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AI based Career Guidance

Firdosh sayyed[1], Ronak Sanghani[2], Abhishek Vora[3], Nikita Lemos[4]

[1]*Student, Dept. of Information Technology, Xavier Institute of Engineering, Maharashtra, India*
[1]*Student, Dept. of Information Technology, Xavier Institute of Engineering, Maharashtra, India*
[1]*Student, Dept. of Information Technology, Xavier Institute of Engineering, Maharashtra, India*
[1]*Professor, Dept. of Information Technology, Xavier Institute of Engineering, Maharashtra, India*

Abstract - The customary way to deal with career guidance is a manual technique that is ineffective and wasteful. The electronic methodology gives effective and productive career guidance. The proposed system developed is a web-based intelligent career guidance system that assists a student to independently choose a career whenever and anyplace with the utilization of computer or portable/advanced mobile phones as candidates look for admission into different fields of study. The intelligent system uses student-driven parameters such as academic performance, career interest, personality analysis test results for career recommendation [1]. Right now, there is an expanding career in machine learning and its job in the educational system, making this another developing examination domain. Check grammar

Machine learning practices can commit by offering help to students for selecting the correct educational domain to shape their vocation. The proposed system has proposed an education decision support system model, which compromises the components i.e. user interface, inference engine, and knowledge base. Our model support machine learning type strategies to give a knowledge revelation design, in this way it likewise incorporates the knowledge of a few domain experts.

***Key Words*: Career Guidance, Neural network, Personality test, MBTI.**

1. INTRODUCTION

Choosing a career isn't constantly a simple task for students, particularly since the decision should be based on a few criteria and at a generally early age. This significant decision influences the academic and professional existence of the student. An awful educational or professional guidance might be at the inception of a few educational and social issues: failure, dropout, lack of skills, integration difficulties, unemployment and so on. Career development is a lifelong procedure [2]. There are various components that impact your career development, including your interests, abilities, values, personality, background, and circumstances. Guidance is a term sometimes utilized extensively to refer to advising or helping an individual with any sort of educational, vocational or personal issue [1]. It can likewise be referred to as a service gave by the specific school to help a person in settling on clever decision and changes to build up their potentials as an individual and a contributing member from the society. Guidance is a procedure of helping a person to acknowledge and develop his/her vocational, educational, and psychological potentials and additionally accomplishing the best degree of individual joy and cultural value [2].

Career guidance comprises of services that help individuals effectively deal with their career planning and development. The proposed system is an online career guidance system which will address the concerned issues. The proposed system will assess students on different parameters to recommend a career path. The parameters are personal interests, personality traits, skills, aptitude, comfort, and so on. The system is utilized in a useful way, an online career counselor can be more successful and open than a genuine counselor.

An artificial intelligence system is a computer program that works a similar way that a biological brain does, just that it functions in an electronic path rather than by activating neurons. characterizes artificial intelligence as the science and engineering of making intelligent machines, particularly intelligent computer programs. An average example of an artificial intelligence system is an Expert System (ES). Intelligent system can be described as any system with artificial intelligence. Expert system approach is valuable to enable human expert (to career counselors), additionally as an authentic and effective device for the computerization and automation of the reasoning of human career instructor, by investigating the expert system highlights, for example, questioning ability, reasoning power, providing explanations, providing alternative solutions.

2. EXISTING ONLINE SYSTEM

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3. EXISTING ONLINE SYSTEM

The proposed system requires least human intervention for the analysis of the personality of the individual and recommend him/her a career. The system will have enrollment screen which will gather the fundamental data of the end user. Further in the signing there will be alternatives to settle on the test, see all the available careers with field. The test will be directed utilizing Myer Briggs Type-Indicator (MBTI) [4]. The algorithm is a hypothesis based Multiple Choice Question (MCQ) test which fundamentally recognizes the personality of the individual and the capability of the individual. Here facts are made utilizing the MBTI algorithm. These facts would be additionally used alongside the data gathered previously and the outcomes will be produced as shown in fig.2. The tests will be isolated into 2 classes post SSC and post HSC. There will be various tests questions and facts generation for all these 2 tests [4].

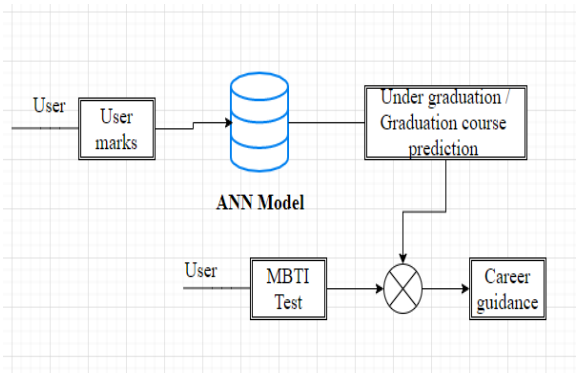

Fig -1: ANN Model of proposed system

A neural network is an artificial neural network wherein associations between the units don't frame a cycle. Right now, data moves from the input nodes, through the hidden nodes, and to the output nodes. To enhance the intensity of the Neural Network and increase its accuracy by the expansion of a hidden layer that sits between the input and output layers. The size of a hidden layer(s) is one of the most significant consideration when taking care of genuine issues in the network. Neural networks require a trainer so as to describe what ought to have been delivered as a response to the input. It is expected to utilize a backpropagation method as a part of algorithms that enhance the performance of the network by modifying the weights. This methodology calculates the gradient of the loss function as for the weights in an artificial neural network [5].

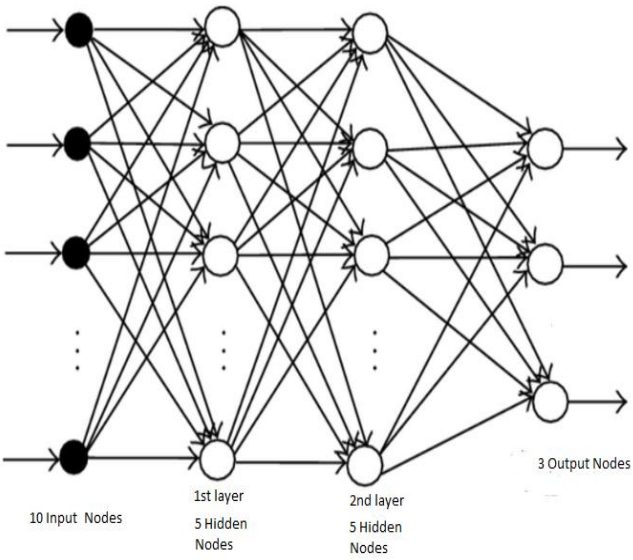

Fig -2-. Neural network diagram of post SSC prediction

Our aim is to predict the best career suitable for individuals. So as to build the network, we deploy the" Neural Network". The general network structure for post SSC career prediction appeared in the beneath figure which implies 10 neurons in the input layer, 5 neurons in both hidden layers, and 3 neurons in the output layer Input layer nodes are associated with hidden layer nodes with weights.

Hidden layer nodes are associated with an output layer node with weights. The values that were given to weights are taken arbitrarily and will be changed during cycles. In NN training, all model sets are determined but the logic behind the estimation is the equivalent. The calculation is a two-advance procedure; the initial segment is getting the values of the hidden layer nodes and the subsequent part is utilizing those values from the hidden layer to figure the value or values of the output layer.

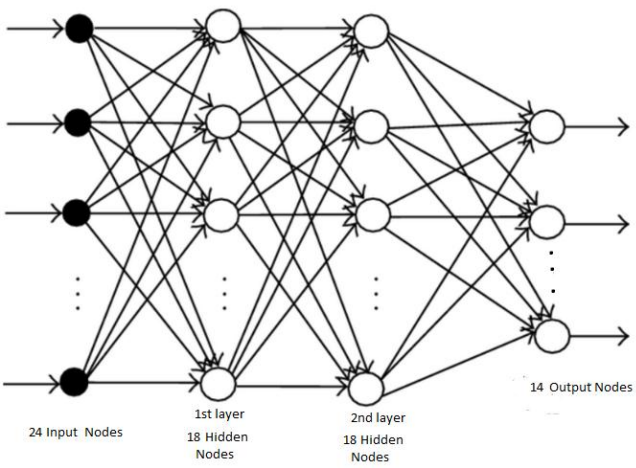

Fig -3. Neural network diagram of post HSC prediction

NN in figure 4 is structured for post HSC career prediction which has 24 nodes in the input layer, 18 nodes in both first hidden layer second hidden layer and 14 nodes in the output layer. Input layer nodes are associated with hidden layer nodes with weights. Hidden layer nodes are associated with an output layer node with weights [6].

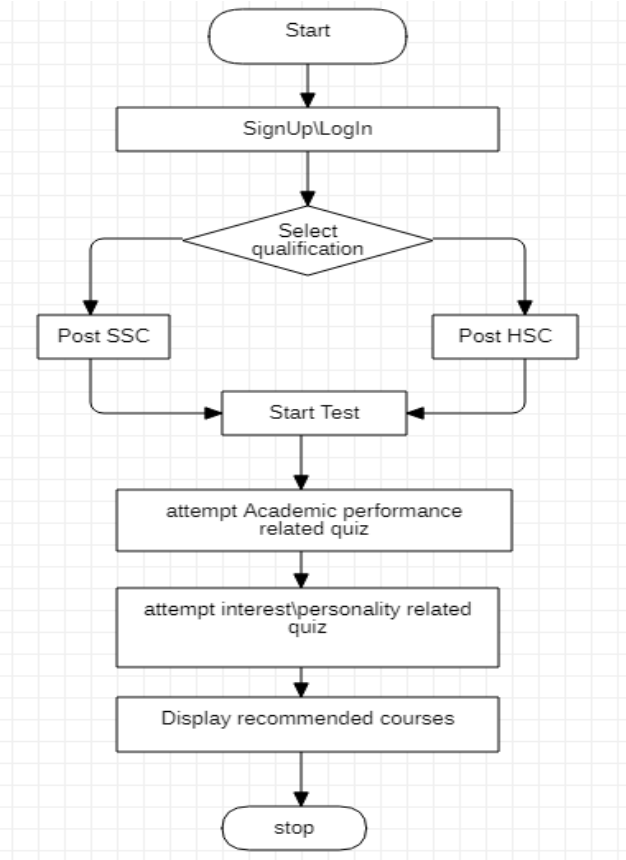

Fig -4. Flowchart of proposed system.

(1) User supplies academic performance through the user interface.

(2) The system captures, evaluates and examines the performance.

(3) The system matches the captured, evaluated and examine user data with the appropriate rule in the knowledge base.

(4) The proposed system executes the matched rule in the knowledge base.

(5) The fired/triggered rule selects the relevant courses from all stream in the working memory and also stores the selected relevant courses in the working memory.

(6) User supplies answers to intelligent quotient questions through the user interface, and result of intelligent quotient is calculated.

(7) The inference engine evaluates and examines the result of intelligent quotient.

(8) The inference engine matches the captured result of intelligent quotient with the appropriate rule in the knowledge base.

(9) The selected and stored relevant course are displayed to the user through the user's interface

4. ANALYSIS

4.1 Qualification forecasting

The system has assigned a threshold value to each subject in which a category incorporates at least one subject. The eligibility criteria for the student whether he/she qualified for the specific subject is checked on the basis of the threshold related to the subject. As student settles on the decision of the career, all the subject fall into the category are brought [6].

If Student_GPA ≥ Subject_Threshold (1)

Then Student is qualified for Subject and Proceed Further.

Each subject falling into the career option will have some effect. The subject has been allocated some weight. Our approach has exemplified delicate skills, required for the subject, of the student that is recorded in the database after test conducted in Student skills and Personals Record module. So, the effect of each subject on career classification is assessed by utilizing the following formula (equation 2) [7].

SubjectImpactFactor=Subject_PredictedValue * Subject_weight+Subject_SoftSkill (2)

Career choice class allots certain Impact factor to subjects that go in close to the career choice. So, the determined Impact factor of the subject is checked against assigned

Impact factor as follows:

If $Subject_{Impact\ factor} \geq Assigned_{Impact\ factor}$ (3)

Then proceed else Send Advisory Report to concerned Student [7].

4.2 Personality forecasting

Personality analysis is a part of the inference engine that gives the personality type of the student. The personality forecasting module utilizes this data to coordinate the fitting personality type with industrial and academic requirements. Qualification forecasting module obeys eligibility criteria that stress on nonintuitive characteristics, for example, academic record. To make career advice process closer to what student truly is, the system utilizes an expert system idea to cast career advice to individual coordinating with his/her personality [8].

5. METHODOLOGY

1. Gather the source data required.

2. Sort out the data in the required format and remove irrelated data.

3. Derive a few conclusions using the ANN model.

4. In light of conclusion data, a component vector and data are characterized.

5. provide input data to the input layer of the neural network.

6. Procedure data in the hidden layer of the neural network.

7. Match yield to the desired result.

8. If it coordinates then display a subset of data and if doesn't coordinate then adjust weights [8].

5.1 Data preparation

The data gathered is arranged and took care of into the computer with the end goal of data transformation in separate parameters. The parameters utilized in the data are examined and investigated and the missing data is handled intelligently [9].

5.2 Data analysis

Clustering Techniques was applied to group the data. Clustering is utilized for classification of the necessary student's data and the demonstrations performed are adjusted into the significant division of groups based on previous data. The set of data Items from the clustering process is then trained and tested by optimizing the error. Association rule is then used to investigate the association connecting the subgroups. This process is then applied to discover the student characteristics that adjust the individual characteristics. The Association Rule gives the number of occurrences that it predicts accurately. The general output is observed comparing at the contrast with the clustering output to make the expectation more effectively.

5.3 Prediction model

The predictions made incorporate an interrelated process that calculates the outputs from the previous stage and applies a weighted formula to decide the definitive suggestion. The weights are resolved from earlier well-known data and subject to human interference Inference from heuristic knowledge on the counselor [9].

6. SCOPE

Today, in our society, the importance of guidance and counseling for career choices is often overlooked, ignored and underestimated. Accordingly, numerous students have fallen into the trap of picking incorrectly careers, and this is answerable for some dropouts in the nation [10]. The arrangement of student-driven web-based intelligent career guidance system is prescribed to enough help and backing in the dynamic procedure of picking a career as they seek admission and prepare to study, so that, students can have free choice on the decision of career, and find applicable courses where they stand a better possibility to graduate as at when due, yet to turn out with better execution. Additionally, it is suggested that the degree of computer literacy, especially at the secondary school level, must be stepped up if sufficient use of the intelligent career guidance system is to be maximized [11].

7. CONCLUSIONS

Today, in our society, the importance of guidance and counseling for career choices is often overlooked, ignored and underestimated. Accordingly, numerous students have fallen into the trap of picking incorrectly careers, and this is answerable for some dropouts in the nation [10]. The arrangement of student-driven web-based intelligent career guidance system is prescribed to enough help and backing in the dynamic procedure of picking a career as they seek admission and prepare to study, so that, students can have free choice on the decision of career, and find applicable courses where they stand a better possibility to graduate as

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