Chatbot through RASA

1. Introduction:

A chatbot is an application that can initiate and continue a conversation using auditory and/or textual methods as a human would do. A chatbot can be either a simple rule-based engine or an intelligent application leveraging Natural Language Understanding. Many organizations today have started using chatbots extensively. Chatbots are becoming famous as they are available 24*7, provide a consistent customer experience, can handle several customers at a time, are cost-effective and hence, results in a better overall customer experience.

1.1 Uses

- Customer support
- Frequently Asked Questions
- Addressing Grievances
- Appointment Booking
- Automation of routine tasks
- Address a query

2. Prerequisites

The prerequisites for developing and understanding a chatbot using Microsoft Azure are:

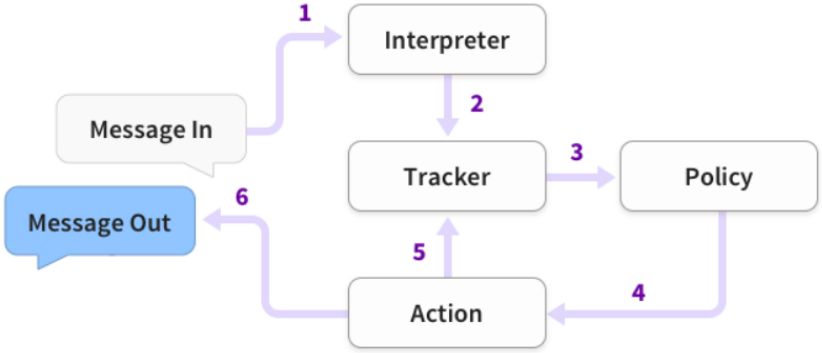
- Python installed
- Microsoft Build tools with visual c++ 14.0 installed. Link: https://visualstudio.microsoft.com/downloads/

3. Introduction to RASA

Rasa is an open source machine learning framework for building contextual AI assistants and chatbots.
Rasa has two main modules:

- **NLU** for understanding user messages
- **Core** for holding conversations and deciding what to do next

3.1 RASA Architecture:



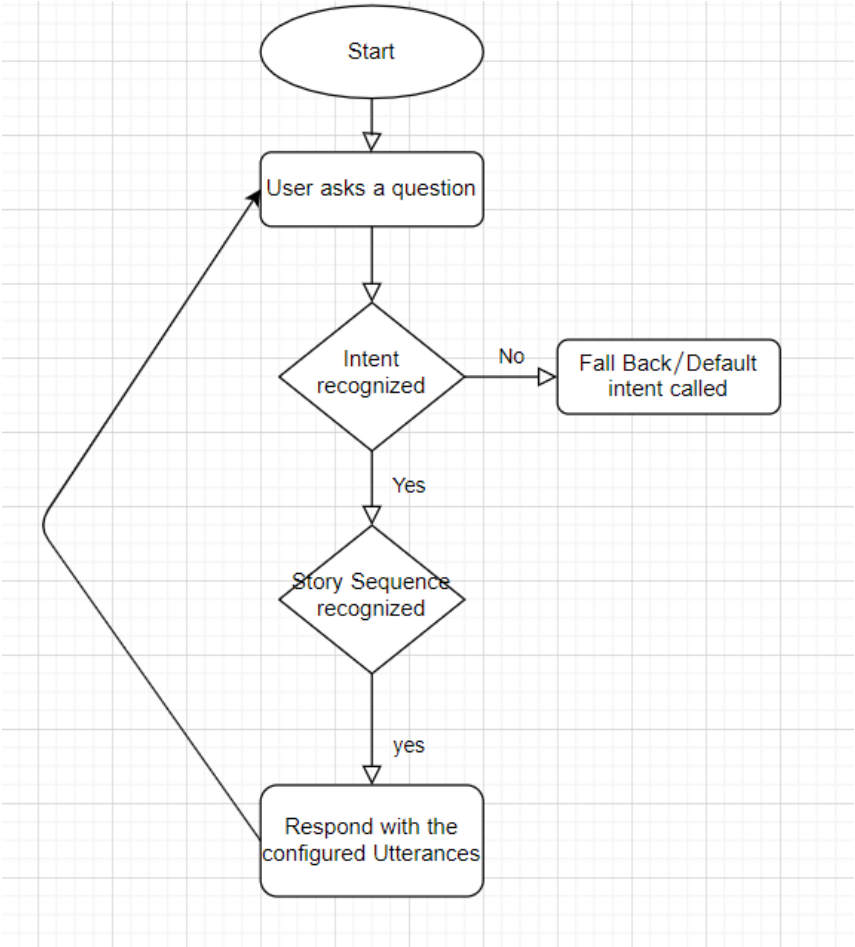
4. The problem statement:

The goal here is to build a chatbot which can answer queries related to the COVID-19 disease.

4.1 Technical stack:

- Python
- Rasa X

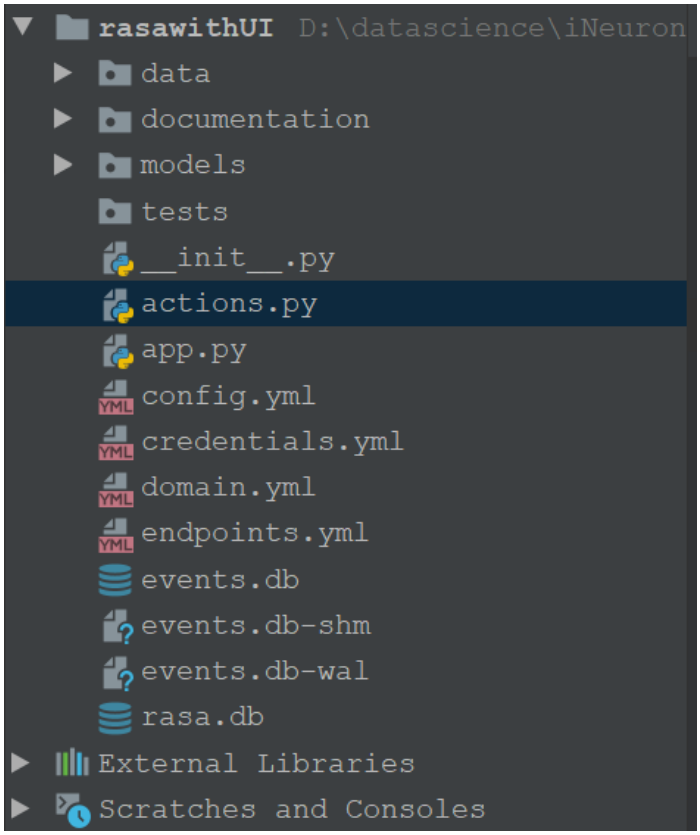
4.2 The application flow



5. Implementation:

- Create a new folder for your chatbot project.
- Open that folder using Pycharm
- Create a new environment for your chatbot project from pycharm or from anaconda prompt.
- Run the command **pip install rasa x** for installing all the rasa dependencies
- Run the command **pip install spacy** for installing spacy library.
- Then enter the following commands:
  - `python -m spacy download en`
  - `python -m spacy download en_core_web_md`
  - `python -m spacy link en_core_web_md en`

- After all this command run successfully, enter the command **rasa init** and for all the subsequent actions choose Y (for training the model etc).
- You'll then end up with all the predefined structures which RASA would have built, as shown below:



- Open the ‘nlu.md’ file from the data folder and enter the following content:

```
## intent:greet
- hey
- hello
- hi
- good morning
- good evening
- hey there

## intent:goodbye
- bye
- goodbye
- see you around
- see you later

## intent:bot_challenge
- are you a bot?
- are you a human?
- am I talking to a bot?
- am I talking to a human?

## intent:corona_intro
- What is corona virus
- what is covid
- what is a novel corona virus
- what is covid-19
- tell me about corona
- can you tell me about covid

## intent:corona_spread
- how does corona virus spread
- how does the virus spread

## intent:corona_food_spread
- Does corona spread from food
- how will corona spread from food
```

```
## intent:warm_weather
- will warm weather stop the spread
- will it stop with warm weather

## intent: high_risk
- who is at a higher risk of infection
```

This file is used to create all the intents and their sample utterances for conversation.

- Open the 'domain.yml' file and put the following content:

```
session_config:
  session_expiration_time: 60
  carry_over_slots_to_new_session: true
intents:
- greet
- goodbye
- bot_challenge
- corona_intro
- corona_spread
- corona_food_spread
- warm_weather
- high_risk
responses:
  utter_greet:
  - text: Hey! How are you?
  utter_did_that_help:
  - text: Did that help you?
  utter_goodbye:
  - text: Bye
  utter_iamabot:
  - text: I am a bot, powered by Rasa.
  utter_corona_intro:
  - text: Coronaviruses are a group of
related viruses that cause diseases in
mammals
      and birds. In humans, coronaviruses
```

```
cause respiratory tract infections that
      can be mild, such as some cases of
the common cold (among other possible
causes,
      predominantly rhinoviruses), and
others that can be lethal, such as SARS,
MERS,
      and COVID-19
  utter_corona_spread:
  - text: "This virus was first detected in
Wuhan City, Hubei Province, China. The\
      \ first infections were linked to a
live animal market, but the virus is now\
      \ spreading from person-to-person.
It’s important to note that person-to-
person\
      \ spread can happen on a continuum.
Some viruses are highly contagious (like\
      \ measles), while other viruses are
less so. The virus that causes COVID-19\
      \ is spreading from person-to-person.
Someone who is actively sick with COVID-19\
      \ can spread the illness to others.
That is why we recommend that these
patients\
      \ be isolated either in the hospital
or at home (depending on how sick they\
      \ are) until they are better and no
longer pose a risk of infecting others.\n\
      How long someone is actively sick can
vary so the decision on when to release\
      \ someone from isolation is made on a
case-by-case basis in consultation with\
      \ doctors, infection prevention and
control experts, and public health
officials\
      \ and involves considering specifics
of each situation including disease
severity,\
```

```
      \ illness signs and symptoms, and
results of laboratory testing for that
patient.\n\
      The virus that causes COVID-19 seems
to be spreading easily and sustainably\
      \ in the community (“community
spread”) in some affected geographic areas.
Community\
      \ spread means people have been
infected with the virus in an area,
including\
      \ some who are not sure how or where
they became infected."
  utter_corona_food_spread:
  - text: Coronaviruses are generally
thought to be spread from person-to-person
through
      respiratory droplets. Currently there
is no evidence to support transmission
      of COVID-19 associated with food.
Before preparing or eating food it is
important
      to always wash your hands with soap
and water for 20 seconds for general food
      safety. Throughout the day wash your
hands after blowing your nose, coughing
      or sneezing, or going to the
bathroom.
  utter_warm_weather:
  - text: It is not yet known whether
weather and temperature impact the spread
of
      COVID-19. Some other viruses, like
the common cold and flu, spread more during
      cold weather months but that does not
mean it is impossible to become sick with
      these viruses during other months.
At this time, it is not known whether the
      spread of COVID-19 will decrease when
```

```
  weather becomes warmer.  There is much
        more to learn about the
  transmissibility, severity, and other
  features associated
        with COVID-19 and investigations are
  ongoing.
    utter_high_risk:
    - text: Older adults and people of any
  age who have serious underlying medical
  conditions
        may be at higher risk for more
  serious complications from COVID-19. These
  people
        who may be at higher risk of getting
  very sick from this illness, includes;
        Older adults, People who have serious
  underlying medical conditions like...
        Heart disease, Diabetes, Lung
  disease,
  actions:
  - utter_greet
  - utter_did_that_help
  - utter_goodbye
  - utter_iamabot
  - utter_corona_intro
  - utter_corona_spread
  - utter_corona_food_spread
  - utter_warm_weather
  - utter_high_risk
```

This file is used to configure the bot responses.

- Open the 'stories.md' file from the data folder and put the following content:

```
## say goodbye
* goodbye
  - utter_goodbye

## bot challenge
* bot_challenge
  - utter_iamabot
```

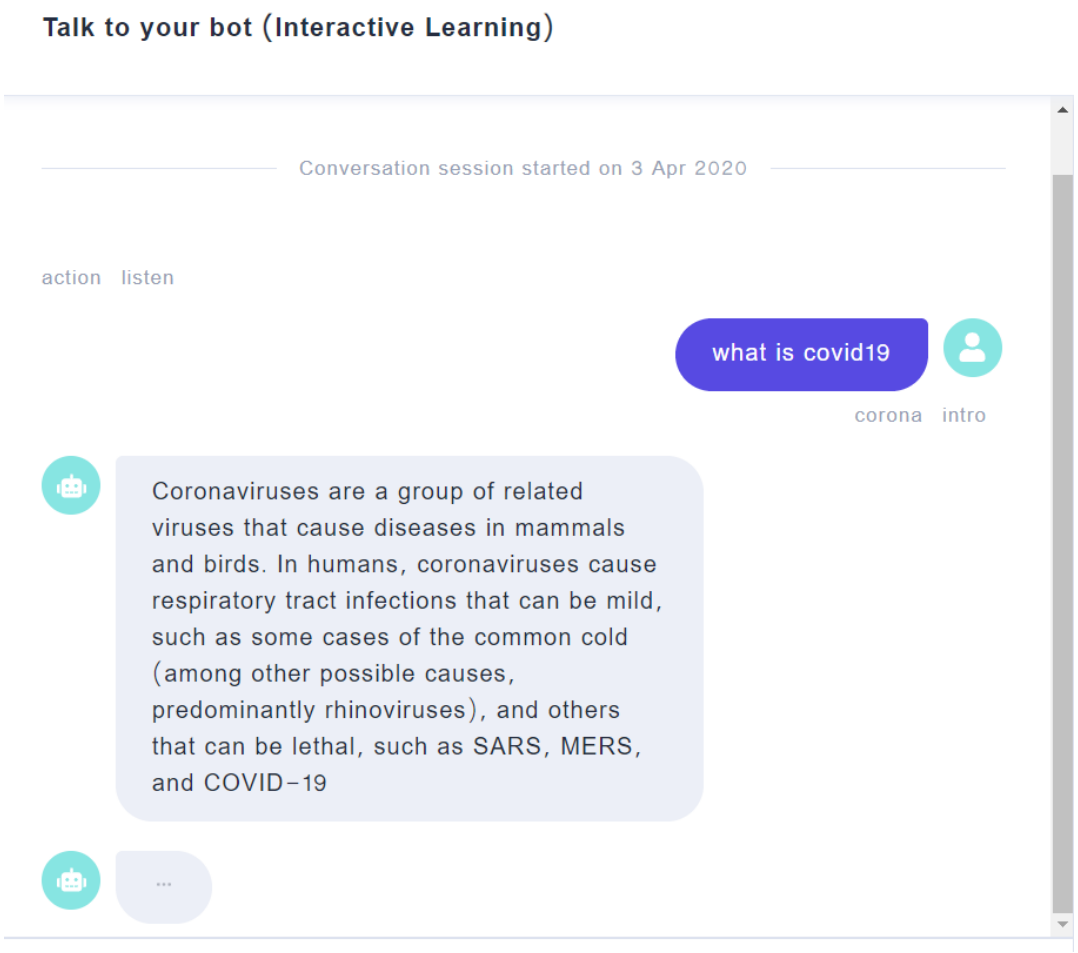
```
## what is corona
* corona_intro
  - utter_corona_intro

## how does corona spread
* corona_spread
  - utter_corona_spread
## corona food spread
* corona_food_spread
  - utter_corona_food_spread

## corona warm weather
* warm_weather
  - utter_warm_weather
## corona high risk
* high_risk
   - utter_high_risk
```

This file is used to create the conversation flows.

- After all this, you can just enter the command '**rasa train'** to train the model with new conversation elements.
- After the training is completed, enter the command '**rasa x**' to test your chatbot in the web UI. You'll see :

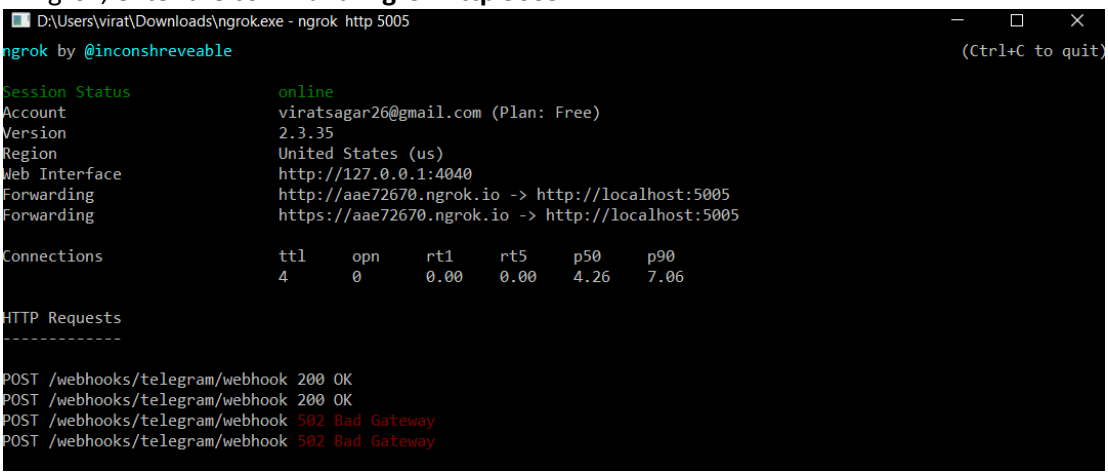
```
The server is running at http://localhost:5002/login?username=me&password=n8DDzwUAo9LL
```

- Copy this URL in your web browser and you'll see the web UI for your chatbot:



6. Telegram Integration:

- Download ngrok from https://ngrok.com/download
- After extracting the zip file, open the ngrok file and run it.
- In ngrok, enter the command '**ngrok http 5005** ':



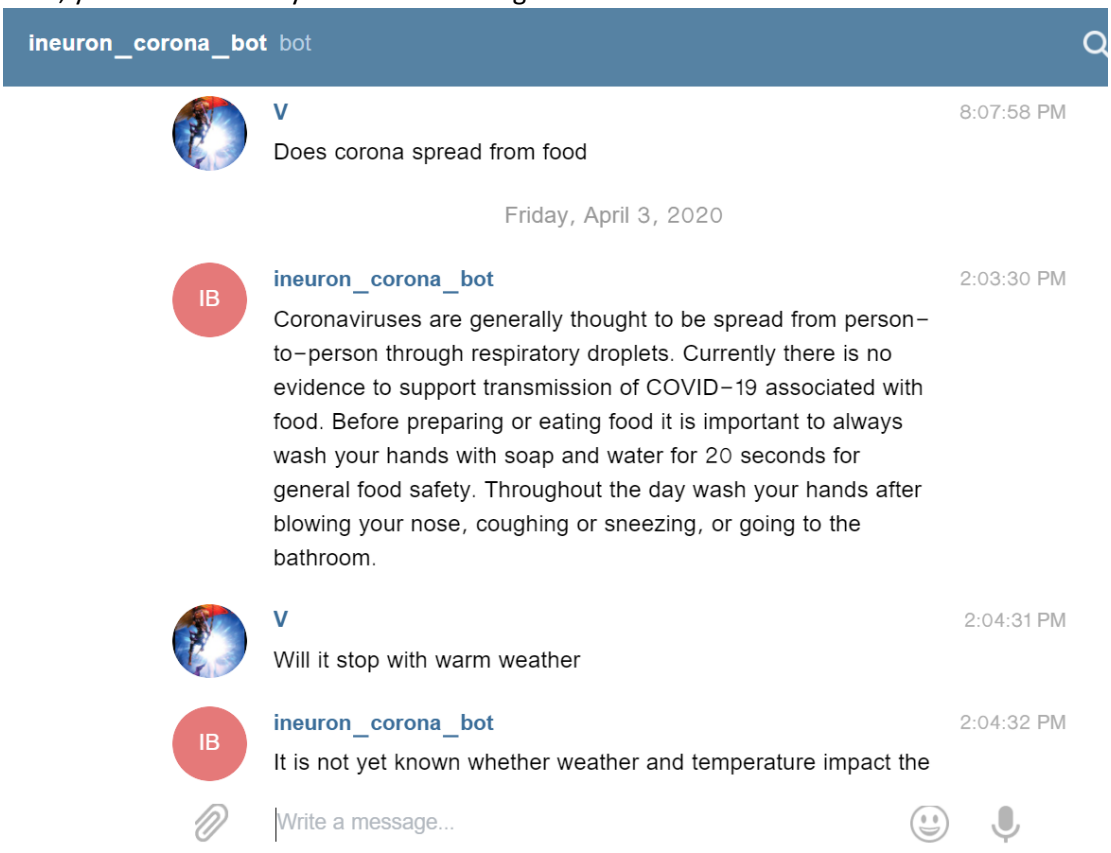
- Then go to telegram and create your own bot using Botfather:
  a) Open the telegram app and search for botfather(it is an inbuilt bot used to create other bots)
  b) Start a conversation with botfather and enter /newbot to create a newbot.

c) Give a name to your bot
d) Give a username to your bot, which must end in _bot.This generates an access token.

- Open ‘credentials.yml’ and enter:

```
telegram:
access_token: "obtained from telegram"
verify: "your bot username"
webhook_url: "https://<ngrokurl>/webhooks/telegram/webhook"
```

- Go to terminal and enter the command ‘rasa run’
- Open one more terminal and run the command ‘rasa run actions’
- Now, you can chat with your bot from Telegram.



References:

1. Rasa Official documentation https://rasa.com/docs/rasa/user-guide/installation/
2. CDC Corona FAQ.

Thankyou!