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GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES
FRELSER-A FRIEND INDEED

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ABSTRACT

The rate of mental illness is growing at an alarming rate. Mainly the problems associated with depression and loneliness are taking over the large percentage of people including youngsters and old aged. This depression can also lead to deadly dementia; namely Alzheimer's depression which may lead to memory loss. It has hugely disabling effects on career, relationships and above all on quality of life. The basic cause for depression is the lack of interaction with people or maybe because of any other reasons. According to a study, people are more likely to open up to a talking computer than a human. So, our idea is to utilize this point and help people. We can use a friendly Chatbot to interact with people of all kinds and engage them with meaningful conversations and support emotionally. Also, it encourages users to engage themselves in activities which are usually suggested by psychiatrists. A bot which asks and reacts to questions like a friend and which is able to speak on various topics is our idea. This will help in boosting people positively.

Keywords: Artificial intelligence, Chatbot, Depression, loneliness.

I.   INTRODUCTION

A machine is introduced to replace humans in the works they do. They work in the place of humans which reduces the extra burden on their daily lives. Later, researchers didn't confine the applications of machines and they introduced Chatbots, which will chat with the humans. They answer to all the questions a human asks. But they do not connect to the people emotionally and answer emotionally. A lot of research has been done to make machines identify human emotions by using complex artificial intelligence systems. The different types of systems are used for different purposes like robotics , decision making etc., The models are trained using deep learning techniques, deep learning techniques like recurrent neural network, convolutional neural network, attention network and so on. Some systems will combine different features and those are called hybrid models. These hybrid models are used to access many features and also are used to understand human natural language. Such systems can learn things by themselves by accessing the information from webpages online and gives a positive emotional effect on the users. This learning technique is beneficial as the system itself can answer the questions. The human user can ask question to the bot in the way they ask any other human.

The chatbots that are used by majority of the people now-a-days for assistance is Apple Siri, Google Allo, Microsoft Cortana, etc. these assistants answer to the humans like a question and answer session. They are helpful for asking quires and getting information about the things or places. But they won't connect to the people emotionally. i.e., they won't answer the emotional questions that are being asked by humans in a emotional way. This is because they use only Natural Language Processing (NLP). There are some bots which are made to interact with the humans personally and they can answer the Emotional question i.e., they provide the emotional assistance. Apps like weobot, youper, wysa etc., are made to track the mood of the people and answer accordingly. They recognize the user's mood and works on lifting up their mood. FRELSER is our idea of creating a bot to uplift the user's mood by diverting the user by building up conversations. Our bot is mainly for the people who are facing problems with loneliness which have chances in turning to depression which may even lead to dementia; it is a stage where memories fade.

II.   LITERATURE SURVEY

The purpose of this paper was to conduct a systematic review of articles that examine intervention strategies for patients with Alzheimer's depression to potentially improve their quality of life. The researcher was looking to find effective non-pharmacological interventions that have been found successful in decreasing behaviours in patients with Alzheimer's depression; while also reviewing medications used to treat agitation and other negative behaviours, which can sometimes be necessary to maintain the patient's quality of life. In the following section, a broad review of the literature will be examined. While this project involves a literature search, the literature review discussed here will overlap to some extent with the more specific research (i.e., articles reviewed) that is the core of this paper. The following themes that are included which will be discussed are: a) Psychological Impact b) Behavioural Interventions which include Non-Pharmacological Interventions, Cognitive Behavioural Stimulation and Therapy, c) Pharmacological Interventions, and d) Patients Experiences with Caregivers.

Psychological Impact
While being diagnosed with Alzheimer's depression can have its own impact on someone's physical and cognitive life, it can also have a psychological impact as well. Depression and anxiety symptoms can be assessed using the Cornell Scale for Depression in Alzheimer's depression (CSDD) which assesses mood and related signs, behavioural disturbances, function and ideational disturbance as well as any physical signs of depression on a scale using patient and proxy interviews .The Cornell Scale for Depression in Alzheimer's depression (CSDD) is a 19-item scale scoring 0 to 2 for each item and uses the information from the interview with the patient and their caregiver . The CSDD is considered to be a valid and reliable source of depression testing. It is believed that hopefulness in chronic illness has shown association with an improved quality of life through pain management and improved tolerance as well as having improved coping and problem solving skills. Disturbances in the circadian rhythm and restlessness has been proposed as a cause for psychological and psychiatric symptoms in patients with Alzheimer's depression; along with wandering behaviour and lowered levels of acetylcholine, which may also be an implication for aggressive behaviour .

Behavioural Interventions
 Non-pharmacological interventions: Non-pharmacological interventions are interventions that do not include medications or other chemical measures to decrease agitation and other behavioural symptoms among patients diagnosed with Alzheimer's depression American Association for Geriatric Psychiatry stresses that non-pharmacological strategies should be the preferred method as a treatment approach to managing behavioural symptoms . However, if a person is in imminent danger or compromising the safety of others or themselves, then pharmacological interventions may be necessary. Some pharmacological interventions are reported to precipitate agitation regardless of the interventions commonly used to decrease the agitation among patients diagnosed with Alzheimer's depression. There are common behaviours, especially for families, that don't respond to pharmacological treatments, such as refusal of care, repetitive vocalizations, and arguing. Other common behavioural symptoms of Alzheimer's depression may include aggression, screaming, restlessness, wandering, culturally inappropriate behaviours, hoarding, cursing, and sexual disinhibiting. "Advancing caregiver training (ACT) conceptualized problem behaviours as a consequence of interacting factors reflecting three domains: patient based (unmet needs, discomfort or pain, incipient medical condition), caregiver based , and environment based . In a systematic review completed by Kong et al (2009), the researchers reported that only sensory interventions such as aromatherapy, thermal (heated) bath, calming music and hand massage had a moderate effect in reducing agitation for those with Alzheimer's depression. The use of effective non-pharmacological interventions may be able to delay nursing home placement for patients currently living in the community, and also lower the use of physical restraints and decrease the use of pharmacological interventions for those who are living in the nursing home setting.

Alzeheimer's depression and the family Much of the literature dealing with the impact of alzeimer's depression of a later onset has concentrated on carer outcomes, frequently the spouse (e.g. Torti et al., 2004). Studies have focused on the negative impact of caring and interventions (e.g. Burns et al., 2003). It has become well established in the older adult literature that caring for a relative with alzeheimer's depression can lead to physical and psychological problems, social isolation and financial difficulties (e.g. Schulzet al., 1995). Some studies have also acknowledged

that caring can have a positive impact, such as increased gratification and well-being (e.g. Connell et al., 2001).

Considering the particular needs of younger people with alzeheimer's depression, it follows that their carers may also face particular problems (Arai et al., 2007) and that a diagnosis may have an impact on "the entire family unit" (Roach and Keady, 2008). Such problems may concern life stage issues,diagnostic difficulties, coping with symptoms and relationship changes. Exploring the impact on the family as a whole may have much to contribute to our understanding and broadening of the current knowledge base on young onset alzeheimer's depression. This review aimed to explore what the literature shows about the experiences of younger people with alzeheimer's depression and their families.

This review aimed to explore what the literature shows about the experiences of younger people with alzeheimer's depression and their familieGlobally, the word Alzeheimer's depression has been associated with old age . It is the most leading cause of disability and dependence among the older population . It is a complex, chronic and progressive syndrome that arises with the interplay of factors which could be genetic , environmental, psychological and even low physical activity (Modifiable) during one's early life course . Recently alzeheimer's depression has been a global public health concern as population ageing advances; this promoted the holistic definition by WHO where some concepts like memory, Thinking, orientation, comprehension, calculation, learning, language and judgement was introduced all linked to "impairment of cognitive function. It has been noted from obvious neuropathological studies that alzeheimer's depression in older age reflects more than one pathological state as it is caused by an underlying condition like Alzheimer disease (AD), vascular cognitive impairment (VCI) /vascular alzeheimer's depression (VaD), alzeheimer's depression with Lewy bodies (DLB) and HIV associated Alzeheimer's depression amongst others (HAD) (Kovacs et al, 2008 and Robbins et al, 2011). Alzeheimer's depression is not a normal part of ageing but mostly affect the older people with a global prevalence of over 60 years is between 5% and 7%around the world . In Latin America (8.5%), in Sub-Saharan African Regions (2% -4%), specifically in Nigeria, it ranges between 0% to 10.1% , In Europe, 6.2%; 4% of Alzheimer's disease; In the United states of America, 8%; 6% of Alzheimer's disease. 35.6 million people lived with alzeheimer's depression worldwide in 2010 with a projection of double the number every 20years (see figure 1), approximately to 65.7 million in 2030 with 58% of those living with alzeheimer's depression living in low or middle income countries . In the global burden of disease, Alzheimer's depression is the leading cause of non-fatal burden of disease in the world for age over 75years and accounts for 6% of all deaths.. Generally, Table 1 shows a worldwide estimate for the absolute number of instances of alzeheimer's depression, according to the Delphi Consensus Study.

Alzheimer's depression is a complex condition that imposed many challenges to health professionals throughout the pathway of care, from early diagnosis to end of life . Even with the challenges efforts have been made to explain in details what Alzheimer's depression entails. For instance the description of Alzheimer's depression and cognitive impairment in the realm of neurocognitive disorder which is explained in the recent Diagnostic and Statistical Manual of Mental disorder. Although there has been a lot of arguments on treatment procedures of Alzheimer's depression ranges from when diagnosis should be done, discussions in the care home among others but conclusions has been difficult. In some researches it was concluded that a erotological approach alongside with psychosocial seems to give a positive outcome when compared to biomedical approach. Among the Psychosocial approach is Reminiscence therapy. Reminiscence therapy is defined by the American Psychological Association (APA) as "the use of life histories - written, oral, or both - to improve psychological well-being. It has been documented that Reminiscence therapy has produced a good positive outcome in treating Alzheimer's depression of any type. However, I will critically review the effectiveness of Reminiscence therapy in treating Alzheimer's depression using studies by Wang, 2007; Huang et al, 2009; Tadaka and Kanagawa, 2007 and Okumura et al, 200

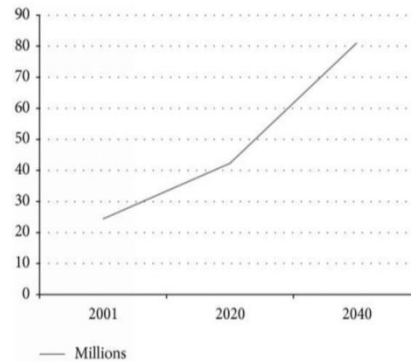Figure 1 Estimate of numbers of people living with dementia worldwide

Figure 1: Estimation of number of people facing problems.

Table 1: Worldwide estimate for the absolute number of cases of Alzheimer's depression, according to the Delphi. Consensus Study.

	Absolute number of people over 60 years old who have alzeheimer's depression(millions)		
	2001	2020	2040
Western Europe	4.9	6.9	9.9
Eastern Europe low adult mortality	1.0	1.6	2.8
Eastern Europe high adult mortality	1.8	2.3	3.2
North America	3.4	5.1	9.2
Latin America	1.8	4.1	9.1
North Africa and Middle Eastern Crescent	1.0	1.9	4.7
Developed Western Pacific	1.5	2.9	4.3
China and	6.0	11.7	26.1

the developing Western Pacific			
Indonesia, Thailand, and Sri Lanka	0.6	1.3	2.7
India and South Asia	1.8	3.6	7.5
Africa	0.5	0.9	1.6
Total	24.3	42.3	81.1

III.   PROPOSED CHATBOT

In this Code Pattern, we will use the Watson Assistant Slots feature to build a friendly chatbot.
The things we use to create the conversations are
- Intents
- Extents
- Dialogs

Intents are purposes or goals expressed in a customer's input, such as answering a question or processing a bill payment. By recognizing the intent expressed in a customer's input, the Watson Assistant service can choose the correct dialog flow for responding to it.

Plan the intents for your application.
Consider what your customers might want to do, and what you want your application to be able to handle on their behalf.

Teach Watson about your intents.
Once you decide which business requests you want your application to handle for your customers, you must teach Watson about them.

Creating intents
Use the Watson Assistant tool to create intents.
➢   In the Watson Assistant tool, open your dialog skill. The skill opens to the **Intents** page.
➢   Select **Create new**.
➢   In the **Intent name** field, type a name for the intent.
➢   The intent name can contain letters (in Unicode), numbers, underscores, hyphens, and periods.
➢   The name cannot consist of or any other string of only periods.
➢   Intent names cannot contain spaces and must not exceed 128 characters.
➢   Select **Create intent** to save your intent name. Next, in the **Add user examples** field, type the text of a user example for the intent. An example can be any string up to 1024 characters in length. Click **Add example** to save the example.
➢   Repeat the same process to add more examples. You can tab between examples. Provide at least 5 examples for each intent. The more examples you provide, the more accurate your application can be.
To get help with user example creation, see Get intent user example recommendation.
➢   When you have finished adding examples, click to finish creating the intent.
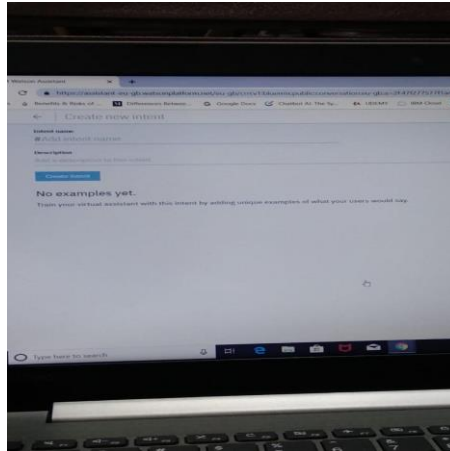➢   The system begins to train itself on the intent and user examples you added.

Figure 2: Creating intent

Creating entities
Entities represent information in the user input that is relevant to the user's purpose. Recognizing entities in the user's input helps you to craft more useful, targeted responses.

Synonym entity: You define a category of terms as an entity (color), and then one or more values in that category (blue). For each value you specify a bunch of synonyms (aqua, navy). You can also pick synonyms to add from recommendations made to you by the service. At run time, the service recognizes terms in the user input that exactly match the values or synonyms that you defined for the entity as mentions of that entity.

Pattern entity: You define a category of terms as an entity (contact info), and then one or more values in that category (email). For each value, you specify a regular expression that defines the textual pattern of mentions of that value type. For an email entity value, you might want to specify a regular expression that defines a text@text.com pattern.
At run time, the service looks for patterns matching your regular expression in the user input, and identifies any matches as mentions of that entity.
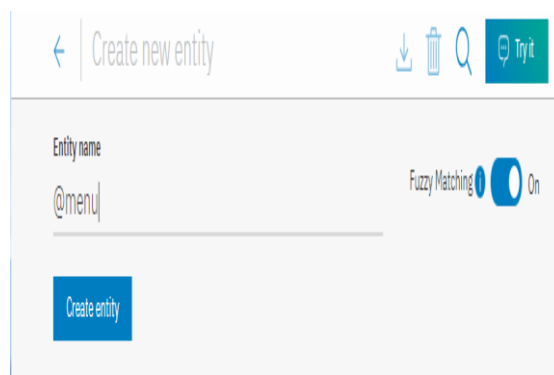
Figure 3: Creating entity

Dialog
The dialog uses the intents that are identified in the user's input, plus context from the application, to interact with the user and ultimately provide a useful response. The dialog matches intents (what users say) to responses (what the bot says back).

Dialog nodes
Each dialog node contains, at a minimum, a condition and a response.
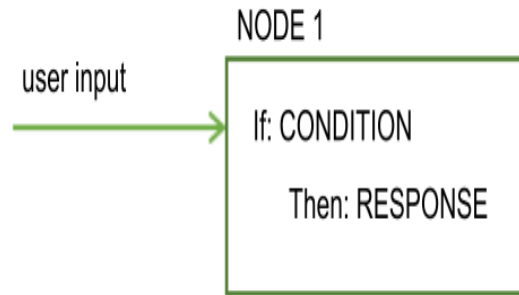
Figure 4: Using conditions in dialogs

- Condition: Specifies the information that must be present in the user input for this node in the dialog to be triggered. The information is typically a specific intent. It might also be an entity type, an entity value, or a context variable value. See Conditions for more information.
- Response: The utterance that the service uses to respond to the user. The response
- can also be configured to show an image or a list of options, or to trigger programmatic actions. See Responses for more information.

You can think of the node as having an if/then construction: if this condition is true, then return this response.

Dialog flow
The dialog that you create is processed by the service from the first node in the tree to the last.
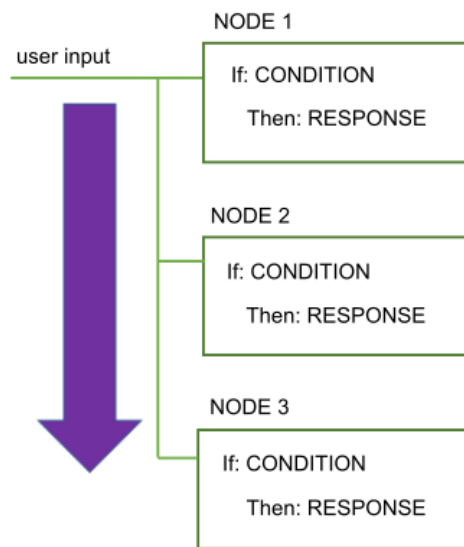
Figure 5: Responses to conditions

As it travels down the tree, if the service finds a condition that is met, it triggers that node. It then moves along the triggered node to check the user input against any child node conditions. As it checks the child nodes it moves again from the first child node to the last.
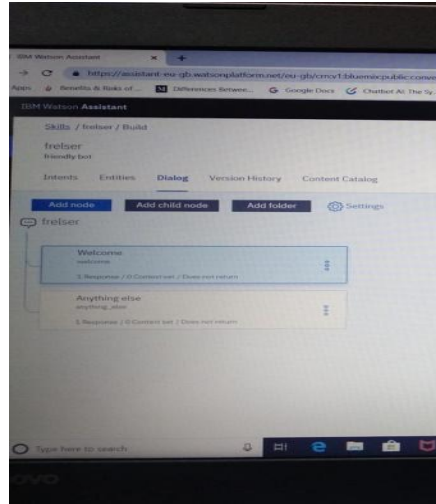
Figure 6: Creating dialogs

NODE RED:
Once the node red is created, the following can be done.
1. Add an Inject node
The Inject node allows you to inject messages into a flow, either by clicking the button on the node, or setting a time interval between injects. Drag one onto the workspace from the palette. Open the sidebar and select the Info tab. select the newly added Inject node to see information about its properties and a description of what it does.

2. Add a Debug node
The Debug node causes any message to be displayed in the Debug sidebar. By default, it just displays the payload of the message, but it is possible to display the entire message object.

3. Wire the two together
Connect the Inject and Debug nodes together by dragging between the output port of one to the input port of the other.

4. Deploy
At this point, the nodes only exist in the editor and must be deployed to the server.
Click the Deploy button. With the Debug sidebar tab selected, click the Inject button. You should see numbers appear in the sidebar. By default, the Inject node uses the number of milliseconds since January 1st, 1970 as its payload. Let's do something more useful with that.

5. Add a Function node
The Function node allows you to pass each message though a JavaScript function. Wire the Function node in between the Inject and Debug nodes. You may need to delete the existing wire.
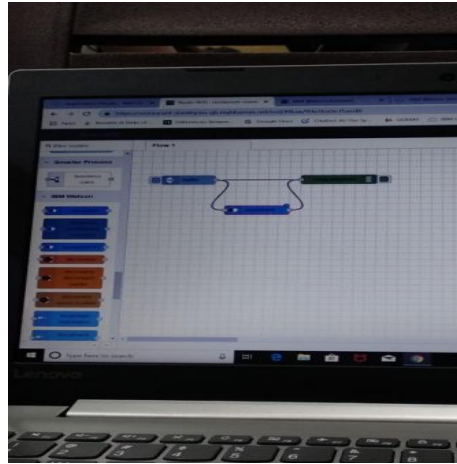The connections are completed by connecting the flows to each other.
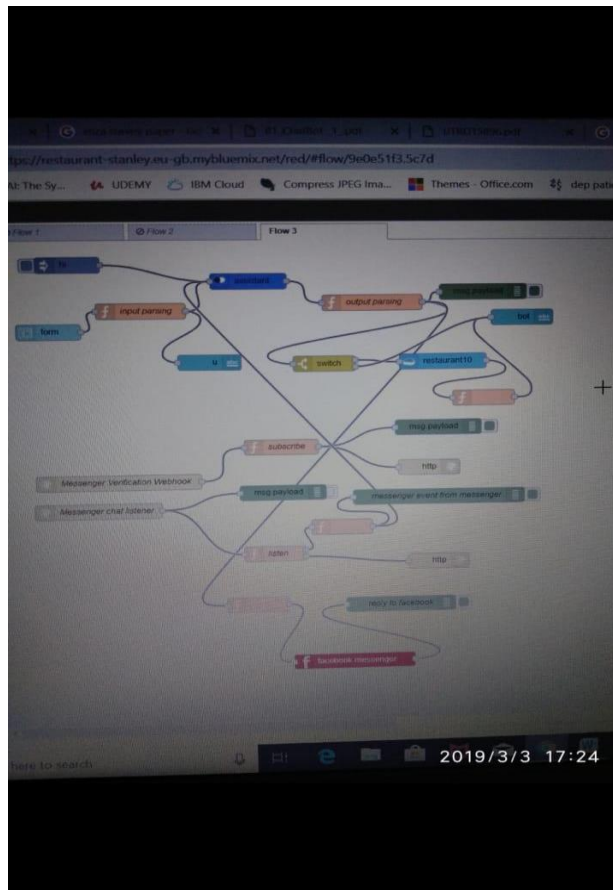
Figure 7: Creating basic flow

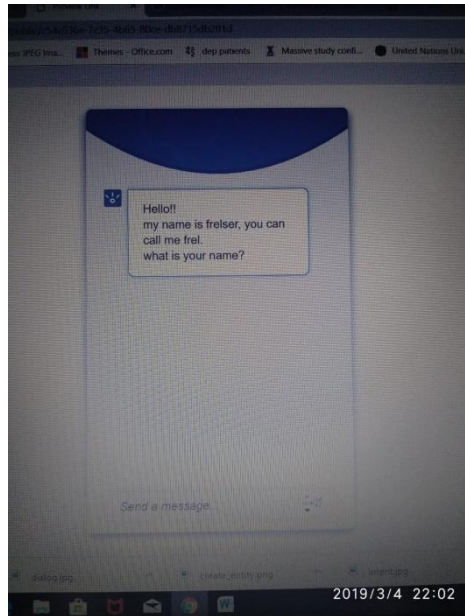*Figure 8: Complete flow*

IV. RESULTS AND DISCUSSION

Figure9: Introduction

Using Ibm Watson assistant we have created dialogs which responds to the user the very next moment the user opens the preview link. The bot gives the warm welcome to the user and introduces itself to the user by telling the bot name and asks the user's details like , the very first question the bot asks is the user's name. This helps the user feel more connected to the bot. Next, the bot welcomes the user by calling out the user's name. this helps the user to get the personalised experience with the bot. the bot puts the further questions and depending on the user's response the bot suggests the user things like whether he wants to watch funny videos, sports related videos etc., if the user wants to share the things of his day , the bot is ready to listen to the user.

Based on the user response the bot replies the user with memes or videos.
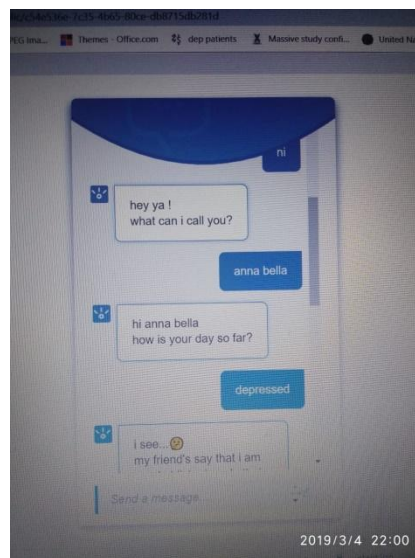
Figure 10: Knowing the user

As soon as the bot gets to know the name of the user, the bot responds with a question. It asks the user about his/her day.it helps in tracking the mood of the user and further questionings of the bot depends on the user's response.
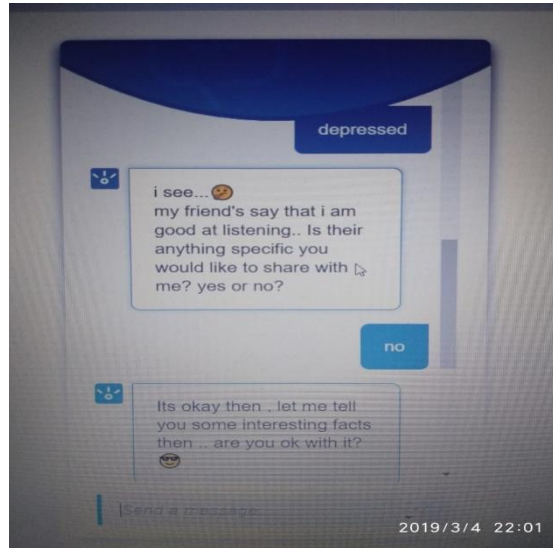

Figure 11: Further questioning

The further questioning of the bot includes gathering the information about the user. The information can be the things related to the day to day activities. The bot identifies the keywords like friends and family, stress, fun and so on and responds accordingly.
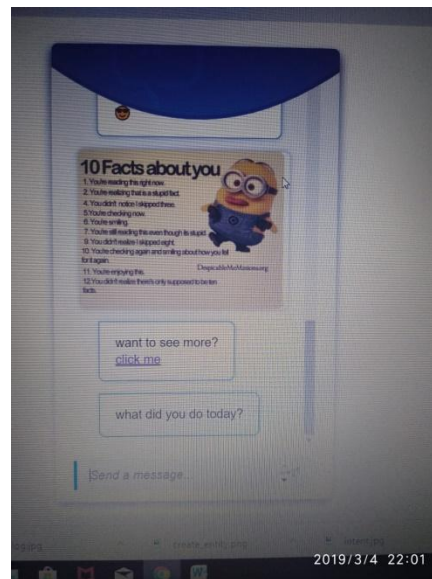
Figure 12: Suggestions

It suggests more activities which includes the links of the video related to work, stress, exercises, which helps in reducing the stress by suggesting the remedies. It also suggests the fun videos which can boost up the user's mood instantly.
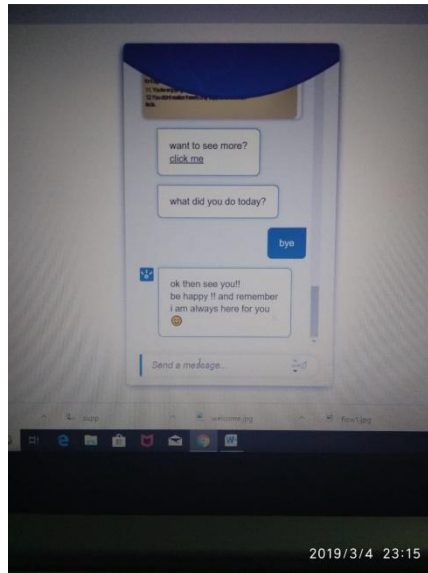
Figure 13: See you

The warm greeting at the end of the conversation along with assurance of being a friend who is 24/7 available for them is what users look for. The bot does the exact same thing, greets the user by assuring its presence whenever he/she need the bot.

V.   CONCLUSION

A friendly bot which tracks the mood of the user and which not only helps him/her in boosting up the mood but also sharing the things that user wants to share, in other words the user can share the things like he does with any other human being. This helps in reducing the stress and accompanies the user.

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