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Research paper



Assessing Psychological Factors of a Student Through Concentration Game for Career Selection

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Abstract

Psychological factors of a student helps in selecting the appropriate career for the student. The Expert System is designed to assess the psychological factors of a student, build a cognitive model and identify the most suitable career(s) for the student. In order to provide career guidance to a student by an expert system, it is necessary to assess various psychological factors of the student which include the speed, time taken, level of the game and by the number of clicks used. In order to assess these psychological factors of a student, the system asks the student to play the Concentration game a number of times. Basing on the scores obtained and some other factors by the student the system builds a cognitive model for the student. In this paper the main focus is to design a Concentration Game by assessing the psychological factors of a student for the career guidance of a student.

Keywords:*Career Guidance, Expert System, Cognitive Model, psychological factors.*

1. Introduction

Career selection plays an important role in student's life for determining and making decisions for future plans of the student in order to choose which career is best suitable. It was found that career counsellors follow different methods for career guidance. They consider different factors for assessing student. Many of them analyzed student's abilities, aptitude, personality, interest, skill, Iq etc.

And also these days it is observed that there is a huge demand for the particular fields only and students as well as parents are focusing on only such fields, and are giving preference towards those streams without accessing their ability, aptitude and many more of the student. The fundamental thing which is being ignored these days is that either due to ignorance or due to false notation the capability, ability and the interest of the student who is going to pursue his/her career for the rest of his life is not considered and are not considering the best suitable career for him basing on his capabilities and abilities. So the Design for an expert system is made for the decision making for the student for the career selection. Expert System is a computer application that helps in solving many complex problems in various fields and models.

2. Related Work

There are various existing systems which are based on the applications and implementations of the expert system.

S.Saraswathi [1] has developed an Expert System for the career guidance of the students. The developed system helps in selection of undergraduate courses which one is best suitable to him/her after the completion of higher school education. The inference engine gets the information from web pages which consist of all related data, using pattern matching and parsing techniques. Waghmode[2] proposed a theoretical framework for the design and development of an expert system for the career selection. The proposed system mainly focuses on the various theoretical concepts and different tests required for the career selection process. P.P. Jamsandekar [3] has proposed a framework design as well as a working of the expert system which is useful for the career selection. Data mining techniques with different classification algorithms are used for selection of career stream. The datasets collected are executed using the Weka tool. Classification algorithms FURIA, JRIP, PART, PRISM, ID3, J48 and IB1 are applied and performance is observed. Machine learning algorithms viz; ID3, PRISM and PART gives 100% accuracy in classification along with rules. This proposed system concludes that the classification is a good option for career selection process. S. Katore [4] proposed a system to design the accurate prediction and recommendation systems with the help of mining and statistical algorithms. The career recommender system analyzes the psychological condition of the students and recommends them the preferable career choice. The Career recommender system was developed with the help of C4. 5 algorithms.M. Ayman [5] has proposed a model on expert system and developed a rule-based Expert System with the help of object-oriented modeling techniques for the guidance to the high school students in selecting suitable undergraduate careers. The proposed system has a graphical user interface which consists of simple menus. The system developed for career guidance of student is easy to maintain, modify, and extend.

3. Proposed Work

In this paper the psychological factors of a student are assessed. The assessment of these factors is done by playing the concentration game a number of times, basing on these factors an expert system is designed for the guidance to the student(s) about which career is best suitable for the student in future.

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3.1 Design of Expert System

Career assessment is the most important part for every student to know the best suitable career. This assessment is done through the psychological factors of a student. The factors include time taken, score obtained, number of clicks used and the level of the game the student is playing, basing on these factors an expert system is designed and a cognitive model is built for the career guidance to the student.

The Expert Systems are nothing but the computer applications which are built on the principles of the artificial intelligence which are used to gain expert level skill in problem solving of various complicated areas of fields. Expert system consists of the database which consists of all information and the Inference engine. The database that is present in the system is called as Knowledge base consists of the information which is used for the analysis. It consists of If-Then rules and facts. The facts include the scores obtained, various career options. Knowledge base consists of two parts the knowledge acquisition and knowledge representation. Knowledge acquisition consists of the expert level knowledge about different career options/streams.

In the knowledge representation information received from the experts is translated into knowledge base using proper rules to guide the students according to the information received through different tests. Inference engine uses knowledge in the knowledge base and information provided by user to infer new knowledge. The design of an expert system consists of the user, user interface, database which consists of scores obtained, other parameters and inference engine. Users include students and counselors, who actually use the system. Student users initially need to register their details and generate user id and password for further processing for testing their different career related parameters. User interface is communication exchange between user and system. Students are interacting with actual system is user interface.

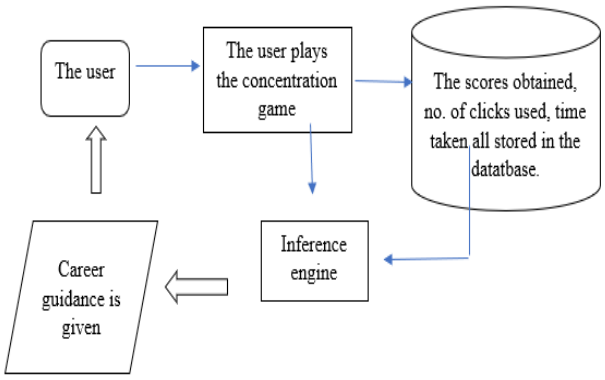


Figure1: Framework for the concentration game

3.2 Design of the User Interface:

The user interface is the communication exchange between user and the system. This communication can be done through by playing the concentration game. The user or the student is asked to play the game a number of times so that the psychological factors involved in it are assessed. While playing the game a number of times different scores are obtained, different number of clicks are used while playing each time and other factors also differs. Basing on these factors the guidance is given for the best suitable career of the career.

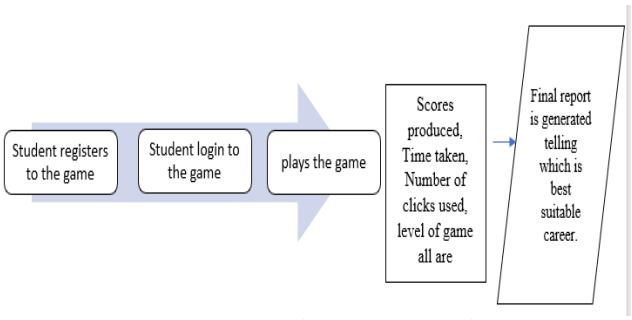


Figure 2: Assessment of the psychological factors

3.3 Design of the Concentration Game:

Concentration is very critical part of the brain, because without concentration a game can't be played especially with a distracted mind. This concentration test is a little bit hard, and deals with problems solving more efficiently.

The game is developed using the Java Swings at the frontend and mySQL at the backend for the database. The game helps in the assessment of the psychological factors of a student like the number of clicks used, score, level of the game the player is playing and many more factors, basing on these the game is developed for the career guidance to the student.

To play the game first the user logs into the game. If the user or student is playing the game for the first time he/she registers to the game then login to the game and then plays the game.

3.4 How to Play the Game:

Click on one of the buttons in the playing field then the number selected gets subtracted by one as well as all the four surrounding ones get subtracted by one. By clicking on the button it changes the number on all the four directions (top, bottom, left, right) and the clicked area number also. If the number in one of directions is already is zero then it goes back to three. The final aim of this game is make all the boxes in the field to 0.

The game consists of three panels. The panels include the top panel, bottom and the main playing field. The top and bottom field include the parameters that are responsible for the assessment of the psychological factors. This game should be played with a lot of concentration, this is also one of the parameter in assessing the student. Parameters included in the game:

- Levels in the game
- Score
- Time taken
- Number of clicks

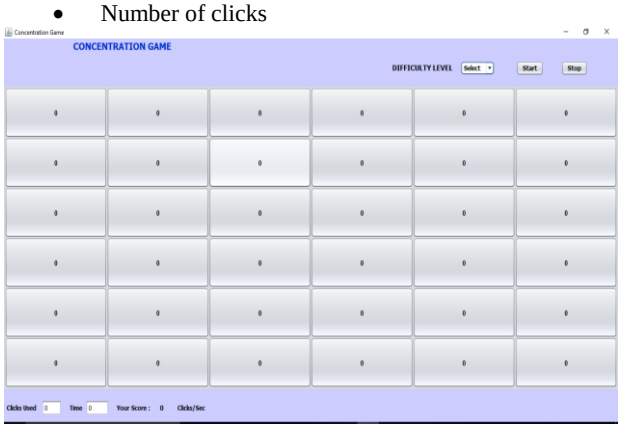


Figure 5: The game at the start stage.

Basing on the playing of the game the psychological factors of the student are assessed and a game is made to develop a cognitive model for the student career guidance. In order to assess these psychological factors of a student, the system asks the student to play Concentration game a number of times. Basing on the scores obtained and all factors, the system builds a cognitive model of the student.

Then a career table is maintained by the data base which contains the list of career and the minimum levels of psychological factors that are required for each career in order to take up that career by the student in future. A matching process is carried by the system in order to predict the best matching career(s) for the student, basing on his/her cognitive model.

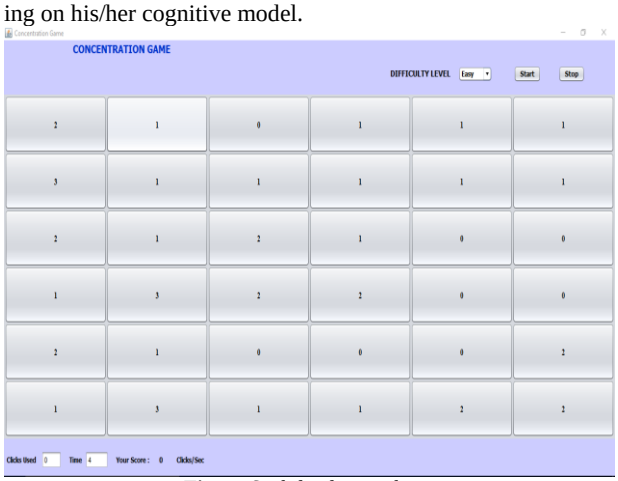


Figure 6:while playing the game

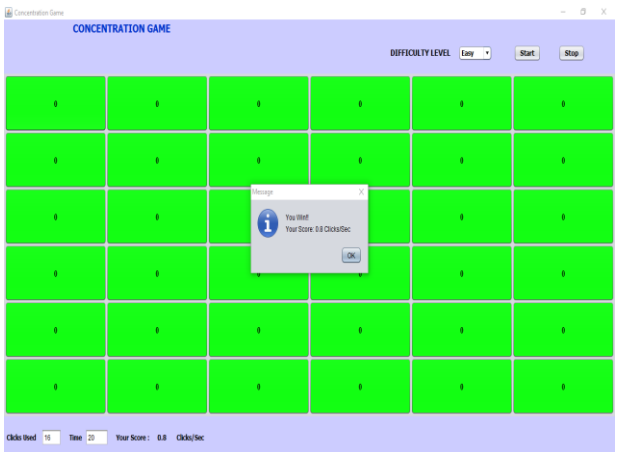


Figure 7: game has finished.

4. Conclusion and Future Work

Design of a Game based way of assessing the student for the career guidance plays a major role, as it can recommends the best career(s) suitable for the student so that he/she can be advised /guided to go through the appropriate path and select the career which is best suitable for student.. Apart from the academic record of a student, the psychological factors of the student also play a major role while deciding the best career(s) for a student. Though there are many career assessment tests that are used to assess the psychological factors of a student, the best idea is to assess the psychological factors is by playing the Concentration Game. In this paper the main focus is to assess the psychological factors of a student for the career guidance. In the future we will be working on the analysis of the design and will predict which field of career is best suitable for the student in the future. This can be done maintaining a career table contains the list of careers, the minimum academic record like CGPA and the minimum levels of psychological factors that are required for each career in order to take up that career by the student in the future A matching process is carried by the system in order to predict the best matching career(s) for the student, basing on his/her cognitive model.

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