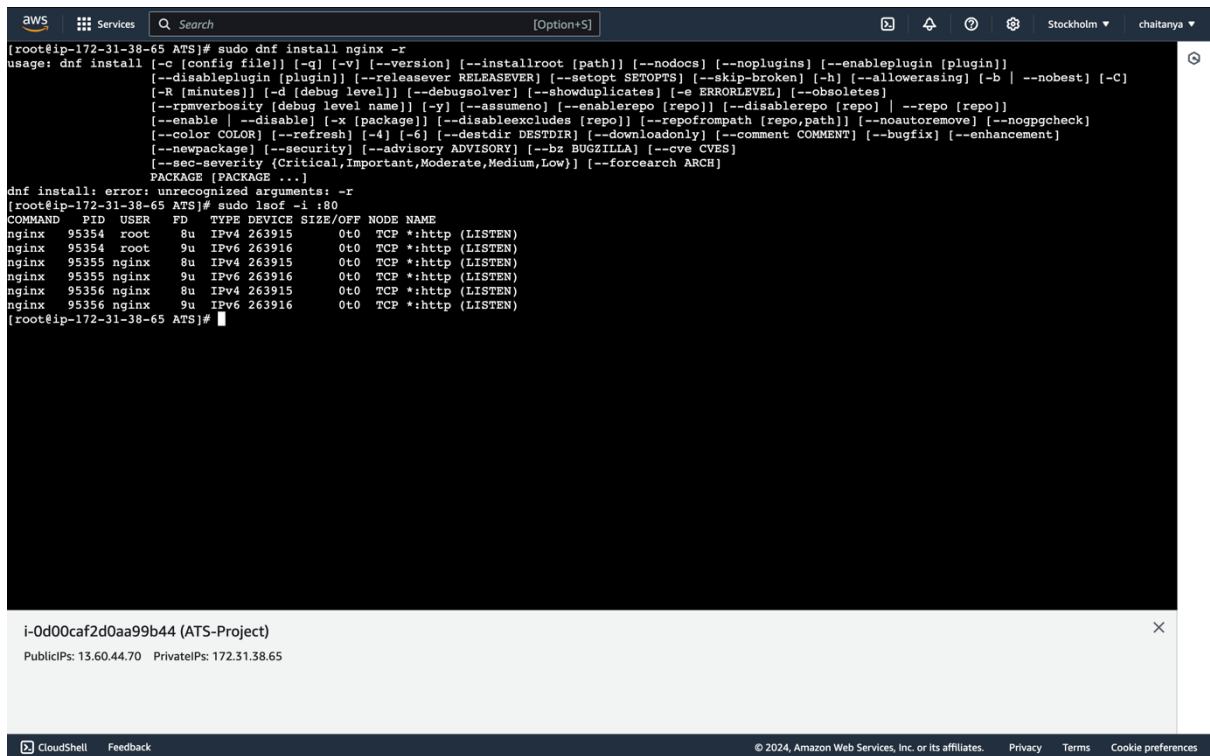
Oct 30 10:24:42 ip-172-31-38-65.eu-north-1.compute.internal systemd[1]: Starting nginx.service - The nginx HTTP and reverse proxy server...
Oct 30 10:24:42 ip-172-31-38-65.eu-north-1.compute.internal nginx[95352]: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
Oct 30 10:24:42 ip-172-31-38-65.eu-north-1.compute.internal nginx[95352]: nginx: configuration file /etc/nginx/nginx.conf test is successful
Oct 30 10:24:42 ip-172-31-38-65.eu-north-1.compute.internal systemd[1]: Started nginx.service - The nginx HTTP and reverse proxy server.
[root@ip-172-31-38-65 ATS]#
```

i-0d00caf2d0aa99b44 (ATS-Project)

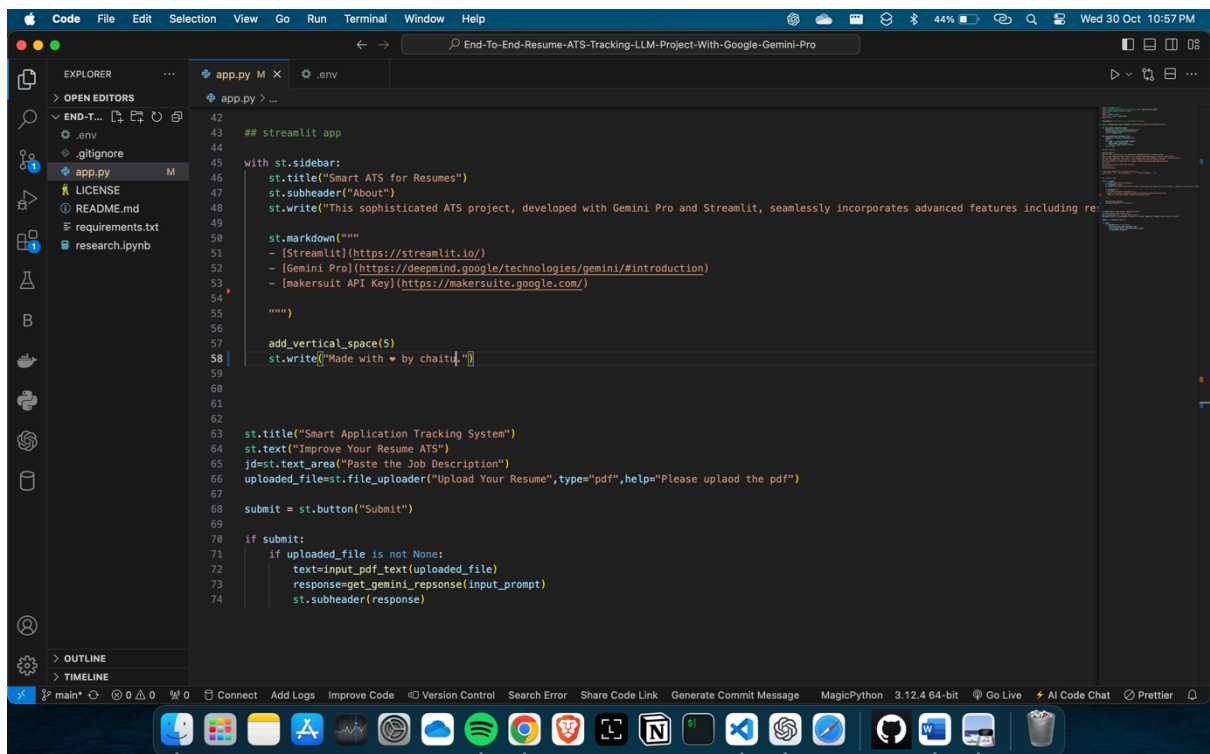
PublicIPs: 13.60.44.70 PrivateIPs: 172.31.38.65

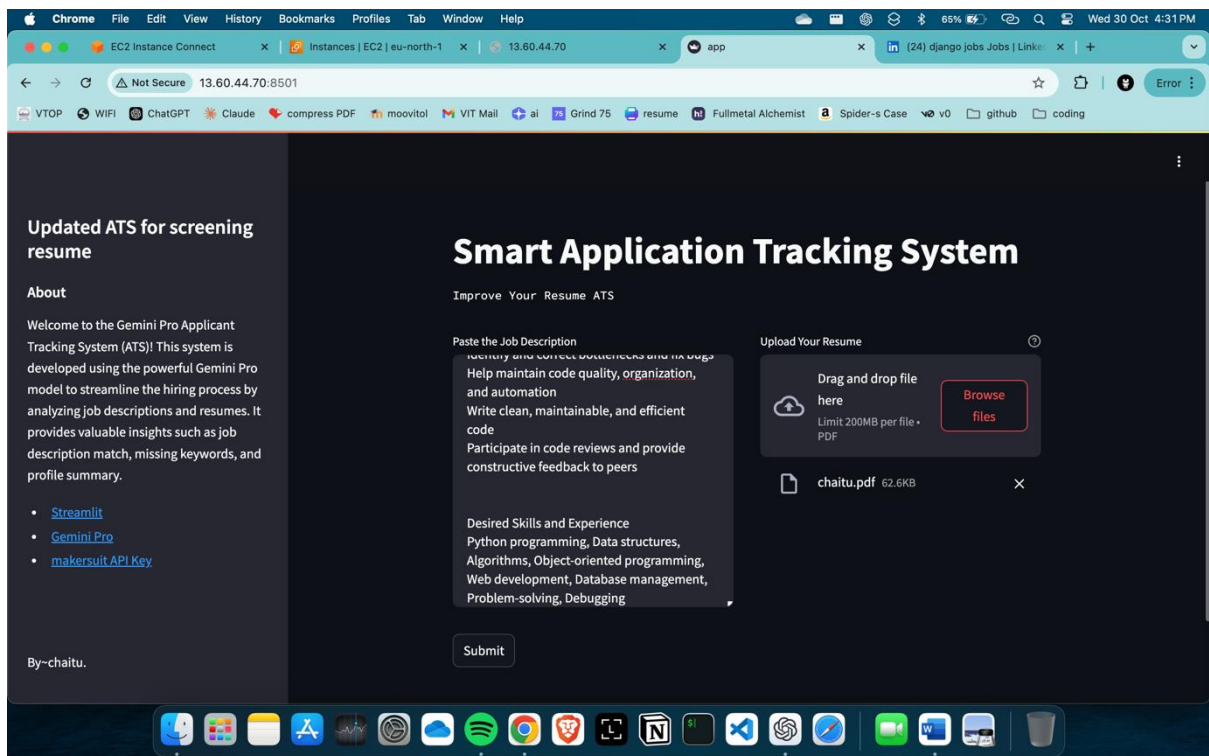
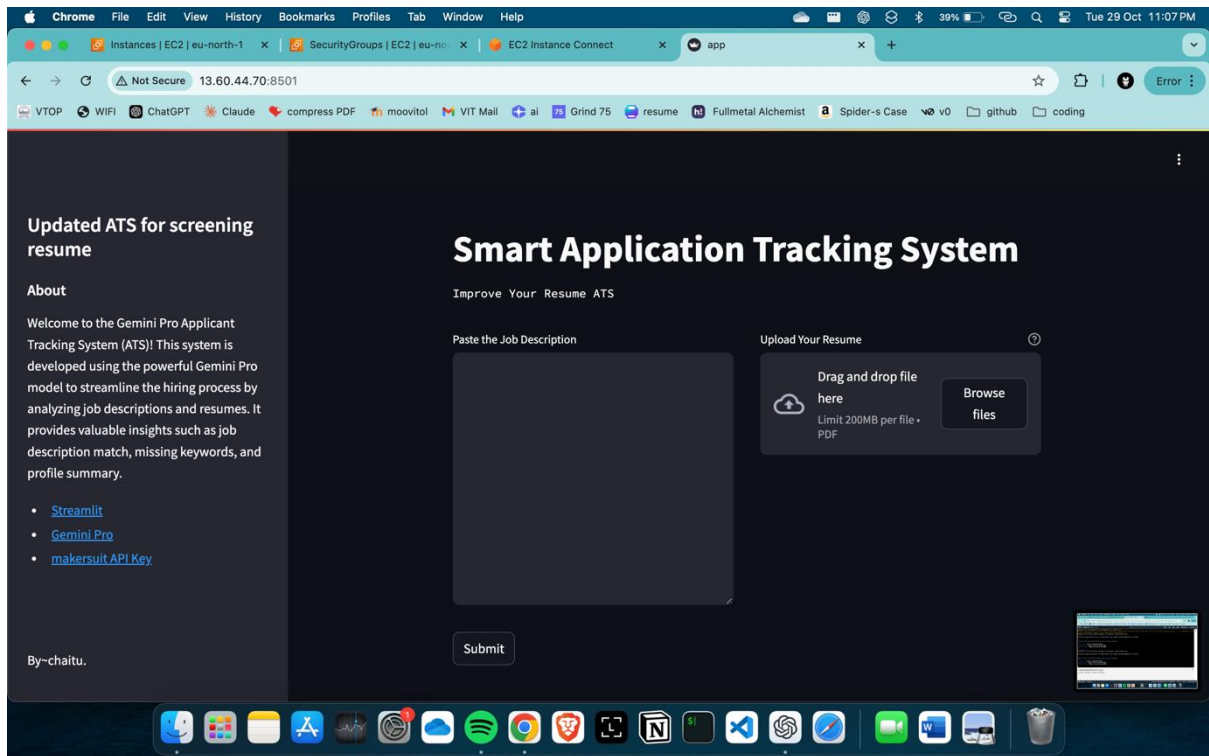
CloudShell Feedback

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## App.py:





Access the website from public IP: <http://13.60.44.70:8501/>



OUTPUT:

```
{
```

```
"JD Match": "85%"
```

```
"Missing Keywords": ["Advanced Data Wrangling Techniques", "Machine Learning Frameworks"]
```

```
"Profile Summary": "An experienced Data Scientist with a proven track record of developing and implementing data-driven solutions. Demonstrated expertise in utilizing statistical techniques, machine learning algorithms, and big data platforms to extract insights and drive business outcomes. Skilled in data wrangling, feature engineering, model selection, and optimization."
```

```
}
```