

Intelligent System in Behavioural Analysis

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Abstract— This paper investigates the behaviour of a school students aging from 13 to 16 years with the help of intelligent system. The proposed model is an attempt to closely analyse the behaviour based on ‘Big Five Behavioural Factors’. The five-factor model of personality is a hierarchical organization of personality traits in terms of five basic dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. The algorithm is evaluated on a dataset of various test cases. The required parameters are estimated by questioning the students. Later the parameters are analysed using the intelligent system and the results are displayed. This result indicates the detailed behavioural analysis of a student using graphs, texts. Further discussion on these results should be done by parents and teachers for betterment of the respective student.

Keywords— Behavioural analysis, Bidirectional search, Big Five Factors, Intelligent system, Search algorithm.

I. INTRODUCTION

To work with a live data, is a real research especially in the field of Psychology. Because of three reasons, one is to get an appointment of a psychiatrist for an Engineering research is always very tough. The second reason is Medical Ethics have to be followed carefully as students are involved. And the third important reason is the study will vary with different student group belonging to a diverse demographic, socio economic background. Psychology in India is a growing area of Research as Statistically the behavioural changes due to various reasons has increased significantly in the last five years. In this paper we have put our efforts, to develop a model which can be used for classifying a student based on different behavioural factors. The emphasis lies in developing the Model.

In today’s world it’s very difficult to understand behaviour and interest of schooling student. This software will overcome the problem through intelligent system without consulting to any psychiatrist or school teachers.

In this project, we review the role of psychology in origins of artificial intelligence. The software is designed for analysis the behavioural factors-> Openness, Conscientiousness, Extraversion, Agreeableness & Neuroticism of students. In psychology these behavioural factors are termed as BIG-5 personality traits. Psychology tests are performed on students in form of simple question-answers format. The questions are formed dynamically and each student appearing for test will be questioned depending on his/her answer keyword. The intelligent system analyses all these answer and frame the final behavioural report of student along with his profile. Parents will get their respective student’s behaviour report and other details at their own places. This software also reduce gap between teachers and parents.

II. BACKGROUND

A. Artificial Intelligence

Artificial intelligence (AI) is making a computer that thinks like a human (or eventually better) - to be able to learn and to have new ideas. Computers are very good at following exact orders, and handling very specific things, but not good at dealing with new things they haven’t seen before. For example, a common computer program can turn a report of names and hours worked into paychecks for the workers at a company. But the same program could not answer questions from an employee about why the company will not pay for nap time.

The goals of AI research include reasoning, knowledge, planning, learning, natural language processing (communication) and the ability to move and manipulate objects. The AI field is interdisciplinary, in which a number of sciences and professions converge, including computer science, psychology, linguistics, philosophy and neuroscience, as well as other specialized field such as artificial psychology.

Artificial Intelligence focuses on various psychological processes such as perception, decision-making, communication and motor functions. With the help of computer models, such processes are simulated in order to gain a better insight into human thinking, perception and linguistic behaviour. Artificial Intelligence cooperates closely with other study programs such as those of Experimental Psychology, Informatics, and Language, Speech and Informatics.

B. Behavioural Analysis

The Big five personality traits was the model to comprehend the relationship between personality and academic behaviours .In psychology, the Big Five personality traits are five broad domains or dimensions of personality that are used to describe human personality. The five factors are openness, conscientiousness, extraversion, agreeableness, and neuroticism.

- 1) *Openness*: It reflects the degree of intellectual curiosity, creativity and a preference for novelty and variety a person has. It is also described as the extent to which a person is imaginative or independent, and depicts a personal preference for a variety of activities over a strict routine.
- 2) *Conscientiousness*: A tendency to be organized and dependable, show self-discipline, act dutifully, aim for achievement, and prefer planned rather than spontaneous behaviour.
- 3) *Extraversion*: Energy, positive emotions, urgency, assertiveness, sociability and the tendency to seek

stimulation in the company of others, and talkativeness.

- 4) *Agreeableness*: A tendency to be compassionate and cooperative rather than suspicious and antagonistic towards others. It is also a measure of one's trusting and helpful nature, and whether a person is generally well tempered or not.
- 5) *Neuroticism*: The tendency to experience unpleasant emotions easily, such as anger, anxiety, depression, and vulnerability. Neuroticism also refers to the degree of emotional stability and impulse control and is sometimes referred to by its low pole, "emotional stability".

III. DATA PREPARATION

When creating dataset of students, Questionnaire method is followed. First stage of data set for Questionnaire is based on student's profile entered at the time of account creation .Next question will be asked based on the answer for the previous question. Flow of the question will be dynamic. Questions entered in the database will be in tabular format. Three tables will be created – one for questions, second for predicted answers for questions in table one and third for answers given by the students .Primary key and name of the questions, predicted answers and given answers will be matched to decide the further flow of questions. Flow will continue till we don't reach any of the big five factors maximum score. Intelligent system will analyse this score to give result. Questions will be based on following topics related to student-

- 1. Family
- 2. Hobbies
- 3. Likes and dislikes
- 4. Area of interest
- 5. School Life
- 6. Nature
- 7. Aim
- 8. Roll models

These are preliminary and essential requirement.

IV. DATA MODELLING

It is important for us to know the view of the student in every possible aspect related to behavioural analysis. For this we have to question the students based on sub traits of big five factors. Areas of behavioural science where we are focusing are as follows-

- A. Openness*
 - 1) *Imagination*
 - 2) *Artistic interest*
 - 3) *Emotionality*
 - 4) *Adventurousness*
 - 5) *Intellectual interest*
 - 6) *Liberalism*

- B. Conscientiousness*
 - 1) *Self Efficacy*
 - 2) *Orderliness*
 - 3) *Dutifulness*
 - 4) *Achievement-striving*
 - 5) *Self-discipline*
 - 6) *Cautiousness*

- C. Extraversion*
 - 1) *Friendliness*
 - 2) *Gregariousness*
 - 3) *Assertiveness*
 - 4) *Activity level*
 - 5) *Excitement seeking*
 - 6) *Cheerfulness*

- D. Agreeableness*
 - 1) *Trust*
 - 2) *Morality*
 - 3) *Altruism*
 - 4) *Cooperation*
 - 5) *Modesty*
 - 6) *Sympathy*

- E. Neuroticism*
 - 1) *Anxiety*
 - 2) *Anger*
 - 3) *Depression*
 - 4) *Self-consciousness*
 - 5) *Immoderation*
 - 6) *Vulnerability*

V. RESULT SET:

We calculate specific result out of 5 for each behavioural category sub traits. And based on that average result is calculated showing percentage of student behaviour based on 'Big 5 Behavioural Factor'.

Let us consider for 1 factor (say openness), we have 6 category traits; taking average of those we calculate percentage for openness for a particular student.

Openness:-

	Imagination	Artistic Interest	Emotionality	Adventurousness	Intellectual Interest	Liberalism
S1	1.2	3.4	2.7	4.1	1.0	0.6
S2	3.1	4.0	5	3.1	2.1	4.3
S3	3.4	0.5	4.0	3.5	1.0	5
S4	5	4.2	3.5	4.0	5	4.9
S5	4.9	2.0	2.4	3.4	1.5	3.5

Analysing above data we get result for one factor, openness.

Similarly, for rest of the four factors, depending on analysis of their respective traits we will get final result set of Big Five Factor for each student.

The result will be given in graphical format as well as in text format. Graphical representation:-

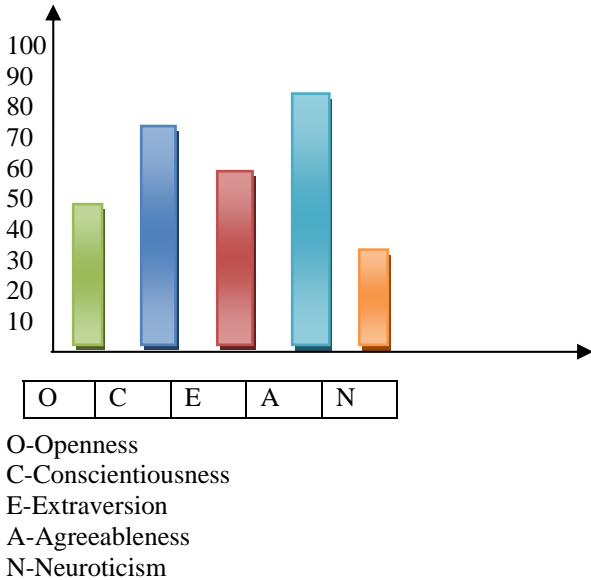


Fig: Graphical representation of Behavioural Factors.

VI. CONCLUSION

In this paper we have combined Behavioural analysis and Artificial Intelligence in a different way. The method as it models the behaviour of a student in a modern way is proven to be highly efficient with good accuracy. Further, as it works on the real-time dataset, it serves as support for betterment of student. Sensitive and highlighted Part of results required to be analysed for further improvement.

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