



**NUS**  
National University  
of Singapore

**MASTER OF TECHNOLOGY - INTELLIGENT SYSTEMS 2020**

**EBA5004 PRACTICAL LANGUAGE PROCESSING**

# **Installation and User Guide**

## **Team members:**

Viswanathan Chandrashekar (A0088591N)

Lakshmi Subramanian (A0215255L)

Yalavarti Dharma Teja (A0215457A)

## Installation and User Guide

1. Create and activate Virtual Environment (recommended) with python version 3.6.13

2. Clone the following github repositories and extract to the desktop:

<https://github.com/nuschandra/Chatbot-Telegram/tree/chandra-branch>

<https://github.com/nuschandra/Virtual-Recruiter/tree/chandra-resume-parser>

3. The Chatbot-Telegram is the main repository of the project as it contains all the chatbot related functionalities which has been integrated with our PLP models.
4. The Virtual Recruiter repository comprises of the scripts to train the resume NER model, JD NER Model, Bert detection model, etc.
5. Open terminal and navigate to the directory where 'requirements.txt' file is located.
6. Install the 'requirements.txt' file using the following command:  

```
pip install -r requirements.txt
```
7. Install java and make sure environment variable is set.

8. Install sutime

- i) use the following command:

```
pip install sutime==1.0.1
```

- ii) Install the corresponding Java dependencies with the following command:

```
mvn dependency:copy-dependencies -DoutputDirectory=./jars  
-f $(python3 -c 'import importlib; import pathlib;  
print(pathlib.Path(importlib.util.find_spec("sutime").origin).parent / "pom.xml")')
```

**Note:** Check step 7, if you face any error while running the above command

**Note:** If you don't have native python, follow the below steps:

- i) Run the following in your python env (conda env)

```
import importlib;  
import pathlib;  
print(pathlib.Path(importlib.util.find_spec("sutime").  
origin).parent / "pom.xml")
```

ii) Copy the output (path for the pom.xml)

iii) Run the below maven command in the terminal

```
mvn dependency:copy-dependencies -  
DoutputDirectory=./jars -f $<copied path>
```

Github Reference link : <https://github.com/FraBle/python-sutime>

9. In case the second command gives an error “mvn: command not found”, then ‘maven’ needs to be installed. Based on your OS, follow the link below to install ‘maven’ and then execute the second command :

<https://www.baeldung.com/install-maven-on-windows-linux-mac>

For Mac users, another alternative to install ‘maven’ is to install it using Homebrew. If you do not have Homebrew installed on your mac, you can use the below command to install it :

```
/bin/bash -c "$(curl -fsSL  
https://raw.githubusercontent.com/Homebrew/install/master/i  
ninstall.sh)"
```

Once Homebrew is installed, you can run below command to install maven:

```
$ brew install maven
```

reference link : <https://java2blog.com/install-maven-on-mac/>

**The steps from 10 to 13 are optional and you can directly download the required .hdf5 file from step 14 if you wish to.**

10. Download the BERT uncased model from the link :

[https://storage.googleapis.com/bert\\_models/2018\\_10\\_18/uncased\\_L-12\\_H-768\\_A-12.zip](https://storage.googleapis.com/bert_models/2018_10_18/uncased_L-12_H-768_A-12.zip)

i. Create a folder named ‘model’ under Virtual-Recruiter-chandra-resume-parser/chatbot/

ii. Extract the contents of this downloaded zip file into the ‘model’ folder.

11. Now in terminal, go to Virtual-Recruiter-chandra-resume-parser/chatbot/ and run the following command:

```
python convert_to_csv.py
```

12. Once the execution is successful, run the following command:

```
python bert_finetuning.py
```

This would train the BERT model for 20 epochs and generate a bert\_intent\_detection.hdf5 file.

13. Copy this bert\_intent\_detection.hdf5 file and paste it inside the Chatbot-Telegram-chandra-branch/ (the second github repository that is extracted) folder.
14. Alternatively, you can download the bert\_intent\_detection.hdf5 file from the below google drive link and then paste it inside the path Chatbot-Telegram-chandra-branch/ (the second github repository that is extracted) folder :  
[https://drive.google.com/file/d/1qVMjq1dJ2fQXxs\\_M4ZRKskSIUPFzOCdX/view?usp=sharing](https://drive.google.com/file/d/1qVMjq1dJ2fQXxs_M4ZRKskSIUPFzOCdX/view?usp=sharing)
15. Download and install 'ngrok' from the following link : <https://ngrok.com/download>
16. In the terminal, run ngrok using command: ngrok http 5000
17. Now, copy the forwarding link and paste it in bot\_url in /Chatbot-Telegram/app.py. Make sure there is a slash at the end of the bot\_url.

```
ngrok by @inconshreveable (Ctrl+C to quit)

Session Status      online
Session Expires     1 hour, 54 minutes
Update              update available (version 2.3.38, Ctrl-U to update)
Version             2.3.35
Region              United States (us)
Web Interface        http://127.0.0.1:4040
Forwarding           http://be165ec955ea.ngrok.io -> http://localhost:5000
Forwarding           https://be165ec955ea.ngrok.io -> http://localhost:5000

Connections
  ttl    opn    rt1    rt5    p50    p90
    0     0     0.00   0.00   0.00   0.00
```

```
25 bot_url = "https://b9e5a020b8d7.ngrok.io/"
26 bot = telegram.Bot(token=bot_token)
27 bot.delete_webhook(drop_pending_updates=True)
28 bot_url = "https://be165ec955ea.ngrok.io/"
29 bot.setWebhook('{URL}{HOOK}'.format(URL=bot_url, HOOK=bot_token))
30
```

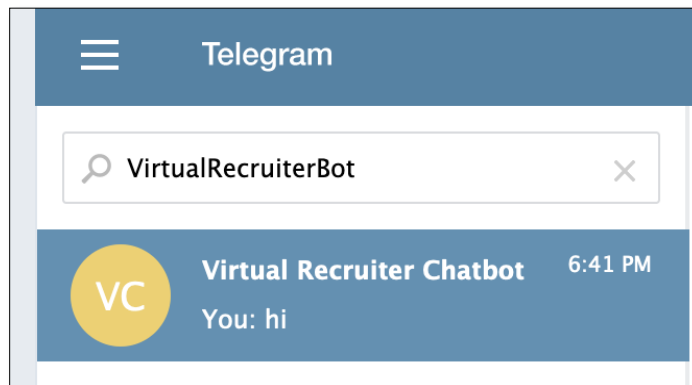
18. Paste the following values for bot\_token and bot\_username in /Chatbot-Telegram/app.py

```
bot_token = "1537657914:AAEspo0IA7tiW2CCAnWLfsxOd0YabGC-r50"  
bot_username = "VirtualRecruiterBot"
```

```
11 bot_token = "1537657914:AAEspo0IA7tiW2CCAnWLfsxOd0YabGC-r50"  
12 bot_username = "VirtualRecruiterBot"
```

19. Open Telegram in your browser: <https://web.telegram.org/> or use the mobile app

20. Search for VirtualRecruiterBot and open the Virtual Recruiter Chatbot.



21. Click on 'START' and follow the instructions to start the chatbot. Once the bot is ready, run the app.py file in the terminal using command: python app.py or use flask run.

22. Once the server is running, go back to the chatbot in Telegram to check its functionality for the intents it is trained for as shown in the below screenshots.





23. Make sure to upload a .txt file as a job description document. Once a .txt file of job description is uploaded, the bot will search and return the most suitable candidate resumes that match the job description.



24. The manager can then download and go through the provided resumes and choose to set up an interview for the suitable candidate by clicking on the 'Accept' button.
25. Once the manager clicks on the 'Accept' button, the bot asks to select a date to set up the interview.

Please choose a date for your interview with the candidate.

April 2021						
Mo	Tu	We	Th	Fr	Sa	Su
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		
<					>	

26. Once the date is selected, the bot asks to select a time slot from the available time slots.

Please choose a time slot on the chosen date for your interview with the candidate.

Available Time Slots				
9:00	10:00	11:00	12:00	13:00
14:00	15:00	16:00	17:00	18:00

27. Once the slot is selected, the bot sets up the interview accordingly, saves the details into the database and provides an acknowledgement for the same.

Your interview has been scheduled at 04:00 pm on May 25 with Nimantha Samarasinghe for the senior unix systems administrator role.

28. The manager can view their scheduled interviews by typing in the appropriate query in the chat box as shown below.

DT

**Dharma Teja**  
show me the scheduled interviews for next month

TE

**TestVirtualRecBot**  
This is your schedule. Please click on the buttons below to confirm or cancel.

Abdul Khuddoos May, 24 02:00pm

29. This schedule can be confirmed or cancelled by clicking on the corresponding candidate button.

Kindly click on the buttons to confirm or cancel your interview.

Name: Abdul Khuddoos  
Timing: May 24, 02:00pm

Cancel

Confirm

Thank you for confirming the interview! The details are as below:

Name: Abdul Khuddoos  
Timing: May 24, 02:00pm

30. The Manager can update the candidate performance, that is, whether the candidate is selected or rejected into the database once their interview is over.



DT

**Dharma Teja**  
i want to update the candidate performance

TE

**TestVirtualRecBot**  
Kindly click on the candidate names to update the performance.  

Name: Gabriel Versoza April 01, 02:00PM Title: applica...

Name: Gabriel Versoza April 02, 04:50PM Title: applica...

Kindly click on the buttons below to reject or hire the candidate.

Name: Gabriel Versoza  
Timing: April 01, 02:00PM  
Title: application engineer

Reject

Hire

Thank you for the confirmation. We shall notify the candidate on the good news

Since you have hired a candidate, would you like to close the application engineer opening? You can keep it open if you would like to hire more candidates for this role.

Close

Keep it open

Thank you for the confirmation.

DT

**Dharma Teja**  
goodbye

TE

**TestVirtualRecBot**  

**Dharma Teja**  
goodbye

See you later!

31. Open <http://localhost:5000/resumeUpload> on your browser to use the candidate's portal for uploading resumes.



If you would like to join Wayne Enterprises, please upload your resume in the below link and we will match your resumes with our job opportunities and reach out to you if your application is successful.

Choose

No file selected

☐ Would you like to get weekly updates via email on the status of your application?

Submit