



# Personality Prediction Via Social Media User Using Recurrent Neural Network

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**Abstract:** The Personality is vital since it recognizes individuals from one another Field of personality prediction research is still being studied. Since it does away with the requirement for user-filled surveys, saving time and increasing trust, the use of social data from the media for personality presumption shows promise. Utilization of social media has expanded each day. Large volumes of content and pictures are continuously added to the internet. The work now focuses on using Naive Bayes machine learning and decision trees on the standard Face book dataset.

**Index Terms** – Machine Learning, Facebook, Personality detection, sentiment analysis, Recurrent Neural Network

## I. INTRODUCTION

The prevalence of social networks has led to significant changes in people's social interactions, influencing individual exchanges, communication, and participation. On one hand, individuals use these platforms to connect with friends, comment on various topics, and engage in public discussions. Conversely, the influence of social networks on our daily lives is expanding, significantly impacting our offline social connections. As social network interactions are readily documented, gathered, and subject to analysis, the field of social computing has emerged as a pivotal area of study within information technology and computer science. Given the strong interconnection between a person's behaviour and their nature, the prediction of personality traits has garnered notable academic attention and found practical utility. Consequently, leveraging social network data to infer users' personality traits has become a central focus for both industry and researchers.

Personality is a broad abstraction of the various characteristics that define an individual. Even within the same social environment, different people exhibit distinct behaviours, stemming from their unique personalities. Personality psychology is a field of study that aims to discern an individual's intrinsic traits primarily through their observable behaviours, in order to explore the connections between these traits and their behaviours.

In essence, personality traits are often used in psychology to define an individual's character and to explain their behaviour and preferences. Understanding and predicting these traits through social network data can provide valuable insights and applications in various fields.

## II. LITERATURE REVIEW

In Big Five Factor Model personality types can be calculated from users' profile pictures. To evaluate the performance, two models using CNN were prepared to identify individual users. Performance assessment was performed on two different models to effectively predict behaviour from profile images. [1].

This paper presents a new prediction method that uses several deep learning models along with several pre-trained languages as a procedure for social media content extraction. In the end, the system reaches a decision by considering the collective model and generates a forecast [2].

Self-prediction is accepted today. It learns the user's behaviour and detects the user's thoughts, feelings, etc. shows. Traditional analysis methods are time-consuming and require automatic estimation for many users. Client are powerful and can have their own accounts on many platforms because they can have data in many contexts [3].

In this paper, we try to examine the studies carried out by predicting social media users. has been using data obtained from digital footprints over the last decade. Additionally, we discuss various systems and deep algorithms, datasets, behavioural tests, and applications for automatic self-diagnosis[4].

There are numerous investigate articles on client conduct in social systems have pulled in the consideration of analysts around the world in later a long time. Personality acknowledgment is examined through two fundamental disciplines: factual investigation and social investigation. from the field of computational phonetics [5]

Pennebaker and King 1999 [6]. wrote a speech function for character extraction from text. They examined articles from a variety of sources, including journals, university papers, and psychology journals, to learn about the personality traits of the instructs. The results showed that extroverts tended to use a lot of letters, while introverts and non-extroverts tended to use more words to express the difference. Neurotic patients use more negative words

Agamon et al. In 2005, [7] classified neuroticism and extraversion using concepts such as functional language, decision-making and evaluation language, and modal language.

The findings suggest that neuroticism is linked to engagement in tasks involving lexical elements, like lexical categorization tests, although the relationship between extraversion and such tasks remains less definitive

Other curriculum have linked neuroticism to negative assumption or negative resolutions toward personal happiness.[8] Oberlander and Newson 2006 used the negative Bayesian prediction model as the bloggers' learning algorithm. 'Extraversion uses many groups and is classified as traits of sexuality, security, agreeableness and desire. .

Myers et al. In 2007 [9] we used LIWC and RMC as factors to examine the relationship between five main characteristics. LIWC features involve a single word, such as feeling positive or angry, while RMC features include the age-related effects of each word or image. The personality type of the Big Five Factor Model can be calculated based on the user's profile picture. To evaluate the effectiveness, two models were prepared using a neural network to analyse each action of the user. Performance evaluation of two different models for predicting personality traits from profile pictures

### III. . METHODS AND MATERIAL

Re f	Technique s	Outcome	Evaluation
[2]	Regression n analysis	Facebook users Personality prediction	Accuracy : Above 70
[3]	Multiple ML algorithm survey	Personality identification	Accuracy : Above 75
[4]	LSTM	Twitter users Personality prediction	Accuracy : Above 80

### IV. PROPOSED SYSTEM ARCHITECTURE

Previous We mine social information and studies, centring on the utilize of users' data to foresee their conduct. We utilize relationship investigation and Foremost component investigation to choose user information and after that utilize machine learning, prescient models, and execution models to foresee and analyse the comes about.

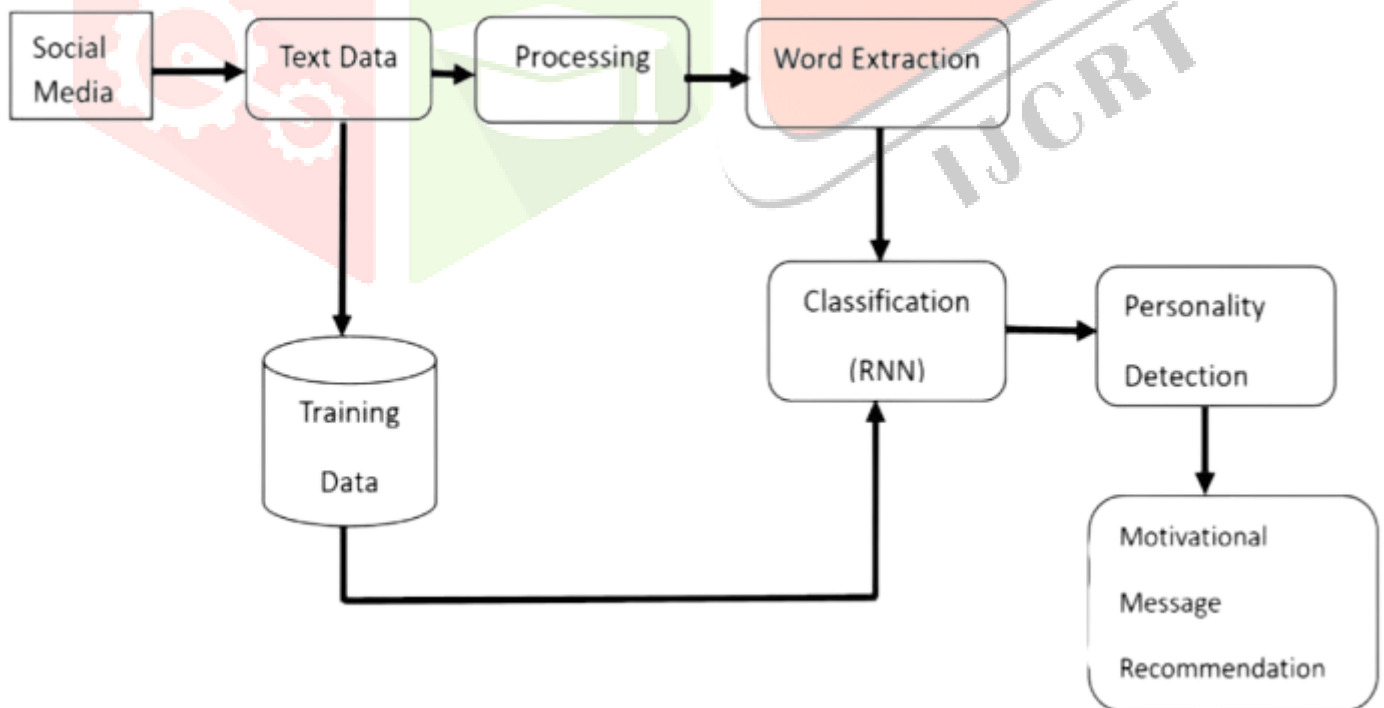


Fig. System Architecture

## 1. RNN :

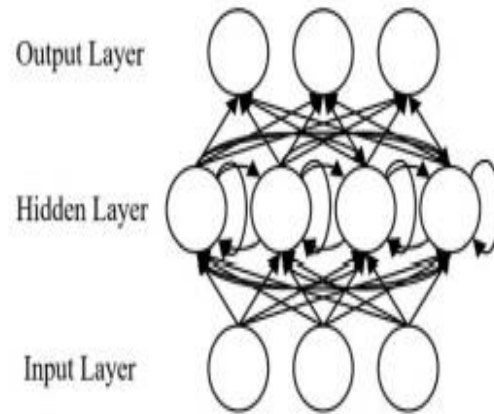


Fig. RNN

In the given illustration, we consider an input sequence for an RNN, denoted as a string of length  $T$ , where  $x = \{x_1, x_2, \dots, x_T\}$ , and each  $x_t$  represents a symbol vector. At each time step  $t$ , the current hidden layer state  $h_t$  is computed based on the previous hidden state  $h_{t-1}$  and the input vector  $x_t$  using the following formula:

$$h_t = \sigma_h (w_h x_t + U_h h_{(t-1)} + b_h)$$

$$y_t = \sigma_y (w_y h_t + b_y)$$

where  $W_h$  and  $W_y$  represent the weight matrix from the hidden and hidden output,  $U_h$  is the weight matrix layer of the covered up layer and itself. The two adjoining times,  $b_h$  and  $b_y$ , are variables and  $\sigma_h$  and  $\sigma_y$  represent the function.

Ideas are always presented as a feed-forward model and learning rules are then applied. Backlinking means that the unit always stores a copy of the hidden unit's previous values (since these were exposed by the link before using the learning code). As a result, the network can control the state that allows the multilayer process to perform tasks such as prediction passing through its resources.

Equation for calculating current state:

$$h_t = \int \text{[}(h_{(t-1)}, x_t)\text{]}$$

Where,

$h_t$  -> Current state

$h_{(t-1)}$  -> Previous state

$x_t$  -> Input state

Formula for using Activation function:

$$h_t = \text{activation}(W_{hh} h_{(t-1)} + w_{xh} x_t)$$

Where,

$W_{hh}$  -> Weight of recurrent neuron

$w_{xh}$  -> Weight of input neuron

Formula for calculating output:

$$y_t = w_{hy} h_t$$

$y_t$  -> Output

$w_{hy}$  -> Weight at output layer

## V. CONCLUSION

In this article, we offer an outline of data from social and individual brain research investigate. This study delves into the literature concerning the utilization of social media platforms as tools for understanding human behaviour by examining the link between users' character and their online social interactions. To anticipate client behaviour, we made a comparison of Facebook's best behavioural measurements that utilize the same strategies to capture client intelligent, communications, and associations.

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