THE DESIGN OF A PSYCHOTHERAPY REMOTE INTELLIGENT SYSTEM

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ABSTRACT

Generally speaking, scientific research aims to develop humanity and makes it be better. Meanwhile, the research we did is involved within this trend because it holds a great importance as it combines many flags that occupy a high profile, such as computer science, psychology and philosophy.

Through this research, we will let the coming generations be blessed with an integrated and balanced psychological health. Besides, people in many countries suffer from psychological problems that turn them into frustrated and make them unable to engage in various activities of their countries.

Those psychological disorders make them remain silent and unable to share their concerns with others; they make them unable to talk about their psychological difficulties that prevent their integration into their communities and it is also known that psychological problems have a cure and a solution. For instance, psychological social scientists are able to edit and correct those behaviors and psychological disorders. Meanwhile, following an analysis of the field work findings, it becomes clear that the problem of citizens is reflected in the lack of courage to visit specialists in the field of psychology.

Waiting for citizens to be convinced that it's not shame to visit a psychologist, and that the doctors or psychologist advisors are just like other medicine specialists, the solution was the psychological remote therapy. Thus, to land this solution on the ground and to solve this problem, we adopted modern technological ways such as the expert system and machine learning.

Keywords: *Machine Learning; Expert System; Psychology; Awareness; Intelligent System.*

1. INTRODUCTION

Nowadays, the scientific research in the field of psychology and its relationship with technology become more dynamic. This fact, led researchers to provide products that help flourishing humanity by combining a set of fields such as medicine, psychology, sociology, education, and technological outreach. Among what it has been done in this area: providing a definition of virtual psychology as a science, that is interested in studying the behavior of virtual people, in their interactions with individuals and groups via the internet. All this was done to understand the difference and overlap between the patterns of behavior in reality and patterns of human behavior in the virtual world.

Those studies and researches have known some gaps, because they relied on some criteria that cannot be generalized to all internet users. For instance, we can mention their reliance on reading the language that was used by an individual with his fellows and peers on the network. Add to that, the skill of using the keyboard and mouse, as well as, websites that were frequently visited, keywords that were repeatedly employed and so on. Others tried to study the personality of digital individuals adopting the analysis of their personal pictures or through analyzing some of their videos. That was very beneficial to this area because all that helped to identify the emotional state of individuals (fear, anger, sadness, disgust, and surprise).

Meanwhile, all the above is considered significant and is described as a revolution in the field of digital psychology. This is because every single research helped to identify an objective understanding of the relationship between humans and computers. [1]

Back to our research, we would like to recall the fact that it was not only done to determine the emotional or psychological state of individuals [2]; however, it was done to provide advice and treatment. The importance of this research hit the depth of the communities that consider psychology as one of the taboos that can neither be talked about nor be open to. Additionally, we tried through this

research to remove the dust of ignorance that made a group of people disbelief the ability of psychology to tackle the deviant human behavior and correct it. This misunderstanding has become inherited by all the generations. The field study we did shows that 80% of the respondents displayed the willingness to visit specialists in psychology. However, the judgments of their communities prevented them from doing that. They only kept pretending that they are in good health and psychologically balanced. On the other hand, it is important to bear in mind that the World Health Organization defines health as a state of complete physical, mental, and social safety, not only an absence of disease or inability.

Hence, our research will be a quantum jump in the field of digital psychology. This research puts solutions that fit the needs of individuals relying on the availability of electronic communication devices such as computers and smart phones within a large proportion of people. In addition, the research relies on the relationship between individuals and those devices as well as their desire to receive psychological treatment gradually. This will start first from the stage of sensitization and raising awareness. After that through the strengthening of the desire that correspondents have; then their response afterwards with psychologists' virtual office; down to the programming of the personal encounter with specialists in the field of psychology and sociology.

2. TECHNOLOGY ENABLES THE ADVANCEMENT OF PSYCHOLOGY

Technology is one of the sciences that are open to a range of fields. Without it, it was difficult for physics to be more developed, for chemistry to reach this success, and for mathematics to become easy to learn and understand. In addition, because of technology, the science of statistics becomes able to analyze a set of data which was difficult to analyze by traditional methods and through the exhausting manual ways of calculation.

In fact, it is truly hard to deprive science and fields that are mixed with technology; however, what we care about now is that relationship which brought technology collectively with the field of psychology, as this relationship has not been exploited the way it should promote this crucial field.

This field, which if understood as it should, we would never see human beings struggling in a series of problems and constraints. We would not see that spread of hate and excessive love of the

self and selfishness among many individuals. Those things generated extremism and deviation in the behavior of many people, and produced a generation of terrorists who do not know the value of humans and humanity. [3]

Therefore, it becomes necessary to employ technology in order to:

a) Define psychology.
b) Realize the importance of psychology.
c) Define, who is a psychological supervisor.
d) Define, who is a psychological doctor.
e) Encourage people to psychotherapy.
f) Raise awareness that psychology is not a taboo.
g) Consider remote psychotherapy the beginning of closer psychotherapy (which means to regard visiting the virtual office as an encouragement and motivation to visit the concrete office).

In fact, technology will have an active role in the advancement and progress of philosophy in general, and psychology in particular. Meanwhile, the good understanding of this field will result in ensuring that the future generations will be more open to their surroundings and more productive.

3. DIGITAL PSYCHOLOGY

Psychology is an academic and applied study of behavior, cognition and mechanisms deduced to both. In short, psychology is the scientific study of behavior, the mind, thinking and personality.

Fig 1 : Some services provided by the system

It could be defined as "*the scientific study of the behavior of the living organisms, especially human, in order to reach an understanding of this behavior, interpret, predict and control it.*" [4]
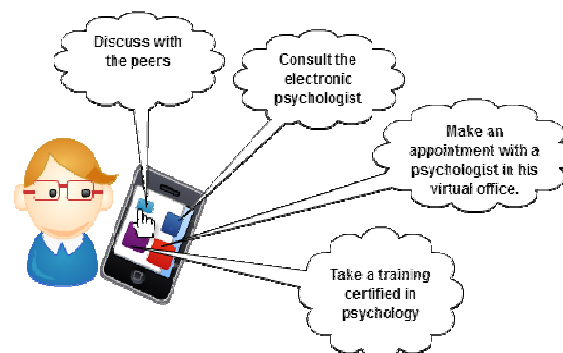
Meanwhile, the science of digital psychology aims to understand the behavior and interpret it. It aims also to predict what will be this behavior like through adopting online communication between two basic components: a psychologist on the one

hand, and the person who seeks to adjust his/her behavior and control it on the other hand.

The science of digital psychology depends mainly on distance psychological treatment. As a result of this research, it can be defined as the science that came as a way to break the barrier which separated traditional people from psychology and psychotherapy.

The science of digital psychology relies on Internet technology not only to communicate from a distance, but also to give a title to psychologists' virtual office. This virtual office will make people, wherever they are, able to benefit from telemedicine. This is because psychologists' virtual office contains a free gate to help sensitizing and raising awareness of the importance of psychology in ensuring the stability and balance with one's self and with others. (See Fig.1)

4. METHODOLOGY
4.1 Machine learning

Machine learning is one of the mechanisms that aim to analyze the data. The objective of this technology is to create knowledge in an automatic manner based on raw and initial data. [5]

This knowledge or model could be adopted and exploited in order to take decisions. Sometimes, we talk about strategies that rely on data or that derive its strength from data.

Since the model is built upon the adoption of the data, it is clear and obvious that the more high-quality data become available the more decisions that are made become more efficient, practical and of high quality.

In short, the available and obtainable data help builds the model, and the model enables taking decisions.

- **Data**

In machine learning, data are named samples. Meanwhile, those samples are most of the time in the form of a guiding power.

- **Types of learning**

In this research we want to mention the most important types of learning and they are the following: [6]
1. Supervised learning.
2. Learning under semi-supervision.
3. Learning without supervision.
4. Learning under partial supervision.
5. Enhanced learning.
6. Learning transfer.

4.2 Data collected

To collect the data, we developed a survey consisted of 10 questions and shared electronically by Google tool Forms, and also printed. [7]

The participants were limited between students of Ibn TOFAIL University in Kenitra and Abdelmalek Essaadi University in Tétuan, Morocco. (See Fig 2)
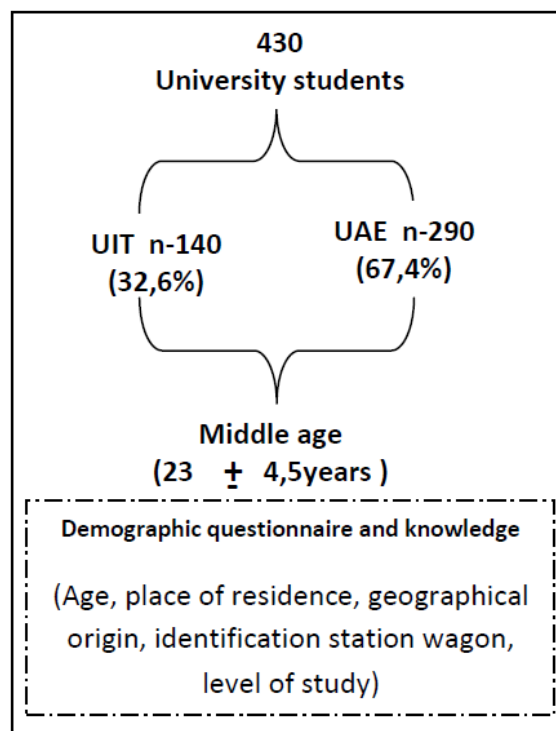

Fig 2 : Students' information

4.3 Data Analysis:

To analyze the data, we used SPSS software as the working tool, here is a summary of the results we obtained: [8]

Table 1 : Custom Cross-Tabulations Are The Most Flexible And Specialized Research Products.

		Do you think you have psychic problems? (a)		Do you have the strength of sharing them with your friends, colleagues and family? (b)		Do you think of scheduling a visit to a psychologist? (c)		Do you think that visiting a psychologist is insane? (d)	
		No	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**
Sex :	**Female**	40	200	140	100	170	70	230	10
	Male	50	140	110	80	170	20	170	20
Total		**90**	**340**	**250**	**180**	**340**	**90**	**400**	**30**

		How do you find the idea of a remote psychotherapist? (e)		**TOTAL**	Could you install a remote psychotherapist application? (f)		**TOTAL**
		Bad	**Good**		**No**	**Yes**	
Participant according to university	AE- University	10	280	**290**	30	260	**290**
	IT-University	0	140	**140**	0	140	**140**
Total		**10**	**420**	**430**	**30**	**400**	**430**

(a) For the first question we notice that the majority of students have psychological troubles because of family problems, social and emotional problems, without forgetting pressures of life (studies, work, lack of money) what entails that every person has psychological troubles with various degrees.

(b) For this question, most of the participants do not share their psychological problems, even with close people (family, colleagues, and friends), because they are afraid of the company's judgment.

(c) The majority of students refuse to visit a psychologist because of the company's judgment.

(d) In this question we notice that students who participated in the questionnaire have schizophrenia, because they said in the previous question (c), that they do not think of scheduling any visit to a psychologist, on the other hand, they said that visiting a psychologist is normal.
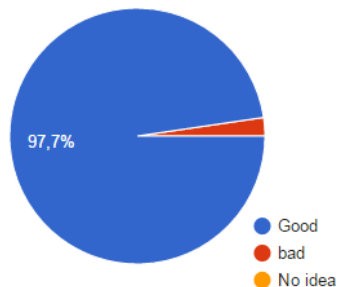

Fig 3 : Students Opinion On Our Idea Of A Remote Psychotherapist

(e) Most of the students confirmed that the remote psychotherapist was a good idea. What shows that this idea draws student's attention and you can see it from their curiosity to know the results. (See Fig 3)

(f) A total Yes confirmation was achieved from participants for this question. This shows that all the students can install an application " psychological IT " because it gives the desire to creativity.

4.4 Data discussion

While beginning with the analysis of the results of the board 1,2, we notice that 340 students suffer psychic problems, 58,8 % cannot share them with their relatives or friends and 76,7 % refuse the fact of going to visit a psychologist.

In addition, a big percentage of participants think that the one who visits a psychologist is not crazy. Meanwhile, 97,7% of the students like the idea of the remote psychotherapist and 93 % agree to install an application of the remote psychotherapist. The fact of having problems at the psychic level is normal, we meet daily conflicts in our life and we live in stress. But, several students do not admit sharing them with their close friends and relatives; it is almost a sense of shame and afterward, they decide to do not go to visit the psychologist.

We need someone to help us, talk with and find assistance. All these reasons and many of the others are valid and reasonable. Most of the time, we believe we can settle down these difficulties. We also think that time will eventually sort out things. Unfortunately, it is still not possible to find in oneself or in the circle of acquaintances the necessary resources to deal with the situation. The idea of E-psychology is really good. The majority can try to install an application on mobiles to hide depression and anxiety [9]-[10].

5. RESULT

It was demonstrated through some field research we did that characterizing information systems with the character of humanity will help increase the demand for these technologies more than ever, as well as the confidence in them, in their content and tasks assigned to them.

Human Sciences are a variety of aspects and issues that concern humans and help improve their behavior. That fact led us to improve this behavior for programmers and practitioners in the computers' professions, computer science and programming.

In general, information systems are only human's creativity and products. This information leads us to request the humanization of information systems through adding the human character on their design, and make it more compatible with the human requirements.

The design of a psychotherapy remote system

Our psychological remote treatment design relies on a set of basic components: (See Fig. 4 and 5).
- The citizen;
- The psychologist;
- The information system (Virtual Office)

In general, we can say that:
- This design aims to increase student's demand for psychology as a science, which has an effective role in correcting some of the unaccepted human behaviors.

- The information system has free tests that will help the individual to be more open to psychology.
- The information system contains a gate to ask questions and display some of the problem's students suffer from and experienced most without mentioning the real name, only by adopting a pseudonym.
- The enrolled psychologists in the program will try to answer those questions and get closer to the citizen. Later on, they will call the individual for a remote psychological treatment after gaining his/her trust.
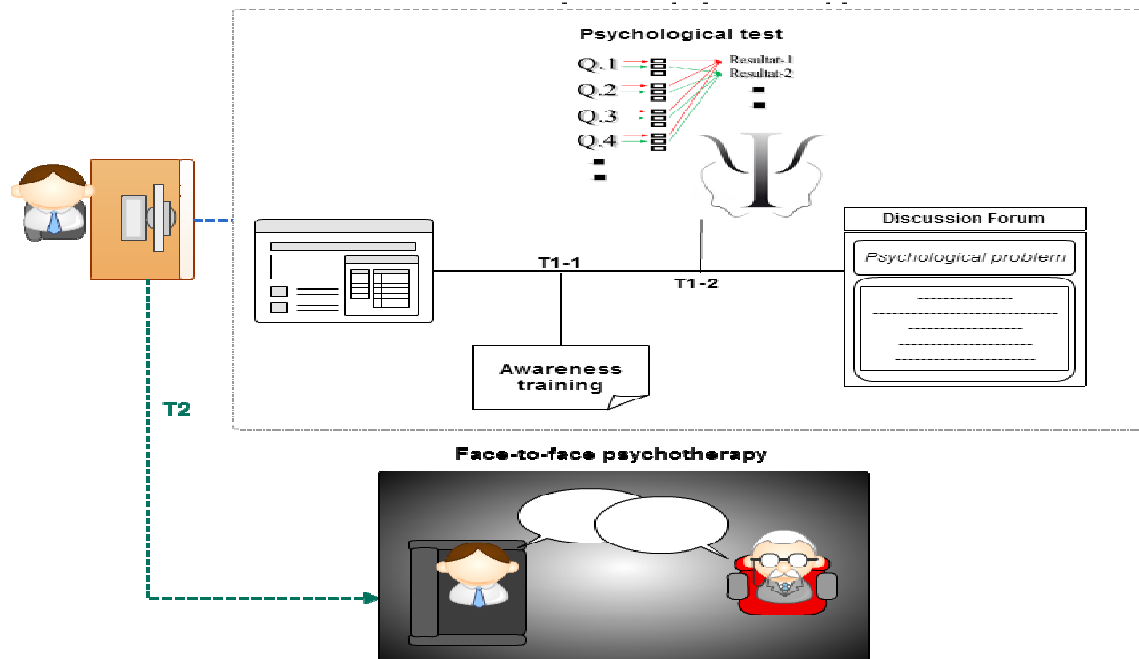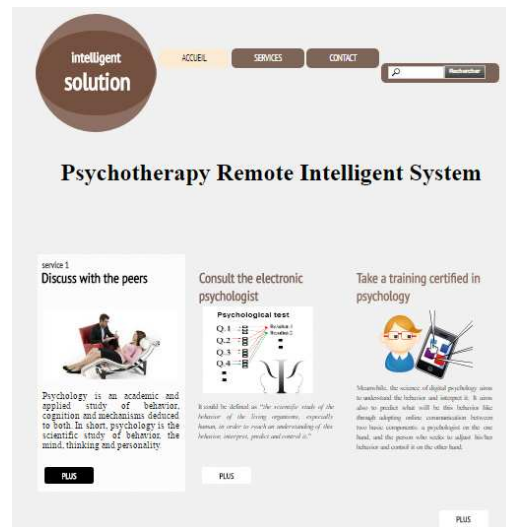

Fig 4 : Remote system of psychoterapy

Fig 5 : proposed interface for the system

- In case the relationship between the citizen and the psychologist has improved, the latter will try to invite the citizen to a meeting in a public area (coffee shop, club ...) so that the ratio of the treatment will be more effective, as the psychological treatment is mainly based on direct contact.
- The preceding step is a fundamental one to encourage citizens visit a psychologist directly without feeling so embarrassed or ashamed, or even the fear to be seen by someone of their fellows.

6. CONCLUSION

Through data collection from various components of the Arab community (Yemen, Libya, Sudan, Chad, Mauritania, Tunisia, Iraq, Jordan, Algeria, and mostly Morocco), and through the analysis and discussion of the data, it becomes clear that the Arab societies are in desperate need of sensitization and awareness in the field of psychology, which many consider as a mythical science that concerns only mentally disordered people.

Meanwhile, activating the work by the remote psychotherapy program on the one hand, sensitization and awareness on the other hand, will be the key to avoid extremism and isolation which plenty of people suffer from. Particularly, the program will avoid the spread of extremist thoughts, the increase of unemployment rate and frustration. More importantly, this program will help ensure generations to come with much more awareness and consciousness of psychology's role in life.

In general, recommendations that we will work on, involve the activation of the program and making it in the form of software that will be always accompanied by its owner. The software will be converted to an application which will be downloaded on smart-phones. It will be also equipped with information and tests which will be accessible off-line without the presence of the Internet.

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