

Department of Computer Engineering

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UNIVERSITY OF MUMBAI

Academic Year 2020-2021

A Project Report on
College Enquiry Chatbot On AWS

Submitted in partial fulfillment of the requirement of
University of Mumbai for the Course

in
Computer Engineering (VIII SEM)

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1. Project Conception and Initiation

Abstract

- A chatbot is a software that is used to interact between a computer and a human in natural language.
- The College Enquiry chatbot on AWS application helps the students to access the university related information from anywhere with internet connection.
- All the information related to the college will be present in the cloud such faculty, information related to events and activities, timings of college, courses offered etc.
- This chatbot reduces the management effort, provides necessary details to the student and parents online.
- This application can be a way of creating a situation of delight for parents and student with extra technical support.

Problem Definition

- Create a chatbot using Artificial Intelligence (AI) and Natural Language Processing (NLP).
- Deploy the chatbot on cloud services.
- A chatbot will respond to student's questions about college at any time of day.

Objectives

- To create an interactive chatbot using Natural Language Processing (NLP) in Artificial Intelligence (AI).
- To create a EC2 instance on AWS and deploy chatbot on it.
- To provide 24/7 assistance for student's queries.

Introduction

Students are the important part of any organization. Many people will be having doubts related to the college when they want to join or if they have already joined. The College Enquiry Chatbot on AWS application is an application that will allow the user to query about the college related activities with great ease. Any doubts related to college can be easily solved using this application. Students can rely on this application with great ease and without any difficulty. This system uses artificial intelligence to answer the query of the students. The answers are appropriate to the user's queries. The Model is deployed on AWS and can be accessed from anywhere with internet connection.

Technology stack

Software's Used:

- Anaconda
- Visual Studio Code

Algorithms:

- Natural Language Processing (NLP)

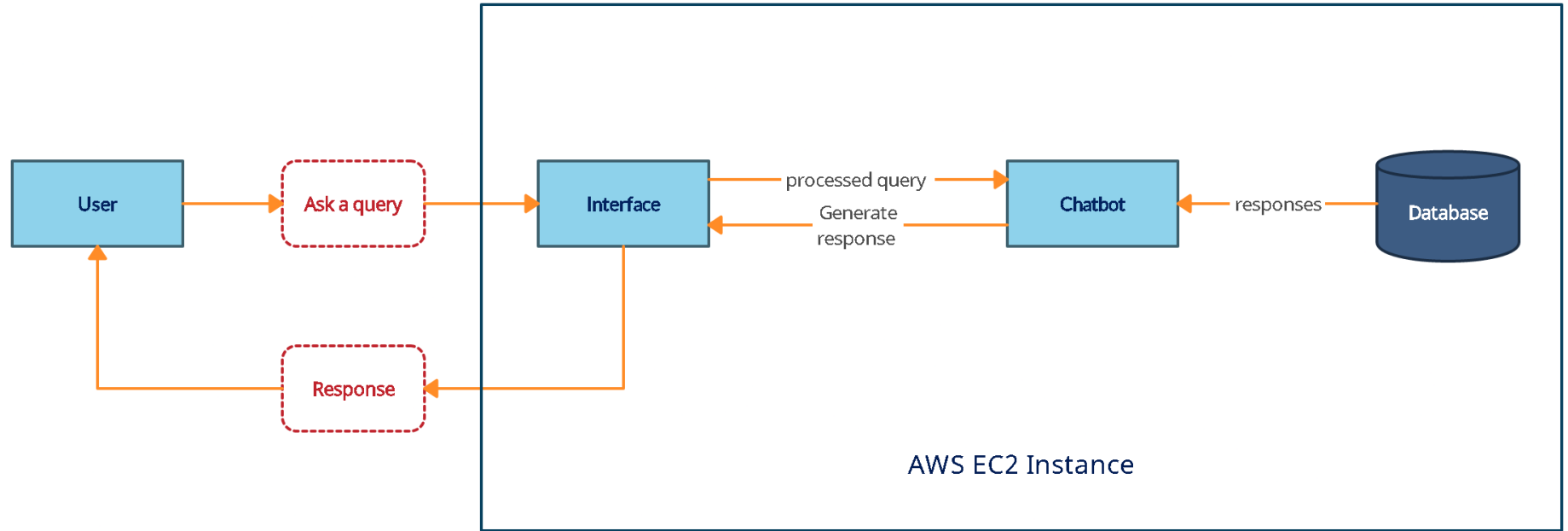
Cloud Platform:

- Amazon Web Services (AWS)

2. Project Design

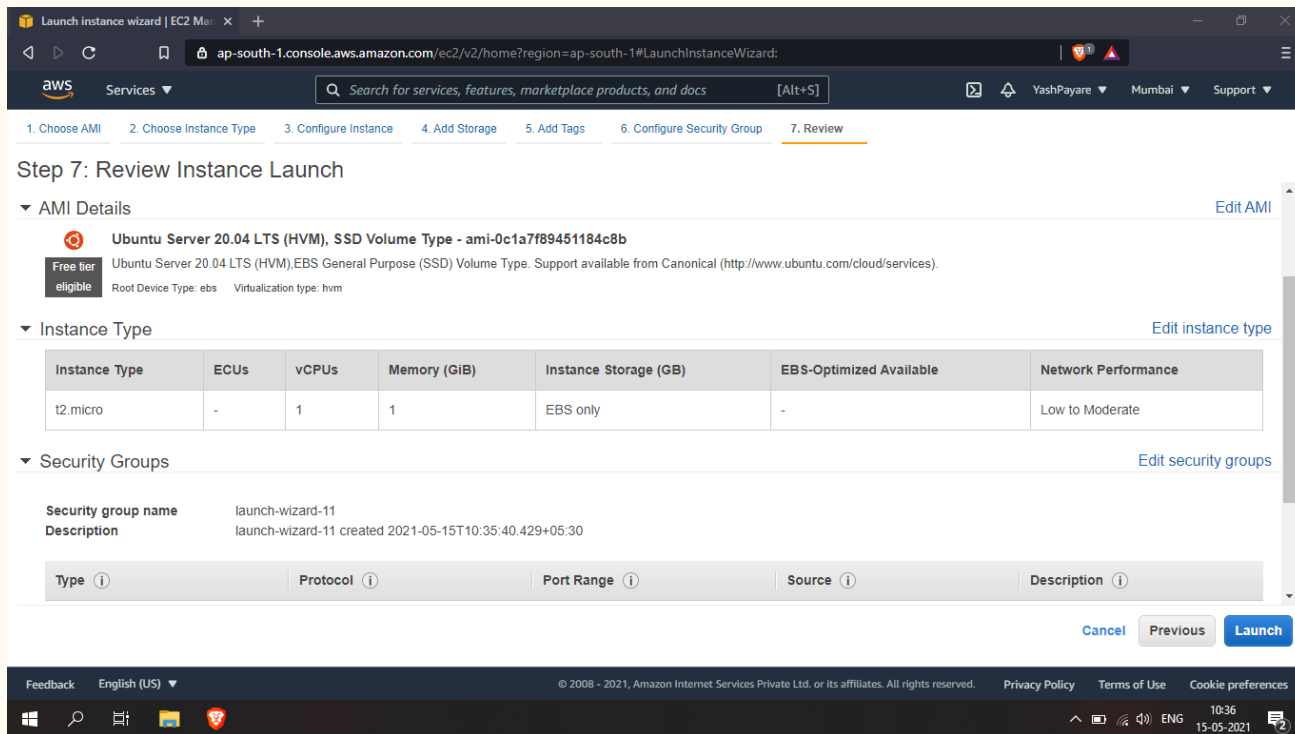
—

Design(Flow Of Modules)



Implementation

Step 1: Create an EC2 instance and select preferred OS.



Launch Instance wizard | EC2 Ma x +

ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#LaunchInstanceWizard:

Services Search for services, features, marketplace products, and docs [Alt+S]

YashPayare Mumbai Support

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

AMI Details [Edit AMI](#)

Free tier eligible **Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0c1a7f89451184c8b**

Ubuntu Server 20.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Root Device Type: ebs Virtualization type: hvm

Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

Security Groups [Edit security groups](#)

Security group name launch-wizard-11

Description launch-wizard-11 created 2021-05-15T10:35:40+05:30

Type	Protocol	Port Range	Source	Description
------	----------	------------	--------	-------------

[Cancel](#) [Previous](#) [Launch](#)

Feedback English (US)

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10:36 15-05-2021

Step 2: Create a Security group so the instance can be accessed from anywhere.

The screenshot displays the AWS EC2 Management Console interface for creating a security group. The browser address bar shows the URL: `ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#CreateSecurityGroup:`. The console header includes the AWS logo, a search bar, and user information (YashPayare, Mumbai, Support).

The main content area is titled "Inbound rules" and "Outbound rules". The "Inbound rules" section is currently active, showing a table with the following columns: Type, Protocol, Port range, Source, and Description - optional. The "Source" column has a dropdown menu open, showing "Anywhere" and two input fields with the values "0.0.0.0/0" and "::/0". The "Add rule" button is visible in the bottom left of the Inbound rules section.

The "Outbound rules" section is also visible below the Inbound rules section, showing a similar table structure with columns: Type, Protocol, Port range, Destination, and Description - optional. The "Destination" column has a dropdown menu open, showing "Anywhere" and two input fields with the values "0.0.0.0/0" and "::/0".

The footer of the console shows "Feedback", "English (US)", "© 2008 - 2021, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.", "Privacy Policy", "Terms of Use", and "Cookie preferences". The Windows taskbar at the bottom shows the system clock as 18:22 on 28-04-2021.

Step 3: Use WinSCP to transfer chatbot files to the instance.

The screenshot shows the WinSCP interface with two panes. The left pane displays the local file system at `C:\Users\Yash\chatbot aws\`, and the right pane displays the remote file system at `/home/ubuntu/`. Both panes show a list of files and folders with their names, sizes, types, and last modified dates. The status bar at the bottom indicates the transfer progress: 0 B of 48.7 KB in 0 of 13 for the local pane and 0 B of 45.1 KB in 0 of 10 for the remote pane.

Name	Size	Type	Changed
..		Parent directory	01-05-2021 11:30:43
.._vscode		File folder	05-04-2021 21:35:39
.._pycache_		File folder	05-04-2021 21:35:40
templates		File folder	05-04-2021 21:35:39
chatbot aws.txt	1 KB	Text Document	01-05-2021 11:31:03
chatbot_final.py	2 KB	PY File	17-03-2021 21:00:36
chatbotkey1.ppk	2 KB	PuTTY Private Key ...	30-04-2021 12:13:35
chatup.py	1 KB	PY File	05-04-2021 22:07:58
data.pth	18 KB	PTH File	05-04-2021 21:41:44
intents.json	21 KB	JSON File	17-03-2021 21:41:44
model.py	1 KB	PY File	17-03-2021 21:00:36
nlTK_utils.py	2 KB	PY File	17-03-2021 21:00:36
README.txt	2 KB	Text Document	01-05-2021 11:29:29
train.py	4 KB	PY File	17-03-2021 21:00:36

Name	Size	Changed	Rights	Owner
..		30-04-2021 12:14:29	rw-r--r--	root
.._pycache_		30-04-2021 12:27:27	rw-rw-r--	ubuntu
nlTK_data		30-04-2021 12:21:18	rw-rw-r--	ubuntu
templates		30-04-2021 12:27:27	rw-rw-r--	ubuntu
chatbot_final.py	2 KB	17-03-2021 21:00:36	rw-rw-r--	ubuntu
chatup.py	1 KB	05-04-2021 22:07:58	rw-rw-r--	ubuntu
data.pth	18 KB	30-04-2021 12:28:30	rw-rw-r--	ubuntu
intents.json	21 KB	17-03-2021 21:41:44	rw-rw-r--	ubuntu
model.py	1 KB	17-03-2021 21:00:36	rw-rw-r--	ubuntu
nlTK_utils.py	2 KB	17-03-2021 21:00:36	rw-rw-r--	ubuntu
train.py	4 KB	17-03-2021 21:00:36	rw-rw-r--	ubuntu

Step 4: Connect to the instance using private key with the help of putty and install all required packages

The screenshot displays the AWS Management Console interface. A terminal window is open, showing the command prompt for an Ubuntu instance. The terminal output includes system information, update status, and a list of files in the current directory.

Terminal Output:

```
ubuntu@ip-172-31-45-249: ~  
System information as of Sat May 15 05:15:17 UTC 2021  
System load: 0.01          Processes:           103  
Usage of /: 35.7% of 7.69GB Users logged in:     0  
Memory usage: 24%         IPv4 address for eth0: 172.31.45.249  
Swap usage: 0%  
  
* Pure upstream Kubernetes 1.21, smallest, simplest cluster ops!  
  
https://microk8s.io/  
  
60 updates can be installed immediately.  
28 of these updates are security updates.  
To see these additional updates run: apt list --upgradable  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
Last login: Fri Apr 30 07:10:05 2021 from 103.77.153.108  
ubuntu@ip-172-31-45-249:~$ ls  
__pycache__  chatup.py  intents.json  nltk_data  templates  
chatbot_final.py  data.pth  model.py      nltk_utils.py  train.py  
ubuntu@ip-172-31-45-249:~$
```

The background shows the AWS console with a table of instances. The instance 't2.micro' is highlighted, showing a status of '2/2 checks passed'.

Instance type	Status check	Alarm status	Availability Zone
t2.micro	2/2 checks passed	No alarms	ap-south-1a

step 5: Deploy the Chatbot on running server application.

The screenshot displays the AWS Management Console for the 'ap-south-1' region. A terminal window is open, showing the execution of commands to deploy a chatbot. The terminal output includes the URL `https://microk8s.io/`, a list of available updates, and the execution of `python3 chatup.py`. The chatbot is running on `http://0.0.0.0:8080/`. The AWS console interface shows the 'Instances' page with a table of running instances, including a `t2.micro` instance in the `ap-south-1a` availability zone. The terminal window also shows a warning about using a development server in production.

Instances | EC2 Management Console

ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#Instances:publicip=13.127.203.234

Search for services, features, marketplace products, and docs [Alt+S]

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Launch instances

Instance type	Status check	Alarm status	Availability Zone
t2.micro	2/2 checks passed	No alarms	ap-south-1a

Instances

ubuntu@ip-172-31-45-249: ~

```
https://microk8s.io/

60 updates can be installed immediately.
28 of these updates are security updates.
To see these additional updates run: apt list --upgradable

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Fri Apr 30 07:10:05 2021 from 103.77.153.108
ubuntu@ip-172-31-45-249:~$ ls
pycache chatup.py intents.json nltk_data templates
chatbot_final.py data.pth model.py nltk_utils.py train.py
ubuntu@ip-172-31-45-249:~$ python3 chatup.py
* Serving Flask app "chatup" (lazy loading)
* Environment: production
WARNING: This is a development server. Do not use it in a production deployment.
Use a production WSGI server instead.
* Debug mode: off
* Running on http://0.0.0.0:8080/ (Press CTRL+C to quit)
```

Select an instance above

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10:48 15-05-2021

Step 6: Open browser and use public DNS with port 8080 to open the Chatbot.

The screenshot shows a web browser window with the address bar displaying `ec2-35-154-132-33.ap-south-1.compute.amazonaws.com:8080`. The browser tabs include "Connect to instance | EC2 Manag...", "ec2-35-154-132-33.ap-south-1.c...", and "www.BANDICAM.com". The website header features the "APSIT" logo and navigation links: "HOME", "INSTITUTE", and "ADMISSION". A search bar with a "SEARCH" button is also present. The main content area displays a large image of a student using a telescope, with the APSIT logo in the bottom left corner. Below the image, there are three columns of text describing different engineering departments: "Computer Engineering", "Mechanical Engineering", and "Civil Engineering". A chatbot window titled "ApsitBot" is overlaid on the right side of the page. The chatbot interface shows a conversation where the user says "hey", the bot responds "Hey I how can i help you ?", the user asks "timings of college ?", and the bot replies "Monday To Friday 9am to 5pm". At the bottom of the chatbot window, there is a text input field with the placeholder "Send a message..." and a microphone icon. The Windows taskbar at the bottom of the screen shows various application icons and the system clock indicating 20:01 on 06-04-2021.

Connect to instance | EC2 Manag... ec2-35-154-132-33.ap-south-1.c... www.BANDICAM.com

Not secure | ec2-35-154-132-33.ap-south-1.compute.amazonaws.com:8080

APSIT HOME INSTITUTE ADMISSION Search SEARCH

Computer Engineering

Department of Computer Engineering is the largest and most research strong department of its kind in Mumbai University. The Department was established in 2014 and currently offers a B.E in Computer Engineering.

Mechanical Engineering

MECHANICAL ENGINEERING is the discipline that applies the principles of Mechanics and Materials Science for the analysis, design, manufacturing and maintenance of machines. It is one of the oldest and broadest of the engineering disciplines

Civil Engineering

Welcome to APSIT. Department of importance Engineering is the basic branch of Engineering.

ApsitBot

hey

Hey I how can i help you ?

timings of college ?

Monday To Friday 9am to 5pm

Send a message...

20:01 06-04-2021

3. Conclusion and Future Scope

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Conclusion

In this way, we have successfully deployed the AI chatbot on AWS which can answer to student's queries. We have used AWS EC2 instance which is a free tier service. The Chatbot will assist students with their questions at any time of day. It eliminates the need for students to travel to colleges and collect relevant information. A chatbot is the best tool which provides quick way to interact with the users.

Future Scope

- In future we can include voice-based queries.
- Accuracy can be increased by providing more data to the database and training the neural model.
- we can implement the chatbot in other domains like medical, forensic, sports, etc.
- FAQ system can be implemented in chatbot to make it more user-friendly.
- A portal can be made to add new data to the database.

Thank You

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