Computing of Personality Inference in The Muslim World

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Abstract

With the rise of Computer Science and the Internet, in particular, the Muslim world has shifted its dynamics on an industrial scale. Whether its alternative interpretations of Islam or questions about it, the Internet has been as all new medium to reach the masses. On the other hand, social intelligence has always been considered vital for understanding and managing soft-biometric traits of a person we are communicating.So what actually is social intelligence? Although it has always been a mystery to understand how humans interact with each other and explore the world in a global era. Learning ability, perceiving ability and adaptation to a new environment are usually linked with intelligence. The ongoing research in cognitive science has increased our understanding of intelligence. According to research, it has been clarified that it is not one or two factors that are responsible for intelligence but rather there is a range of abilities to determine social intelligence.

KEY WORDS**:** *Internet, Personality, Communication, Compute, Muslims, Image Preferences.*

Introduction

This article shows how the circumstances have changed in the Muslim world since the emergence of the internet and computer science. The ways of delivering and preaching Islamic perspectives are moulding according to the technology of the modern world.The next-generation computing can become more efficient and effective; the need is to include the ability to recognize human personality factors like extraversion, neuroticism conscientiousness, openness and agreeableness etc. Current computing devices do not account for the fact that human-human and/or human-computer interaction is a huge source of information about the personal identity, it is a hybrid type of communication in which information is delivered through different channels.Research is moving increasingly taking into account the importance of inferring personality traits of users who use a particular application (i.e. social networking sites, social media, video games, voice communication device, chat or video-chat, etc.).Computer systems and devices capable of sensing personality traits of a person and capable of adapting and responding to these factors in an effective, un-intrusive, or persuasive manner are likely to be perceived as more natural and trustworthy. For example, some personality traits (Extraversion, agreeableness and openness to experience) are known to increase user profiles in recommender systems, tutoring systems and intelligent e-commerce in globalization. The purpose of these user profiles in each area is different according to their usage.[1]

To better understand the role of the user profile in intelligent tutoring systems; let's assume an example of intelligent tutoring systems where student model or user profiles are used to guiding students in their learning process through different learning styles. Moreover, personality characteristics of student are of great help in the above process. [2] Another example is the e-commerce applications where user profiles are used for personalized offers. In this kind of system, customers are offered with products that are likely to be liked by them.[3] Another interesting example is the recommender systems where user profiles have ratings for different things like news, movies and books. In this kind of system, products are recommended to the user according to his/her interests. This recommendation is also given to users who have similar interests or tastes.[4]

This survey is planned to shed light on the previous research and efforts that have been done to solve these problems using computer (inferring personality traits) in different contexts, it wants to summarize the relevant findings in social psychology, and it wants to propose a set of recommendations for enabling the development of the next generation of computing aware of the human personality.

The rise of the Internet and Computer Science in the Muslim World

The development of the globally interconnected computer networking system, commonly referred to as the Internet. It has transformed communication and changed the societies, economies and privacy of billions people. While the use of Internet, is not much but considering the developed countries we can say, dependents on the financial situation of its users. The affordability of acomputer or a smart device with its connection, understanding of English language to some extent and technological capabilities.In the Middle East and other so-called third world countries, and although more and more religious leaders are beginning to use satellite televisions the internet to impart religious doctrines. However, modern media is presenting its role like a sword with double edged that can bring both pain and prosperity. For example, political regimes find it more difficult to control social media and leaders find it more difficult to control and block the views on different political and sensitive religious issues. However, when users use websites maintained, promoted and offered by political and religious elites, the Internet can be a tool to maintain the dominant system.

With regard to research on Islam and the Internet, it is clear that individuals and groups who have focused on their "Muslimness" are among the first to use new media. According to a study by John W. Anderson in Anderson and Eickelmannin 2003, this is due to the fact that Muslim students visiting the United States were enrolled in technology programs that would become leading chairs in Internet development and promotion. According to Roy 2004 and Uprising 2009, people of different religious, linguistic, political and ethnic backgrounds use the Internet to discuss issues of Muslims and Islam, as well as for contentious or apologetic reasons. An increasing number of Muslim scholars and respected Islamic institutions (e.g. Al-Azhar Sunni Muslim University in the Egyptian capital of Cairo) are also using satellite television and the Internet to broadcast their

interpretations of Islam (e.g. Petersen-Skovgaard2004, which examines the use of new media by Egyptian theologian Yusuf al-Qaradawi). It has also become more important to reach Western Muslims, i.e. persons of Muslim cultural origin residing in the United States of America or Europe. The transnational dimension has also been noted in a number of studies, such as Mandeville 2001, which directly or indirectly addresses issues of the Internet, Islam, and Muslims. The Internet provided new dimensions to explore and seek relative elucidationson Islam or questions about Islam (e.g. after a fatwa), but it could be seen as anissue for religious scholars/seminiriesor political leaders, as the Internet is a place with many different groups, from sexual orientation to different political and sociopolitical trends. The tension and complexity of modern media are highlighted in the works of Anderson and Eikelmann2003, Pinknerand Brückner2009 and Larsson 2006, which deal with Islam, the Internet and new media in the local and global context. It is also clear that more and more Muslim scholars like the popular Egyptian secular preacher Amr Khaled are using the Internet to endorse their preciseexplanation of Islam.[5]

Biometric Traits and Personality Factors: ATaxonomy

Social interaction is not just words but it is the interaction between humans or between human and computers. For many years, social psychologists have studied the impact of non-verbal communication where people understand people of different language through television. The reason for this is to understand the social cues such as interaction atmosphere (either relaxed or tense). Thus, non-verbal behaviour can help to understand others feelings, personality, mentality and traits.Behavioural cue is the temporal changes in physiological activity and neuromuscular activity (usually for short terms). This is in contrast to the behaviour such as empathy and politeness that last for longer periods. It can be said that to understand social interaction, the non-verbal social signals are an important source.[6] In this paper, highly important behavioural cues and their impact on socialbehaviour will be discussed.

Moreover, the synopsis of each behavioural cue has been detailed as follows:

1. Physical appearance

Both natural and artificial characteristics are included in physical appearances. The natural characteristics include body shape, skin

colour, height, hair colour and artificial characteristics include ornaments, dressing, makeover and other accessories that are used to enhance physical appearance. Physical appearance is linked with the attractiveness where attractiveness produces a halo effect which means beautiful things are good. People with good physical appearances are considered attractive and thus, these physical characteristics influence social interactions. According to a survey, tall people have been regarded as attractive. In that survey, it was found that the average height of American CEOs was 7.5 cm higher than other people.[7]

There are various somatotypes about personality traits. Endomorphic people (fat, round, soft) are known as talkative and dependent people.Mesomorphic people (athletics, bony and muscular) are known as independent and mature people. Similarly, ectomorphic people (tall, fragile and thin) are known as nervous, tense and pessimistic people. Although these are not related toreality but hasan impact on social perception.[8]

2. Gesture and posture

Gestures and posture are often related to emotions and feelings. For example, it has been studied that body postures are related to emotions. Similarly, in another study, it has been studied that expressions and feelings are related to body postures and gestures.Some gestures like face touching, posture change and head inclination are related to embarrassment and shame.[9] Some gestures illustrate specific meaning such as thumbs up gesture and some are performed unconsciously which are considered important from SSP point of view. These gestures provide information about the actual personality of the person. Similarly, postures are also important while understanding people.[10] There are criteria's including inclusive and non-inclusive where non-inclusive means facing the opposite direction to others. The other type of interaction is face-face or body orientation where direct interaction is among individuals. Another type of criteria is congruence and incongruence. Postures also includemovements and walking style that shows social information.

3. Vocal behaviour

Vocal non-verbal behaviour is about the spoken cues including verbal messages and its effect. This has five points to be considered such as linguistics, voice quality, non-linguistics, silences and turn taking. all of these are related to the social perception of messages.

Linguistics include non-words such as ah, ehm etc. Voice quality is about energy and pitch of the person.The non-linguistic are the sounds such as sobbing, laughing crying etc.According to psychology research, it has been said that listeners can decode emotions through vocalbehaviour.[11] Silence is about non-speech behaviour where the emotions of others can be understood. Another example of vocal behaviour is the turn-taking which includes regulation and coordination during conversations.[12]

4. Writing behaviour

Writing behaviour is linked tothe personality of the individual. There have been various studies on the influence of writing on the behaviour of people. Among these, one study has provided information about blog writing and ideas expressed. There are various people who are expressing themselves through their texts. Li and Chignell have investigated the personality influence on writing style. They evaluated persons by making two experiments for writing blogs. Readers were able to easily identify the personality of writers by reading the texts they wrote. Readers were more attracted to writers with similar personalities.[13] Another study found the accuracy of personality based on creative writing using lens model analysis. This study revealed that observers judged the big five and general knowledge, the judgment of agreeableness, general knowledge and openness to experience was accurate and these accuracies were achieved using valid cues.[14]

5. Aesthetic preferences and social media use:

Aesthetic preferences can describe one's personality. For this purpose, images available on social media have become a source to understand the preferences of individuals. There have been various studies to explain the personality influence on aesthetic preferences. According to John Ruskin's 19th-century adage, it has been suggested that personal taste is the process of interpreting one's personality through their life experience. In one study, users were given different images from Flickr, LASSO regression was implemented to distinctive ones. These aspects were about what we like and what makes us different from others. According to this study, through images, user preference can easily be matched.[15] Lovato and colleagues in another study have modelled user image preferences. They used a different approach where the raw properties of images extracted using heterogeneous feature descriptors were used. This was done using a

counting grid model that makes 2D map based on content and aesthetics of themes in an unsupervised way. According to their research, users' preferences can be shown on a map that allows evaluatingthe affinity of different users.[16]

The state of the art

There are a few sub problems related to machine analysis of human personality.

- Collecting the Dataset (recording a scene, or collecting textual data or images)
- Detecting objects of interest (people in the scene, or from images)
- Extracting audio or visual behavioural cues called soft-biometrics.
- Understanding the context in which the data is collected (for example a social network).

These four subproblems are described as follows:

1. Dataset Collection

Dataset collection or capture is about the sensors that are used to record the social interaction in the real world. The sensor choice determines the SSP process such as if it is needed to record gaze expression then proper detectors should be there. Microphones and cameras are widely used to capture simple oral presentations. More sophisticated systems are used to record smart meeting rooms with many audio and video channels.[17] Human natural behaviour recording is very difficult problems and various studies are being focused to understand and tackle the problems.

2. People Detection

Behavioural cues are extracted from the signals transmitted from sensors recording data. These signals are separated such as invasive devices connected with individuals record physiological signals and these signals are related to a particular person.In the case of person audio detection, it is known as speaker diarisation. Speaker diarisation is important and it has three phases. At the first stage, data is segmented into speech and non-speech data. The second stage is the detection of speaker transition where speech is split into segments and short intervals. Finally, atthe third stage, data is clustered where

segments are grouped according to particular voice using the iterative approach. Recent approaches are a single framework using a hidden Markov model or dynamic Bayesian networks. People can be detected through video data having faces or full human figures. Face detection is important in expression analysis.[18]

3. Social signal detection

After detecting people, the next step is to extract behavioural cues. These cues are based on audio or video signals. To extract behavioural cues, signals can be extracted from physical appearances. Few studies have been conducted to measure the beauty of the faces through determining symmetry and proportions of faces.[19] Few studies have also used 3D models to determine beauty. Another way to determine social signal is from gestures and postures where gestures are studied using pattern recognition approaches. There are two challenges in gesture detection, one is modelling of gesture which is dealt with dynamic time wrapping, Hidden Markov model etcand other is detecting body part doing gesture which is dealt with histograms oriented gradients, optical flow etc.[20] Another way is to detect social signals through face and gaze but this has few problems including face finding, facial feature extraction, eyes motion analysis and interpreting face behaviour.

4. Context sensing and understanding of social behaviour:

In understanding human behaviour, context plays an important role as the situation in which particular behavioural cues have been taken is crucial. The W4 (where, what, when, who) deals only with apparent context but W5+ (where, what, when, who, why, how) is important in understanding human behaviour as these are related to understandingthe intention of communication. There should be researches in future to deal with context-based situation analysis for longer intervals.[21]

Main Applications of Inference of Personality

Inference of personality is important to understand human behavioural cues and for this purpose, there have been various approaches especially the social signal processing. These social signals have been studied by various groups to determine hiring views, salary negotiations and conversations. These studies included vocal signals, influence, consistency and mimicry. There are studies in which cellular phones have been used with proximity sensors and detectors able to

detect vocal activity. The application of this leads to eigenbehaviours. Interactions among small groups have been studied where dominant persons and collective actions were recognized. In this kind of approach, several non-verbal approaches are combined with body movement, speaking energy and identification of moments to find the dominant persons. In such cases,the information is extracted using dynamic Bayesian networks or Hidden Markov models.[22] Performance of human and machines have been compared by various psychologists who detected social factors such as movements, gender and emotions. According to the results, machines were more consistent in their results even in different conditions thus, suggesting that they have more tendencies to provide consistent information rather thana human who sometimes depend on task-specific behavioural cues.[23]

Conclusions

On the contrary, the internet and computer science have been influential in the Muslim world, right after its birth in our modern world. Different Islamic institutions and preachers have been using these mediums to spread their understandings and interpretations of Islam. On the other side of the story, social intelligence primarily involves social signal processing in computers. Research studies related to this have opened a new dimension where understanding human behavioural cues have become easy and advanced in Globalization. Although this is a fascinating research area still there are few challenges that are being faced related to this.The first issue is to use real-world data by psychologists and engineers. Secondly, there is a tightening of collaboration seen which should be minimized. Thirdly, there is a strong need to implement multi-cue approaches to SSP. Another challenge is to identify an application that can be used for SSP. The overall research can improve if there are more collaborative efforts among scientists, engineers and psychologists.

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