Personality Prediction Using Profile Pictures

[1] Angeeta Naik, [2] Kavita Asnani
[1] [2] Department of Computer Engineering, Goa College of Engineering
Farmagudi, Ponda, Goa-India

Abstract: - **In today's world usage of social media is being widely increasing among users for their communication and self-presentation. This has also lead to growth in the social media platforms. Finding different user attributes from social media activities is research topic. Various shared information by the user on the social media can be used in predicting the behavior of the user. This information further can be used in personalization and recommender systems. Image uploading by a social media user gives him an opportunity to present himself before the social media audience. In this study, analysis of profile picture choice of the user is used to infer the personality traits of the user.**

Keywords: **Big-Five model, Emotion, Personality, Profile Pictures.**

I. INTRODUCTION

Social media in recent years has become an important and popular means for information exchange and social interactions. Over millions of people create and share enormous information on social media at a continuous rate per second of time. Social media data available online is enormous and users tend to share their information through self-description, videos, photos, status updates etc. This information reveals users personality and their needs. Thus, this allows us to find the characteristics of user's personality. In psychology, personality is said to be a set of emotional, attitudinal, and behavioral response patterns of an individual. There are five major human personality characteristics known as the "Big Five" [1][8]. They are namely Openness, Conscientiousness, Extroversion, Agreeableness and Neuroticism (OCEAN). Openness is about being curious, imaginative, artistic, executable, and unconventional. Conscientiousness is defined by being organized, thorough, efficient and achievement-oriented. Extraversion is being social, energetic, adventurous, outgoing, and enthusiastic. Agreeableness refers to being straightforward, warm, sympathetic, and cooperative towards others. Neuroticism refers to be shy, moody, irritable, and tense. An individual can have high or low symptoms of these traits together. Personality for analysis is quite a research topic. It can be correlated to many of the real world examples like the music taste. Extrovert people like rock music while people with openness tend to listen to classical music [7]. The choice of profile image posted by the user online is their self-representation towards their audience. Also, users can post images that do not stand for them.

II. LITERATURE SURVEY

A. Personality

In the domain of psychology, personality is the most popular and common topic of research. Personality accounts for various individual differences within people. People on very large, use social media platforms like Facebook, Instagram, Twitter etc. to share their views, suggestions and express themselves to their friends and interested people on social media.

The personality of an individual can vary with respect to time. Many researchers have studied the personality of the online user. Teresa Correa found that there is an interaction between social media and the user's personality [2] where extraversion and openness people had positive predictors while neuroticism had negative predictors. For predicting one's personality from profile pictures, the common focused thing is the facial expressions. Celli found that personality can be extracted using the content of Facebook profile pictures [6].

Personality trait prediction relies on the "Big Five" model which comprises of five broad traits: Openness, Conscientious, Extroversion, Agreeableness, and Neuroticism. The traits are described as follows:

Traits	Representative Attributes
Openness	Imaginative, Unconventional, Curious, Executable
Conscientiousness	Responsible, Thorough, Organized, Reliable
Extraversion	Talkative, Social, Energetic, Active
Agreeableness	Kind, Forgiving, Warm, Sympathetic
Neuroticism	Tense, Unstable, Irritable, Anxious

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In psychology domain, these traits can be of high or low or in combination with each other in an individual.

B. Visual Personality

Social media users post many images online such as profile pictures that are self-selected. Although they can post other images, the study of profile pictures gives a very bright significance on finding the personality of the user. Usually, the prediction of the personality of a user is a person himself or the face.

By uploading images on social media, users try to express themselves to their audience. This provides a way to infer the personality traits of a user based on image semantics. Image semantics can be categorized into person identification, event semantics, concept semantics and location semantics.

III. RELATED WORK

Profile Pictures

Profile pictures are being associated with people, that is, they are digital objects which are posted online by the user to self-present himself before his audience [9]. They are like messages to the audience that says about how the user experiences his life [9].

A. Color

Colors give a wide judgment of personality of a user. They drive out the attractiveness of images posted. They relate the emotions and mood of the person. Research has shown that colors of an image are related to the traits of psychology [3]. The brightness, saturation, contrast are related to colors which give an attractiveness to the picture.

B. Facial expressions

The most important thing which describes one's personality of the user is his face. Face provides information about age, gender, and attractiveness. This also relates to how the user presents himself before his audience. The most prominent face emotions are anger, disgust, fear, joy, sadness, and surprise. The six emotions can be categorized into positive (joy and surprise) and negative (anger, disgust, fear, and sadness).

Detecting and recognizing a face from the image is a quite interesting topic. A small change in the facial expression is easily recognized by people [4]. This is mostly because specific parts of the human brain can easily recognize the facial emotions [5]. Identification of user's face from images by computer technology is called as face detection. It also finds how many faces are present in the image. Detection of face begins with eyes detection, nose detection etc. Thus, facial expressions of individuals describe their personality.

IV. BIG FIVE MODEL AND PROFILE PICTURES

The personality of an individual can vary depending on situations and thus labels have to be provided to traits [10]. Thus the Big-Five model or the Five Factor model is used in recognizing the personality of an individual.

Many research shows that Big-Five model is the best and effective standard to find personality [10]. This model consists of five traits, namely "OCEAN": Openness, Conscientious, Extroversion, Agreeableness and Neuroticism.

A. Openness

Users of this trait post profile images that are other than the face. They prefer to post images that have drawings in it such as artwork or decorations [8]. Also, they post fewer images containing people. People with high openness tend to have increased sharpness, saturation, contrast and less blur and less colorful pictures. People with low openness tend to prefer images of games and sports. This trait user has more intellectual virtues such as people wearing reading glasses [11]. Photos are high in negative emotions especially anger, and lower in smile positive emotions valence.

B. Conscientiousness

This trait is mainly associated with expected behavior that is posting images of themselves especially having only one face, other than objects. They are self-discipline and have planned reactions [8]. They do not prefer grayscale images but prefer more colorful and natural ones. Facial expressions are symptomatic of conscientious users. They are high in smiling and positive mood and also with a negative mood like disgust and fear. They express most of the emotions across all five traits.

C. Extraversion

Extraversion people are mostly related to the outside world. They are highest among all five traits in posting images with colors and lack in a blur. Extroverts users prefer to post images with a high number of people. They are associated with not displaying reading glasses but use sunglasses [11].

D. Agreeableness

This kind of trait people likes to post images in which they are present. Like extroverts, they like colorful pictures but which are low blurry and bright [8]. This shows that they do not have most aesthetical pleasing. Their images show aspect of good life like pets, travels or food. Facial expressions are with smiling and joy with positive and low in all negative emotions.

E. Neuroticism

Neuroticism people have negative emotions. They are mostly opposite of extraversion and agreeableness.

Photos posted by them are not colorful. They like to post objects rather than faces. If the face is present they tend to display reading glasses and are significantly larger [11]. The lack of emotion characterizes their profile pictures.

V. CONCLUSION

In this paper, we study the correlation between the social media profile pictures of a user with the Big-Five personality traits. For this, we used the facial features. We concluded that each user with one of the personality traits posts a specific type of profile pictures. Extrovert and agreeable users mostly post colorful and positive mood expressions. Neuroticism and openness users post pictures containing fewer people or self-images and mostly express a negative mood. Conscientiousness users post what exactly is needed for profile picture that is a self-face picture and have a positive mood.

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