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16. Abstract

Some systems are present to judge thinking style of person, but they are based on questionnaires or hard coded question answers. My system is based on a chat bot, which communicate with user; analyses chat and make report of chat based on different parameters. Then this system save chat in data base and make cluster of this chat with other person's chat and recommend user the people who have same thinking. It is an modern automatic chatting system or a chatting bot, which will chat (in English) with human and judge his/her mental health.it will judge whether a person's thinking is negative or positive ,how a person's discussion is relevant and how this person's chat has resemblance with other normal people's chat. With this system people can analyze their thinking and can improve themselves.so in future it can modified more to make a virtual reality.

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VIRTUAL PSYCHIATRIST: A CHAT BOT BASE APPROACH

Final Report
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Principal Investigator
Dr. Waqar-ul-Qounain Jaffry
Title
Artificial Intelligence and Multidisciplinary (AIM) Research Laboratory
PUCIT, University of the Punjab

Co-Principal Investigator
Dr. Waqar-ul-Qounain Jaffry
Artificial Intelligence and Multidisciplinary (AIM) Research Laboratory
PUCIT, University of the Punjab

Research Assistant
Authors
Ali Farzan Tahaa

A report from
Artificial Intelligence and Multidisciplinary (AIM) Research Laboratory
Punjab University College of Information Technology
University of The Punjab, Allama Iqbal Campus
Shahrah-e-Quaid-i-Azam, PC 5400, Lahore, Pakistan

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Thanks- though a small word but expresses my indebtedness to **Almighty Allah** whose countless blessing helped me at every turn of my life to accomplish whatever I wished. I am highly indebted to Allah Almighty whose countless blessing have always been with me and who's divine help make me feel His presence everywhere.

.I want to thank my teacher Sir Waqar, who is very talented and brilliant person. In this all activity his contribution is much high, without his contribution, perhaps I can't do this. This is all due to his cooperation and motivation.

I want to thank my all colleagues and class fellow who help me every time, and I am also thank full to Poly Vista who give ma chance and motivate me to show my skills.

EXECUTIVE SUMMARY

- ➢ What the report is about?

- ➢ Who is the report targeted at?

- ➢ Background

- ➢ Aims/objectives

- ➢ Methods used

- ➢ Results/key findings

- ➢ Implications for relevant stakeholders for

Report is about a system, which has ability to interact with human, chat with it and analyze his/her chat. This system works like a psychiatrist, which after chat can give information about thinking, normality of a person. This system has a recommender system which shows people of same thinking.

Much research work is in process to analyze behavior and thinking of a person. Some system is present that has ability to analyze the thinking of some person. But they are based on questioners or hard coded questions. User can analyze his chatting factor by filling questionnaire or giving answer of specific question.so these traditional methods are not good and they irritate user. With these method user's psyche can effect badly.so in this research paper a chat bot based approach is use.in this system user can chat with chat bot and after chatting user can make report of his/her chat .so this method is user friendly and do not irritate user.

There are many chat bot .the advance and most popular chat bot is Elise .this chatting bot has ability to interact and chat with other person. Some other chat bot are also good but they are based on huge chat logs and query based knowledge base. Some bot are trying to answer as accurate as possible. Theses bots are based on POS (part of speech) tagging.to implement these kinds of bot; need many people to tag huge amount of chat data.

This research paper is about systems that work like psychiatrist. This system has ability to chat with user, in chat this system has also ability to handle emotions(smiles ,sad ,happiness).this system have analyzing room in which chat is processed and some statistic are generate on the base of particular chat. This system has a recommended system which recommend person of same thinking to specific user

System has basically three parts. First chat bot, second analyzing room and third is recommender system. Chat bot is based on query modeling and work like ALICE chat bot, which has ability to give answer of human chat. When user perform chat with system then system send chat in

analyzing room, where chat is process and returned different statistics about chat. Third system make cluster of these statistics with other's chat and recommend these person as person of same thinking.

This system is useful to analyze the thinking of person. A person can judge his/her thinking with this system. A person can also check whether his/her discussion is normal or not. With the help of this system a person can find other person having same thinking.

ABSTRACT

Some systems are present to judge thinking style of person, but they are based on questionnaires or hard coded question answers. My system is based on a chat bot, which communicate with user; analyses chat and make report of chat based on different parameters. Then this system save chat in data base and make cluster of this chat with other person's chat and recommend user the people who have same thinking. It is an modern automatic chatting system or a chatting bot, which will chat (in English) with human and judge his/her mental health.it will judge whether a person's thinking is negative or positive ,how a person's discussion is relevant and how this person's chat has resemblance with other normal people's chat. With this system people can analyze their thinking and can improve themselves.so in future it can modified more to make a virtual reality.

KEY WORDS

CHAT BOT, KNOWLEDGE BASE, NEGATIVITY, POSITIVITY

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INTRODUCTION

This research explored "Virtual Psychiatrist". Much research work is in process to analyze behavior and thinking of a person. Some system is present that has ability to analyze the thinking of some person. But they are based on questioners or hard coded questions. User can analyze his chatting factor by filling questionnaire or giving answer of specific question.so these traditional methods are not good and they irritate user. With these method user's psyche can effect badly.so in this research paper a chat bot based approach is use.in this system user can chat with chat bot and after chatting user can make report of his/her chat .so this method is user friendly and do not irritate user.

There are many chat bot .the advance and most popular chat bot is Elise [1].this chatting bot has ability to interact and chat with other person. Some other chat bot are also good but they are based on huge chat logs and query based knowledge base [2].Some bot are trying to answer as accurate as possible. Theses bots are based on POS (part of speech) tagging.to implement these kinds of bot; need many people to tag huge amount of chat data.

Some system is present that are working like psychiatrist. Most of them are based on questioners. Big five [3] is most famous cite, they give a questionnaire to user, after filling this, user submit it and a see report according to his answer. Some systems are also present that only base on chat bot ,that only chat with user and sometime not give appropriate answers.

However above systems are working as psychiatrist, but are not actually psychiatrists. They have some basics limitation. Big five [16] just give four option to user, so user cannot give flexible answer. He/she is bounded to answer the question in particular boundaries. User has no choice to answer these questions beside these boundaries.

This study aims to "Virtual Psychiatry". Every person wants to know himself. Nowadays society is rounded different types of mentally disorders like depression frustration etc. people have different fears in their mind. The purpose behind this research is that people explore themselves either they have positive or negative thinking.

Mental health is very necessary for a person. But unfortunately we ignore it. This research "Virtual Psychiatry" will tell people about their mental condition and thinking, either people think negative or positive.

OBJECTIVE

Following are the objective of this research.

➢ To examine human behavior in different situation.
➢ To analyze negative and positive thinking in human being.
➢ To study how people react in fear, depression, happiness and sadness with other.
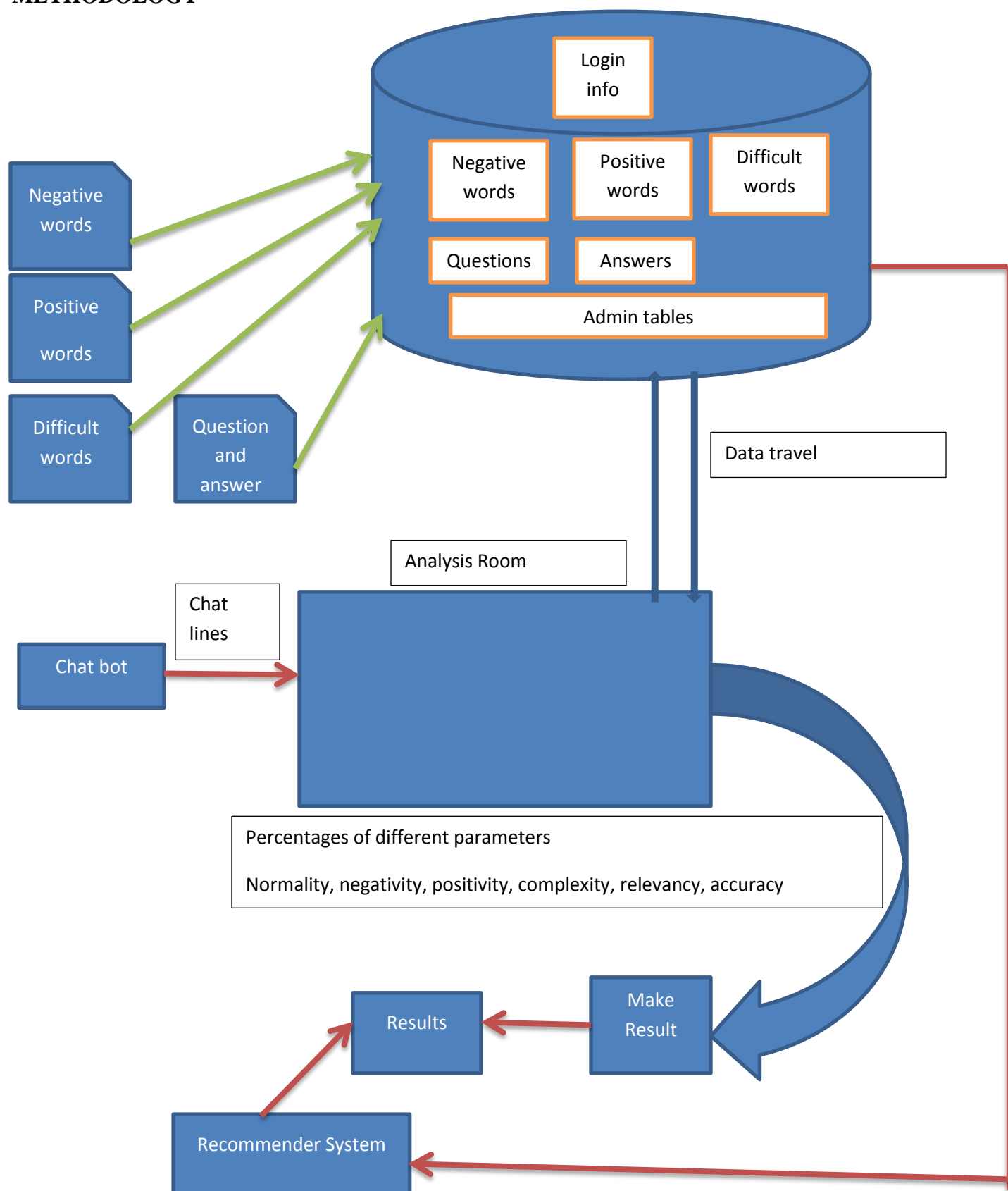
METHODOLOGY

Figure 1: main flow

This system is consisting on three parts (chat bot, chat analyzer, recommender system).

Firstly I use open source Eliza [2] code and modify it for virtual psychiatrist. Then I use normality, relativity and positivity calculation algorithm to analyze the chat, finally I use k-mean clustering algorithm to make cluster of chat of different people, so that part is work like recommender system, which recommend the user, people of same thinking.

My system algorithm are divided into three categories (chat bot, chat analyzer, recommender system), which process are describe below

CHAT BOT

Chat bot is an automatic chat system, which make response according to question

I have data with contain chat logs [4], so these logs has (key words, context and response).when some query sent to chat bot, it search appropriate keyword for it, then find its context boundaries and finally generate appropriate response for this question.

Algorithm

Following data used in chat bot

S []   - DEFINE SIGNON MESSAGE

T []   - DEFINE PAIR OF WORDS TO TRANSPOSE

E []   - DEFINE PAIR OF SENTENCES TO TRANSPOSE

N []   - RESPONSE FOR NULL ENTRY

M []   - DEFINE RESPONSE FOR LATER USE OF "MY"

X []   - DEFINE RESPONSE FOR NO KEYWORD FOUND

Z []   - DEFINE CONVERSATION TOPICS

K []   - DEFINE KEYWORD

R []   - DEFINE RESPONSE FOR PREVIOUS KEYWORD

C []   - DEFINES KEYWORD FOR REPLYING BY USING CONTEXT

A []   - DEFINES SOME SPECIFIC COMMAND OR ACTION TO BE EXECUTED

Firstly bot generate random sentence from S[] array as welcome message

For (any end condition) {

Take input from user

Make appropriate response for this input

Display results**}**

Chat analyzer

NORMALITY CALCULATION ALGORITHM:

Normality is about how someone's chat has resemblance with the chat of other people.so for this I used some modified form of (CFD) algorithm that is described below. After using CFD algorithm I just compare answer of user and answer of CFD algorithm.

Structure {

String Sentence;

Double weight;

}

 Weight =1.0/count of words in answer sentence;

  Lexicon L=<String, List<Structure>> //this is structure of lexicon

//Keyword, answer related to this keyword containing question and its weight

 [] Words=Separate the word of input question.//input Sentence which is need to test

Sentences [words.length];

For i=0 to words.Lenght {

Senatce[i]=L[words[i]];

}

Structure [] Array=addallsamesentancesandweights (sentences);

Array. Sort ();

Return total word match input sentence with Array [0]/total no of word in input sentence;

So this algorithm calculate ratio, how user chat resemble with other normal persons.

The program will calculate negativity and positivity in given chat.

Criteria to judge the negativity is following

N=0;

If (question is negative and answer is negative)

{

N=0;

}

If (question is negative and answer is Positive)

{

N=1;

}

If (question is Positive and answer is Negative)

{

N=-1 ;}

ALGORITHM TO CALCULATE NEGATIVITY

Negativity is about how a person gives answer of a question, either positive or negative. This algorithm a modified forms of "Sung-Hyon Myaeng" research paper algorithm.

Start form leaf to root :{

Calculate new polarity of each node

}

Final polarity will indicate negativity or positivity of particular sentence.

Assign polarity to words in input sentence.

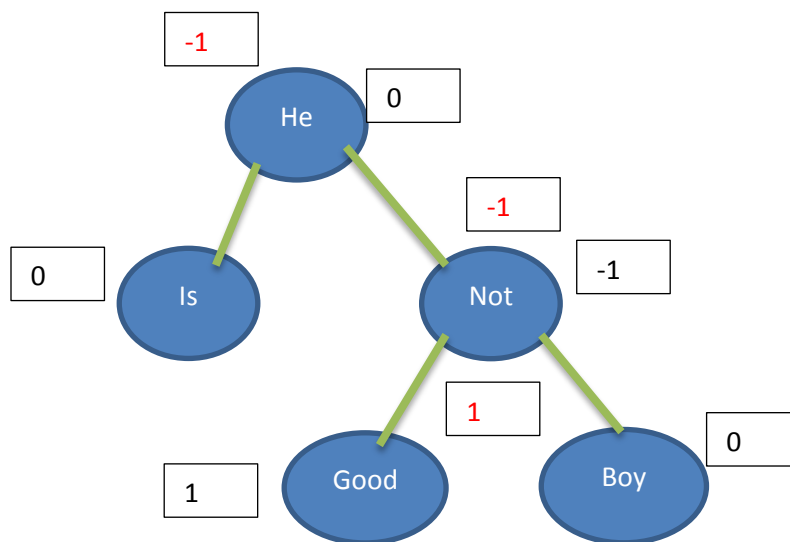e.g.

He is not good boy

P [he] =0;

P[is] =0;

P[not] =-1;

P[good] =1;

P[boy] =0;

Make tree of sentence

Figure 2. Negativity Tree

Black color shows original polarity:

Red shows calculated polarity:

Method to find calculated polarity;

If (both children are negative)

{

Calculated polarity=1;

}

If (both children are Positive)

{

Calculated polarity=1;

}

If (both children are neutral)

{

Calculated polarity=1;

}

If (one is negative and other is positive)

{

Calculated polarity=p [left child];

}

If (one is neutral and other is positive/negative)

{

Calculated polarity=p [not neutral];

}

If (one child)

{

Calculated polarity=p [child];

}

So

After this

If (original polarity!=0){

New polarity=calculated polarity *original polarity

}

Else {

New polarity=calculated polarity;

}

So in this way we can calculate that whether sentence is positive or negative.

CALCULATE COMPLEXITY:

To calculate complexity I will perform following steps

Make a dictionary which contain complex words

Find out the percentage of complex word in chat with the help of dictionary

//dictionary is an efficient method to find complex word in large list of complex/difficult words

CALCULATE RELEVANCY:

Relevancy is about how one person is giving relevant answer.

Algorithm:

POS tag the sentence (question and answers) from API [15]

Extract noun and pronoun from sentence

 Compare the noun/pronoun of question and answer

If they has relation as (direct in direct), then relevancy exist otherwise not

Return ratio of relevant and non-relevant words.

RECOMMENDER SYSTEM

When chat analyzed the chat room returns some statistics about chat.so these are stored in data base and on base of them by using k- mean clustering algorithm[6] I made a recommender system, which make cluster of people of same thinking, and show recommended person to user

RESULTS

In this section, experiment of analyzing chat is described and their results are shown hare.

To evaluate my system, I select ten person to chat with system, I log their results .then I use Big five[16] questionnaire to calculate chat factor(negativity, positivity ,normality ,relevancy)in their chat .so with the help of this exercise I compare my results with Big five.so then calculate testing errors.

Table 1. Comparison Table

Column1	Column2	Column3	Column4	Column5	Column6	Column7
			Pridicted			
Person		Negtivity	Postivity	Normality	relevancy	
p1		50	50	60	70	57.5
p2		60	40	30	79	52.25
p3		25	75	42	56	49.5
p4		45	55	90	45	58.75
p5		70	30	67	34	50.25
p6		20	80	34	56	47.5
p7		11	89	22	78	50
p8		55	45	45	90	58.75
p9		40	60	67	67	58.5
p10		30	70	90	77	66.75

*compare result with Big 5

Table 1. Actual Results Table

Column9	Column10	Column11	Column12	Column13	Column14	Column15
Actual						ERROR
Negtivity	Postivity	Normality	relevancy			
45	55	55	70	56.25		-1.25
65	35	30	79	52.25		0
33	67	42	56	49.5		0
40	60	8	45	38.25		-20.5
65	35	67	34	50.25		0
20	80	40	56	49		1.5
11	89	22	78	50		0
55	45	46	90	59		0.25
42	58	65	67	58		-0.5
30	70	90	77	66.75		0
	total error		-2.05			

*actual data sets
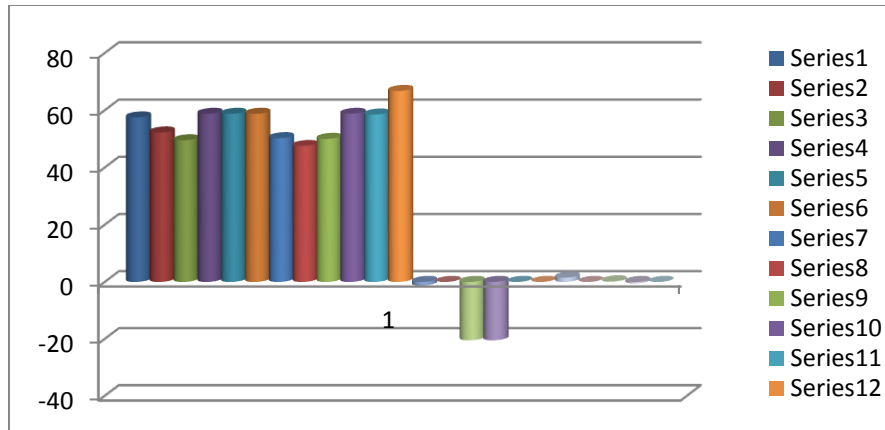
Fig 3: Relation between predicted and actual

Testing error =actual result-Predicted Result

So testing error is minimum, so is prove that we can make psychiatrist software on base of chat bot ,so this method is easy and human friendly

CONCLUSION:

In this paper, we proposed a virtual psychiatrist system, based on chat bot, this system has ability to chat with user and analyze thinking of user. For chatting purpose Eliza type bot is used and for analyzing chat different algorithms (negativity calculating algorithm, normality algorithm, and relevancy algorithm) are use in this system

So in future we can more make accurate this system and make visual effect in this, we can make this as real psychiatrist.

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