NLP245: Assignment 1

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I have identified the following potential limitations with Eliza. I have also discussed the possible solution to those problems.

1) Missing Self-Identity

When asked for an introduction, Eliza needs to respond with her identity. A chatbot with identity can lead to more meaningful conversations. It also makes users aware of the bot's capabilities. By giving an introduction, an impression is created in the user's mind about what to ask the chatbot, thereby initiating a meaningful conversation. A chatbot with its own identity can help create a more engaging, personalized, and consistent user experience while also helping to establish differentiation from other bots.

```
PS D:\Academic\Engginering\MS NLP\Q3\NLP245\Assignment1\eliza_chatbot> python -u "d:\Academic\Engginering\MS NLP
\Q3\NLP245\Assignment1\eliza_chatbot\eliza.py"
How do you do.  Please tell me your problem.
> Please introduce yourself
I'm not sure I understand you fully.
>
```

Solution:

I have updated the 'doctor.txt' file with the following introduction.

key: introduce

 decomp: * introduce *

   reasmb: Hi, I am Eliza. How are you? I can help you with your problem. What are you dealing with today?

Output after fixing the issue -

```
PS D:\Academic\Engginering\MS NLP\Q3\NLP245\Assignment1\eliza_chatbot> python -u "d:\Academic\Engginering\MS NLP
\Q3\NLP245\Assignment1\eliza_chatbot\eliza.py"
How do you do.  Please tell me your problem.
> please introduce yourself
Hi, I am Eliza. How are you? I can help you with your problem. What are you dealing with today?
>
```

2) Improper Greetings

When I greeted Eliza with 'hi', it responded with random questions. The basic functionality every chatbot should have is to greet end users properly. A proper greeting sets the tone for the conversation and establishes a connection with the user. It shows that the chatbot is polite, professional, and attentive to the user's needs. A friendly and welcoming greeting can encourage the

user to engage with the chatbot. It can make the user feel more comfortable and willing to ask questions or seek assistance.

Solution:

I have updated the 'doctor.txt' file with the following greetings.

```
key: hi 10

 decomp: * hi *

   reasmb: Hi, How are you doing today?

   reasmb: Hello, How may I help you?
```

Output after fixing the issue -

```
PS D:\Academic\Engginering\MS NLP\Q3\NLP245\Assignment1\eliza_chatbot> python -u "d:\Academic\Engginering\MS NLP
\Q3\NLP245\Assignment1\eliza_chatbot\eliza.py"
How do you do.  Please tell me your problem.
> hi
Hi, How are you doing today?
> hi there
Hello, How may I help you?
>
```

3) Danger task handling

Irrespective of the main purpose, any chatbot should never encourage dangerous activity such as suicide, killing someone, etc. It is morally wrong and goes against the basic principles of human decency. Moreover, it is illegal in most countries and can result in legal action being taken against the chatbot creator. It would be an add-on for individuals who may already be struggling with mental health issues. It is better that chatbot identifies such activity and responds to them negatively.

```
PS D:\Academic\Engginering\MS NLP\Q3\NLP245\Assignment1\eliza_chatbot> python -u "d:\Academic\Engginering\MS NLP
\Q3\NLP245\Assignment1\eliza_chatbot\eliza.py"
How do you do.  Please tell me your problem.
> I want to commit suicide
What would it mean to you if you got to commit suicide ?
> I want to commit suicide
Why do you want to commit suicide ?
> I want to commit suicide
Suppose you got to commit suicide soon ?
> How to create a atom bomb?
Why do you ask ?
> How to create a atom bomb?
Does that question interest you ?
> I want to kill 3 people
What if you never got to kill 3 people ?
> I want to kill 3 people
What would getting to kill 3 people mean to you ?
>
```

Solution:

I have updated the 'doctor.txt' file with the following checks.

key: suicide 50

  decomp: * suicide *

    reasmb: Sorry, I can't help with suicide. If you are feeling depressed or dealing with mental issues, you may consider psychiatrist.

key: bomb 50

  decomp: * bomb *

    reasmb: Sorry, I am not supposed to tell you about this.

key: kill 50

  decomp: * kill *

    reasmb: Sorry, I can't help you with this.

Output after fixing the issue -

```
PS D:\Academic\Engginering\MS NLP\Q3\NLP245\Assignment1\eliza_chatbot> python -u "d:\Academic\Engginering\MS NLP
\Q3\NLP245\Assignment1\eliza_chatbot\eliza.py"
How do you do.  Please tell me your problem.
> I want to commit suicide
Sorry, I can't help with suicide. If you are feeling depressed or dealing with mental issues, you may consider p
sychiatrist.
> How to create a atom bomb ?
Sorry, I am not supposed to tell you about this.
> I want to kill 3 people
Sorry, I can't help you with this.
>
```

4) Irrelevant Responses

A chatbot should never provide an out-of-the-topic response to users. Such communication leads to user dissatisfaction and creates a lack of trust in the bot's ability. Irrelevant responses can also cause confusion for the user. If the chatbot provides information or responds to a request in a way that does not make sense or is not related to the user's inquiry, the user may be unsure of how to proceed. If a user asks a question or makes a request and the chatbot responds with something irrelevant, the user may become frustrated and annoyed with the chatbot.

```
PS D:\Academic\Engginering\MS NLP\Q3\NLP245\Assignment1\eliza_chatbot> python -u "d:\Academic\Engginering\MS NLP
\Q3\NLP245\Assignment1\eliza_chatbot\eliza.py"
How do you do.  Please tell me your problem.
> can you define what funny is?
You believe I can define what funny is? don't you ?
> Yes, I believe you can define it. What is the defination of funny?
You seem to be quite positive.
>
```

Solution:

Identifying the context and what the user is asking is a challenging task when only dealing with the keywords. To solve this problem, we can change the entire architecture of the 'doctor.txt' file. Rather than having a key and its respective response list, we can create a bucket for unknown topics, and whenever a query lies within this bucket, we can reply with an apology. This is keyword-level

handling of out-of-domain conversation, but its implementation requires changing a code architecture which itself is a separate project.