AI_Phase3

October 15, 2023

1 Create a chatbot in python

1.1 Importing required libraries

[1]:
```
import numpy as np
import string
from nltk.corpus import stopwords
import pandas as pd
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.tree import DecisionTreeClassifier
from sklearn.feature_extraction.text import TfidfTransformer,TfidfVectorizer
from sklearn.pipeline import Pipeline
```

1.2 Loading Dataset

[2]:
```
df = pd.read_csv('dataset/dialogs.txt',sep='\t')
```

[3]:
```
a = pd.Series(df.columns)
```

[4]:
```
df
```

[4]:
```
                                hi, how are you doing?  \
0                        i'm fine. how about yourself?
1                  i'm pretty good. thanks for asking.
2                    no problem. so how have you been?
3                     i've been great. what about you?
4             i've been good. i'm in school right now.
…                                                   …
3719   that's a good question. maybe it's not old age.
3720                              are you right-handed?
3721                                  yes. all my life.
3722  you're wearing out your right hand. stop using…
3723       but i do all my writing with my right hand.

                         i'm fine. how about yourself?
0                  i'm pretty good. thanks for asking.
1                    no problem. so how have you been?
2                     i've been great. what about you?
```

```
3              i've been good. i'm in school right now.
4                              what school do you go to?
…                                                    …
3719                               are you right-handed?
3720                                   yes. all my life.
3721  you're wearing out your right hand. stop using…
3722        but i do all my writing with my right hand.
3723  start typing instead. that way your left hand …

[3724 rows x 2 columns]
```

1.3 Pre Processing the dataset

[5]:
```
a = a.rename({0: df.columns[0],1: df.columns[1]})
```

[6]:
```
b = {'Questions':'Hi','Answers':'hello'}
```

[7]:
```
c = {'Questions':'Hello','Answers':'hi'}
```

[8]:
```
d= {'Questions':'how are you','Answers':"i'm fine. how about yourself?"}
```

[9]:
```
e= {'Questions':'how are you doing','Answers':"i'm fine. how about yourself?"}
```

[10]:
```
df = df.append(a,ignore_index=True)
```

```
/tmp/ipykernel_21803/3772295606.py:1: FutureWarning: The frame.append method is
deprecated and will be removed from pandas in a future version. Use
pandas.concat instead.
  df = df.append(a,ignore_index=True)
```

[11]:
```
df.columns=['Questions','Answers']
```

[12]:
```
df = df.append([b,c,d,e],ignore_index=True)
```

```
/tmp/ipykernel_21803/10559575.py:1: FutureWarning: The frame.append method is
deprecated and will be removed from pandas in a future version. Use
pandas.concat instead.
  df = df.append([b,c,d,e],ignore_index=True)
```

[13]:
```
df
```

[13]:
```
                                    Questions  \
0                 i'm fine. how about yourself?
1           i'm pretty good. thanks for asking.
2             no problem. so how have you been?
3              i've been great. what about you?
4      i've been good. i'm in school right now.
…                                          …
```

```
3724                    hi, how are you doing?
3725                                        Hi
3726                                     Hello
3727                               how are you
3728                          how are you doing

                                       Answers
0          i'm pretty good. thanks for asking.
1            no problem. so how have you been?
2             i've been great. what about you?
3     i've been good. i'm in school right now.
4                    what school do you go to?
…                                          …
3724             i'm fine. how about yourself?
3725                                     hello
3726                                        hi
3727             i'm fine. how about yourself?
3728             i'm fine. how about yourself?

[3729 rows x 2 columns]
```

[14]:
```
df = df.append(c,ignore_index=True)
```

```
/tmp/ipykernel_21803/921143614.py:1: FutureWarning: The frame.append method is
deprecated and will be removed from pandas in a future version. Use
pandas.concat instead.
  df = df.append(c,ignore_index=True)
```

[15]:
```
df = df.append(d,ignore_index=True)
```

```
/tmp/ipykernel_21803/1512068047.py:1: FutureWarning: The frame.append method is
deprecated and will be removed from pandas in a future version. Use
pandas.concat instead.
  df = df.append(d,ignore_index=True)
```

[16]:
```
df = df.append(d,ignore_index=True)
```

```
/tmp/ipykernel_21803/1512068047.py:1: FutureWarning: The frame.append method is
deprecated and will be removed from pandas in a future version. Use
pandas.concat instead.
  df = df.append(d,ignore_index=True)
```

[17]:
```
df
```

[17]:
```
                                    Questions  \
0                i'm fine. how about yourself?
1          i'm pretty good. thanks for asking.
2            no problem. so how have you been?
3             i've been great. what about you?
```

```
4     i've been good. i'm in school right now.
…                                           …
3727                                how are you
3728                            how are you doing
3729                                      Hello
3730                                how are you
3731                                how are you

                                          Answers
0           i'm pretty good. thanks for asking.
1             no problem. so how have you been?
2              i've been great. what about you?
3     i've been good. i'm in school right now.
4                     what school do you go to?
…                                           …
3727              i'm fine. how about yourself?
3728              i'm fine. how about yourself?
3729                                        hi
3730              i'm fine. how about yourself?
3731              i'm fine. how about yourself?

[3732 rows x 2 columns]
```

[18]:
```
def cleaner(x):
    return [a for a in (''.join([a for a in x if a not in string.punctuation])).
 ↪lower().split()]
```

[19]:
```
df.head()
```

[19]:
```
                                  Questions  \
0              i'm fine. how about yourself?
1       i'm pretty good. thanks for asking.
2         no problem. so how have you been?
3          i've been great. what about you?
4  i've been good. i'm in school right now.

                                    Answers
0       i'm pretty good. thanks for asking.
1         no problem. so how have you been?
2          i've been great. what about you?
3  i've been good. i'm in school right now.
4                what school do you go to?
```

1.4 Training model

[20]:
```
model = Pipeline([
    ('bow',CountVectorizer(analyzer=cleaner)),
    ('tfidf',TfidfTransformer()),
    ('classifier',DecisionTreeClassifier())
])
```

[22]:
```
model.fit(df['Questions'],df['Answers'])
```

[22]:
```
Pipeline(steps=[('bow',
                 CountVectorizer(analyzer=<function cleaner at
0x7f9dde5317e0>)),
                ('tfidf', TfidfTransformer()),
                ('classifier', DecisionTreeClassifier())])
```

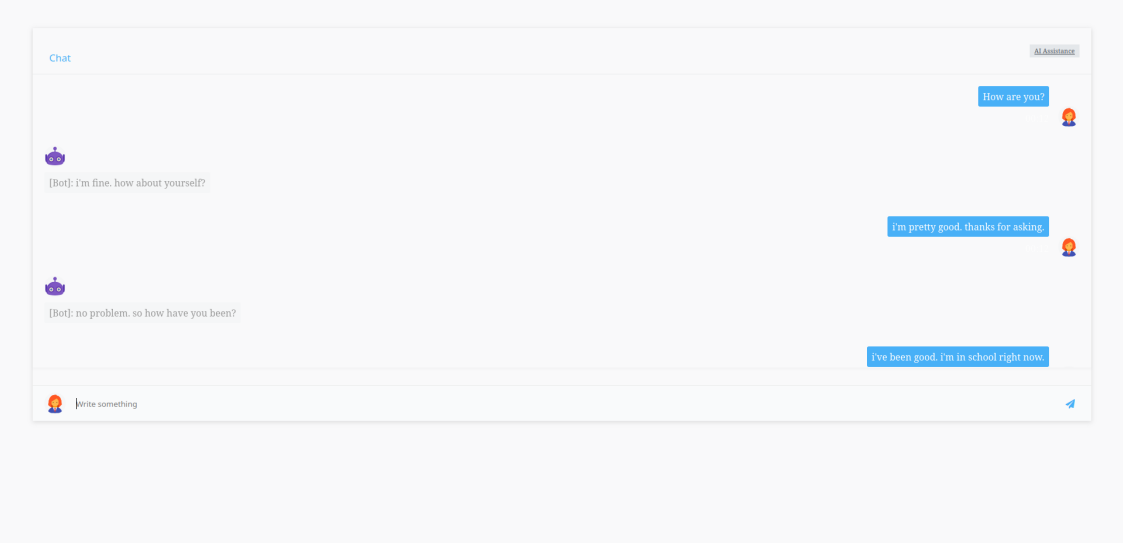
1.5 Testing model

[23]:
```
model.predict(['how are you'])[0]
```

[23]:
```
"i'm fine. how about yourself?"
```

1.6 Environment and Implementing basic user interactions

https://github.com/kimpoobi/Create_chatbot_in_python/blob/main/app/templates/index.html



1.7 integration and flask for web app development

app.py https://github.com/kimpoobi/Create_chatbot_in_python/blob/main/app/app.py

[ ]:
```
from flask import Flask, render_template
from flask_socketio import SocketIO, send
```

```
import pickle
import sklearn
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.tree import DecisionTreeClassifier
from sklearn.feature_extraction.text import TfidfTransformer,TfidfVectorizer
from sklearn.pipeline import Pipeline
import string


app = Flask(__name__)
app.config['SECRET'] = 'somethingelse'
socketio = SocketIO(app, cors_allowed_origins="*")

def cleaner(x):
    return [a for a in (''.join([a for a in x if a not in string.punctuation])).
 ↪lower().split()]
def bot_replay(message):
    pred_msg = ""
    with open('static/models/dclf.pkl', 'rb') as f:
        clf2 = pickle.load(f)
        pred_msg = clf2.predict([message])[0]

    return pred_msg

@socketio.on('message')
def handle_message(message):
    print("Received message: " + message)
    if message != "User Connected!":
        send(message, broadcast=True)
        send("[Bot]: " + bot_replay(message), broadcast=True)


@app.route('/')
def index():
    return render_template("index.html")


if __name__ == "__main__":
    socketio.run(app, debug=True, host="localhost")
```