A Study of Factors Affecting the Personlaity Using Weighted Multi Expert Neural Networks System

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Abstract- Personality is a dynamic organization of psychological system within an individual that will determine one's adaptation to the environment. Dynamic Organization means an integration and connection between various aspects of personality. Personality can change, expand and is not statistical. 'Psychophysical system' is the habit, attitude, values, beliefs, emotional state, sentiment and motive in the form of psychology but posses physical basis in the nerve system, glands and body in general. Personality as behavior of individuals that are displayed in their everyday lives, this implies that every work or activity done in individual can provide an impression of their true personality. Sometimes our different perceptions are a cause of conflict and misunderstanding in our family, work and social lives in the environment,some of the factors affecting the personality, such as, food, peers, friends, education, upbringing genetics (depression and diseases), traumatic experiences in childhood, self-image, previous experiences in life, attitude and choices about those experiences, medication and bullying. In this paper we analyzed, main factors affecting the personality using weighted multi expert neural network system.

Keywords- Personality, Factors of personality and Neural Network

I. INTRODUCTION TO WEIGHTED MULTI EXPERT NEURAL NETWORK

In this section we just recall the notion of neural network called the Weighted Multi Expert Neural Network (Wt.M.E.N.N) constructed using the fuzzy neural networks. This Wt.M.E.N.N., guarantees equal representation of opinion of each expert; hence this method has an advantage over the Fuzzy Neural Networks. Neural Network learning can be either supervised one or an unsupervised one. In a supervised learning algorithm, learning is guided by specifying, for each training input pattern the class to which the pattern is supposed to belong. In an unsupervised one, the network forms its own classification of patterns. The classification is based on commonalties in certain features of input pattern. Since the data is an unsupervised one we make use of Wt.M.E.N.N. In any supervised learning, a training set of correct input-output pairs is given so as to minimize the error, but in an unsupervised one the output is purely based on the input data.We just recall the definition of Neural Network

A. Definition
A neural network is a computational structure that is inspired by observed process in natural network of biological neurons in the brain. It consists of simple computational units, called neurons that are highly interconnected. Each interconnection has a strength that is expressed by a number referred as weight.

B. Definition
The bias defines the value of the weighted sum of inputs around which the output of neuron is most sensitive to changes in the sum.Now we proceed on to define the notion of Weighted Multi Expert Neural Network.In Neural Network bias plays an important role. So we take the bias as an input with value − 1 and its corresponding weight is the sum of the average of the other input weights.In general, using this newly constructed Weighted Multi Expert Neural Network (Wt. M.E.N.N.), we can extend to `n' number of experts.The class of sigmoid function S_β, defined by the formula,

$$S_\beta(a) = \left(1 + \exp\{-\beta a\}\right)^{-1}$$

Then, the output of the neuron is defined by

$$Y = S_\beta\left(\sum_{i=0}^{n} W_i X_i - \theta\right)$$

$$Y = S_\beta\left(\sum_{i=0}^{n} W_i X_i - \theta\right) \qquad Y = S_\beta\left(\sum_{i=0}^{n} W_i X_i\right)$$
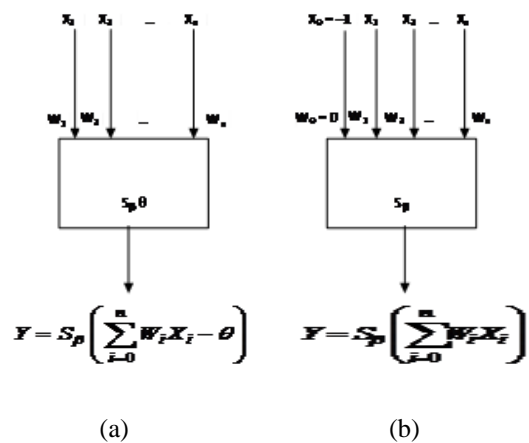
(a)   (b)

Figure:1

Two equivalent representation of a neuron activated by a sigmoid function S_β with bias θ. Where β is a positive constant (Steepness parameter), θ is called the bias of the neuron, since θ the bias is considered as an input, $x_0 = -1$ and the associated weight $w_0 = \theta$. Then the output now is given by

$$Y = S_\beta\left(\sum_{i=0}^{n} W_i X_i\right)$$

, where W_i is the weights given by the experts and

$$S_\beta(a) = \left(1 + \exp\{-\beta a\}\right)^{-1}$$

.

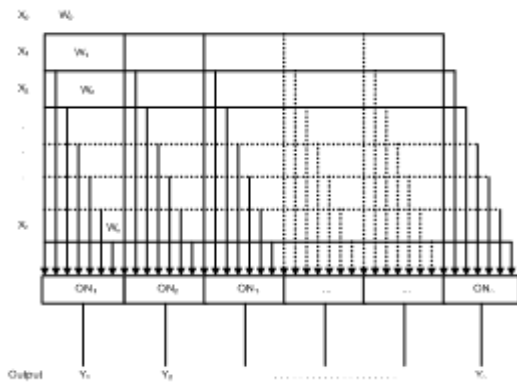The multi expert neural network system with opinion's weights

Figure:2

a)   Description and Justification

The concept of personality inculcates all psychologically related elements within an individual. This includes thinking, perception, phobia, achievement, motivation, wisdom, belief, ability, attitude, behavior, value, norms and character. However, the scope is actually wider. Nevertheless, to narrow this down, they can be further categorized into trait, custom, character and attitude. Traits are the most general personality aspect and easily observable in many situations. Among the examples of traits are friendly, shy, arrogant, idealistic, hardworking and self-confident. Sometimes our different perceptions are a cause of conflict and misunderstanding in our family, work and social lives.

The key to managing tough and difficult relationship lie however in understanding each other's personalities and aligning our behavior to suit the preferences of the various personalities that we encounter each day. Sometimes as we go through life, we may also need to modify our personalities to adapt to changes in our lives that require such modifications.

To gain a better insight into our personalities of those around us and to deliberate about the interplay of these factors where possible:

- Genetics: we must understand that we are all born with qualities and characteristics based on our genetic make-up which we cannot change and with which me must live..
- Self-Image: the way we view ourselves affects our personality. For example, we may have a high self-worth or conversely low-self worth.
- Experiences in life: Our life experiences of good or bad also have an impact on our personalities.
- Attitude and choices about those experiences: The choices and attitudes we make and convey as a result of our experience also play a significant role in the moulding of our personalities.
- Environment: The society and culture in which we live shapes the set of attitudes(morals, values, beliefs)

While we can lay the blame for our flawed personalities on genetics, we must realize that the four other factors that affect our personalities are to a large extent within our control. Building the right self-image, being positive about our experiences (good or bad) and keeping company with people who add value to our lives, will go a long way to building the personalities that truly works for you in your family, work and social life.

II.   ADAPTATION OF THE WEIGHTED MULTI EXPERT NEURAL NETWORK SYSTEM (WT.M.E.N.N) TO THE PROBLEM

Here we describe the problem together with the assumed notations and construct the neural network based on the experts opinion on a few factors like.

X_1-Genetics
X_2-Self-Image
X_3-Experiences in life
X_4-Attitude and choices about those experiences
X_5-Environment

Each input X_0, X_1, ... , X_5 are associated with real numbers called the weights, namely W_0, W_1, ... , W_5 whose value lie in the interval [0,1]. We have obtained 7 experts opinion, the corresponding weightage are given by the following table:

Table:1

	W_0	W_1	W_2	W_3	W_4	W_5
Expert 1	0.46	0.61	0.85	0.79	0.65	0.69
Expert 2	0.58	0.78	0.79	0.56	0.59	0.86
Expert 3	0.73	0.58	0.86	0.82	0.86	0.94
Expert 4	0.84	0.83	0.94	0.76	0.94	0.92
Expert 5	0.95	0.59	0.68	0.89	0.93	0.87
Expert 6	0.38	0.64	0.98	0.95	0.87	0.67
Expert 7	0.48	0.72	0.85	0.92	0.81	0.84

The average of the weight age are given by the experts namely E_1, E_2,…,E_7.

Table:2

E_1	E_2	E_3	E_4	E_5	E_6	E_7
0.68	0.69	0.80	0.87	0.82	0.75	0.77

By taking the input as the average of the weightage given by the experts and the value of bias is kept as in the case of neural network to be −1.

Table:3

X_0	X_1	X_2	X_3	X_4	X_5
-1	0.78	0.85	0.92	0.75	0.62

In general, using the newly constructed Weighted Multi Expert Neural Network (Wt. M.E.N.N), we can extend to 7 number of experts say E_1, E_2,…,E_7 and their corresponding output is given by,

$Y_i = S_\beta \left(\sum_{i=0}^{7} W_i X_i \right)$, where W_i is the weights given by the experts and $S_\beta (a) = \left(1 + \exp\{-\beta a\}\right)^{-1}$.

We now model this by the weighted multi expert neural network (Wt.M.E.N.N) and in our opinion this Wt.M.E.N.N, takes the weight of every expert equally even before the data is processed

for result. Developing and bearing a sound personality is a changing process. In order to have a good personality, self development is needed

III. THE MULTI EXPERT NEURAL NETWORK SYSTEM OF EXPERTS OPINION WITH WEIGHTAGES OF THE SEVEN EXPERTS
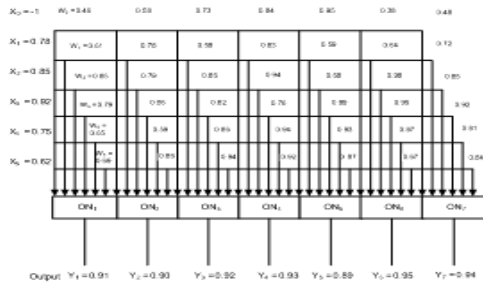

Figure: 3

From the output, we see that the overall opinion of the experts regarding the factors affecting the personality happen to be > 0.2. Thus to make a fuzzy analysis we using the same experts define the fuzzy set μ taking the opinion of the experts, $E_1, \ldots, E_7$ as the universal set E .

The membership function μ given by the experts:

$\mu : E \rightarrow [0, 1]$ where $E = \{E_1, \ldots E_7\}$.

$$\mu(E) = \begin{cases} 0 & if & E_i < 0.65 \\ 0.93 & if & 0.65 \leq E_i < 0.70 \\ 0.96 & if & 0.70 \leq E_i < 0.76 \\ 0.97 & if & 0.76 \leq E_i < 0.80 \\ 1.00 & if & 0.80 \leq E_i < 1.0 \end{cases}$$

where $i = 1, 2, ..., 7$

Now using the fuzzy membership grade given by the same experts and the output got from the Wt.M.E.N.N., we draw it comparison table of fuzzy set value and it output from Wt. M.E.N.N.

Table: 4

	Average Weight	Wt. M.E.N.N	Fuzzy set value μ[E]	Difference between Wt. M.E.N.N. and μ[E]
Expert 1	0.68	0.91	0.93	0.02
Expert 2	0.69	0.90	0.93	0.03
Expert 3	0.80	0.92	1.00	0.08
Expert 4	0.87	0.93	1.00	0.07
Expert 5	0.82	0.89	1.00	0.11
Expert 6	0.75	0.95	0.96	0.01
Expert 7	0.77	0.94	0.97	0.03

IV. CONCLUSION

We now once again using the opinion of the experts we agree to accept an opinion (say) or neglect it according as the difference is less than or equal to 0.02 or great than 0.02. From our

research tells that, Personality is termed as the combination of qualities mental, physical and moral that set one apart from others. Having a strong personality is the key to success. This is also a key determinant of good leadership. A good personality enables one to establish self control and self direction to discover the reality of freedom of choice. A person with a positive attitude can direct his thoughts, control his emotions and regulate his attitude.An executive's self is the sum total of all that he can call his own. Self is something of which he is aware of. The self concept which an executive brings to his job is the amalgamation of many things, his perception towards his parents, the rules he has learnt, and the impressions he/she carries about his peers, the record of success and failure, and the idea of what rewards he deserves. The self development process transforms from dependence to self direction, from impulsiveness to self discipline, from ignorance to knowledge, from incompetence to competence from immorality to morality and from self centered to concern for self and others..

The major causes affectingthe personality of an individual are studied under fiveattributes, i.e.,Genetics, Self-Image, Experiences in life, Attitude and choices about those experiencesand Environment. The foremost determinant of personality is the genetic factor, in which are included heredity, the brain and the physical stature. Psychologists and geneticists argue strongly that heredity plays an important role in one's personality. The importance of heredity varies from one personality trait to another. For example, heredity plays a more important role in determining a person's temperament than determining the values and ideals. Another factor which influences the personality is the brain of the individual. Perhaps, physical stature of an individual is the most outstanding influence on the personality of an individual. For example, the fact that a person is short or tall, fat or skinny, good looking or not, will influence others and in turn will affect the person himself.

Family and social factors are also important in giving the shape to an individual's personality. It initially starts with contact with the mother and later with other members of the family. Later still, the contact with social group influences an individual's personality. The personality of an individual is also influenced by the home environment. There is evidence to indicate that the overall environment at home created by parents is critical to personality development. Apart from the family background, social class also leaves an imprint on the personality of an individual. Situational factors also influence the human personality. The effect of environment on personality is quite strong. Knowledge skill and language are acquired by a person and can be termed as learned modifications of behavior.These learned modifications cannot be passed on to the children. The children in turn must acquire them through their personal effort, experience and the interaction with the environment. Many a times the actions of the person are determined more by the situation, rather than his behavior. Therefore, the situation may potentially have a very big impact on the actions and expressions.

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