

Personality Predictive Analysis Based on Artificial Neural Network

Zuriani Mustaffa
Faculty of Computing
Universiti Malaysia Pahang
26600 Pekan, Pahang, Malaysia
zuriani@ump.edu.my

Nur Alia Shahira Mohd Zaidi
Faculty of Computing
Universiti Malaysia Pahang
26600 Pekan, Pahang, Malaysia
nuraliaa.zaidi@gmail.com

Ferda Ernawan
Faculty of Computing
Universiti Malaysia Pahang
26600 Pekan, Pahang, Malaysia
ferda@ump.edu.my

Haithm Elhadi
Faculty of Computer Science & Information Technology
Jazan University
Jazan, Saudi Arabia
helhadi@jazanu.edu.sa

Muhammad Malik Hakim
Faculty of Science and Mathematics
Universitas Diponegoro,
Semarang, Indonesia
malik@live.undip.ac.id

Abstract—Individual personality is a vital criterion in a human life as well as in a development of an organization. Every individual holds a different personality type with various characteristics in terms of thinking, feeling, and behaving. Due to that matter, analyzing human personality should be done carefully which can be challenging and time consuming. Therefore, this study presents a personality prediction model based on Artificial Neural Network (ANN). The prediction was realized on the Big Five personality model. The dataset consists of 709 rows and retrieved from open-source website called Kaggle. For training, validation and testing phases, the dataset was divided into 70:15:15 respectively. Findings of the study demonstrated the capability of ANN in producing better accuracy compared to three identified algorithms which includes Naïve Bayes, ZeroR and Random Forest.

Keywords—Artificial Neural Network, Big Five Personality, Personality prediction

I. INTRODUCTION

A fresh graduate who possesses an impressive personality would be a great advantage to being qualified in working field. In the past few years, numbers of fresh graduates' rates have gradually risen. As in 2020, 5.36 millions of employed and unemployed graduated are recorded [1]. The assessment on potential candidates' skills and requirement, characteristic traits, and interpersonal skill which will be done during screening stage are critical for both parties, either to the potential candidates or the hiring manager. When a shortlisted candidate is called for an interview session, one of the important criteria that the interviewee will judge is the candidate's personality. The interpersonal skills and personality are typically evaluated during interview stage where the behaviour of the candidates was observed and evaluated by them. This task is clearly vital and challenging, which can be time consuming.

Personality traits defined as person characteristic pattern of thinking, affection and behaviours that signify consistency and stability which it is the idea that any individual is dissimilar from one another on a set of basic traits dimension persist over time and across situations [2]. There are many personality assessments available online

like Myers-Briggs Type Indicator (MBTI) [3], Minnesota Multiphasic personality Inventory (MMPI) [4], Big Five Personality [5], and more.

The most widely used to measure personality traits in career development is Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism (OCEAN) [6]. These traits, which are universal, are also termed the Big Five personality traits. This model is divided into various aspect for more detailed analysis of person's personality. For an instance the trait commonly related to openness is imagination, perceptiveness, insightfulness and more.

The researcher has found that the traits like extraverted and agreeableness possess by individuals was performed better and more committed in marketing industry [7]. The openness traits are the second highest personality domain in relation to job performance since it has the characteristics and advantage in dealing with diverse work experience. Studies to finds the relationship between Big Five personality trait with job performance among school educators to produce dedicated leaders have shown that the influence of personality can contribute to the strengthening of educational services [8].

II. RELATED WORKS

Since decades ago, Artificial Neural Network (ANN) are increasingly used for prediction. There are many researchers implement the ANN algorithm in predicting the outcome. The application of ANN is the ability to emulate the human brain pattern recognition where it is widely used in various field particularly for prediction task which includes in the field of finance such as for stock prediction [9], prediction in water industry [10], disease prediction [11], in transportation engineering for traffic prediction [12] as well as for personality prediction such as presented in [13]. In [13], ANN is employed to predict personality and travel intention based on Big Five personality traits. Meanwhile in [14], ANN was utilized to predict the Perceived Work Performance of Management graduates. By using ANN, the competencies such as emotional quotient and leadership quality can be ranked, for the perceived work performance. Meanwhile, in [15],