

Generation of Online Quiz Using Neural Network

¹Sandeep Nandlal Gupta and ²Amol Joglekar

¹Student, ²Assistant Professor,

^{1,2}Computer Science Department, Mithibai College of Science, Mumbai, India

Abstract: This paper provides the good interface to the user for participating in the quiz application so that they can know himself very well that how much knowledge they have in particular subject. The proposed idea behind this is to gain practical knowledge to the student so that they can increase their knowledge power in the entire subject. This work is especially developed for students who like to play challenging online Quiz so that they can prepare for the exams. As most of the student opt for giving certification exams in any of the subject so that they grab attention to the interviewer and will increase their chance for finding their desired job, this proposed model will help them very effectively. The selection of topic will be decided by innovative algorithm based on neural network.

Keyword: Automatic Quiz Generation, Randomize Algorithm, Neural network.

I. INTRODUCTION

In the ongoing advent of computer based technology there are many changes being made till now in various fields that tend to move from manual systems to automated systems. The automatic generation of the multiple choice questions helps us with must cost and time efficient solutions. It is effected many areas as well as many youth generation.

In any educational system, student has to appear for the examination to determine their performance and depending upon their performance, student calibre will be judge. Even some institutes organized the events related to particular subject in the form of quiz competitions so that maximum student can participate in the quiz competition. In this way, student can judge their IQ for particular subject. With this immense step, student can build their own career. This Proposed model is related to computer science. The proposed model used the concept of Neural Network and Randomize algorithm

A. Neural Network

In modern software implementations of neural networks^[11], the approach inspired by biology has been largely abandoned for a more practical approach based on statistics and signal processing. In some of these systems, neural networks or parts of neural networks form components in larger systems that combine both adaptive and non-adaptive elements. The key to Artificial Neural Networks^[12] is that their design enables them to process information in a similar way to our own biological brains, by drawing inspiration from how our own nervous system functions. Neural networks^[13] are complex non-linear models, built from components that individually behave similarly to a regression model. They can be visualised as graphs, and some sub-graphs may exist with behaviour similar to that of logic gates. Although the structure of a neural network is explicitly designed beforehand, the processing that the network does in order to produce a hypothesis evolves during the learning process. This allows a neural network to be used as a solver that “programs itself”, in contrast to typical algorithms that must be designed

and coded explicitly. The below given fig of processing of neural network.

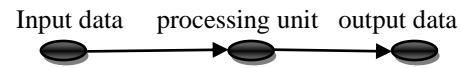


Figure 1: An Information Processing Unit

This concept helps the proposed model to introduced innovative idea of online quiz.

II. LITERATURE REVIEW

With the introduction of new technology related to quiz, student can able to judge their knowledge for particular field or subject. Earlier the teacher has to make effort to make simple quiz for the student by searching questions entire from the syllabus. In this way, it is time consuming process and eventually student or teacher has immense pressure.

With the introduction of online quiz proposed model, the students as well teacher hardly have any pressure. This proposed model is very useful for student for preparing upcoming exams and certifications.

Dong Liu and Chenghua Lin^[1] presented the **Sherlock: a Semi-Automatic Quiz Generation System using Linked Data**. They explored semantic and machine learning technologies and with the help of this they not only offers a generic framework for domain quiz generation but also provides the mechanism for controlling the difficulties level of the generated quiz.

B. Lakshmi, V. Sai Durga and K. Anji Reddy^[2] presented the **Mobile quiz** in android using the randomize algorithm for generating question as well as display result. This was the simple proposed model and can anyone participate and play the quiz. Users can avail this model for improving their knowledge as well as sharpen their IQ.

Jae-Young Lee^[3] proposed **Dynamic Test System for Generating Questions to Match Multiple Meanings in Random Order against Multiple Terminologies**. In this paper, he used the randomize algorithm for generating random questions using its terminologies and similar meanings. Using this proposed model, user can play the challenging quiz as well.

Guillermo Álvaro Rey, Irene Celino, Panos Alexopoulos, Danica Damljanovic, Mariana Damova, Ning Li and Vldan Devedzic^[4] proposed **Semi-Automatic Generation of quizzes and Learning artifacts from Linked data**. In this paper, they demonstrated how Linked data can be effectively used in a Technology-enhanced Learning Scenario. They aim was to use structured data to semi-automatically generate artificial to aid learning delivery and assessment i.e. Natural language facts. They also added gaming flavour in this application. This model

was made for learners and teachers to support and improve the learning path.

Michael Heilman^[5] proposed **Automatic Factual Question Generation from Text**. This paper presents the automatically generating factual WH questions. His goal was to create an automated system that can take as input a text and produce as output questions for assessing a reader's knowledge of the information in the text by using the natural language processing techniques⁽⁵⁾. The system uses a combination of manually encoded transformation rules and a statistical question ranker trained on a tailored dataset of labelled system output⁽⁵⁾. His clear idea was natural language processing can help teachers efficiently create instructional content. It provides solutions to some of the major challenges in question generation and an analysis and better understanding of those that remain.

Chenghua Lin, Dong Liu, Wei Pang and Zhe Wang^[6] proposed **Sherlock: A Semi-automatic Framework for Quiz Generation Using a Hybrid Semantic Similarity Measure**. In this paper, they presented a semi-automatic system (Sherlock) for quiz generation using linked data and textual descriptions of RDF resources. Its different from existing quiz generation systems and also have ability to control the difficulty level.

Ibrahim Eldesoky Fattoh^[7] proposed the **Automatic Multiple Choice Question Generation System for Semantic Attributes Using String Similarity Measures**. In this research they presented an automatic multiple choice question generation system to evaluate the understanding of the semantic role labels and named entities in a text. This proposed model will ask the informative sentence as well as keyword based on the semantic labels and named entities that exist in the sentence. He used the variety of algorithm such as Artificial Intelligence (AI), Natural Language Understanding (NLU), and Natural Language Generation (NLG).

Ming Liu, Rafael A. Calvo and Vasile Rus^[8] proposed **Automatic Question Generation for Literature Review Writing Support**. This paper presents a novel Automatic Question Generation (AQG). This system is made up using Natural Language Processing. The approach first automatically extracts citations from students' compositions together with key content elements. Next, the citations are classified using a rule-based approach and questions are generated based on a set of templates and the content elements. This system will help for recognize learner's knowledge deficits and improve their learning.

Montse Maritxalar, Elaine Uí Donnchadha, Jennifer Foster and Monica Ward^[9] proposed **Quizzes on Tap: Exporting a Test Generation System from one Less-Resourced Language to Another**. In this paper, they demonstrated the scarcity of Natural Language Processing (NLP) researchers who speak the language and the communication gap between teachers in the classroom and researchers working in universities and other centres of research. To overcome this, they introduced the Less-Resourced Languages to work together in reusing and adapting existing resources where possible. The Quizzes on Tap system uses Latent Semantic Analysis to automatically generate multiple choice test items. The QOT system provides a useful resource that enables Irish teachers to produce both domain-

specific and general-knowledge quizzes in a timely manner, for children with varying levels of exposure to the language.

Hosam F. El-Sofany, Noor Al-Jaidah, Shaima Ibrahim and Salha Al-kubaisi^[10] presented the **Web-based "Questions-Bank" System to Improve E-Learning Education in Qatari School**. In this paper, they made the simple proposed model for generating question bank by using web-based technology that allows the students of primary, preparatory and secondary schools to take web-based quizzes and exams, to download course reviews and previous exams. They had given each weight of every question and area of knowledge deals with it. It is very helpful for both teachers and student to improve their knowledge. The model allowed the school 'students to take quizzes, free exercises and exams, to download course reviews and previous exams.

III. RESEARCH METHODOLOGY

A. Proposed Architecture

The proposed architecture has main components like user, neural network with hidden layers and output. User provides details which are required to start the model. The first hidden layer would produce questions based on logic. There will be allocation of weights to answer produced by the user. Based on the feedback received from user the model would produce the level of difficulty and accordingly output is generated.

B. Block diagram

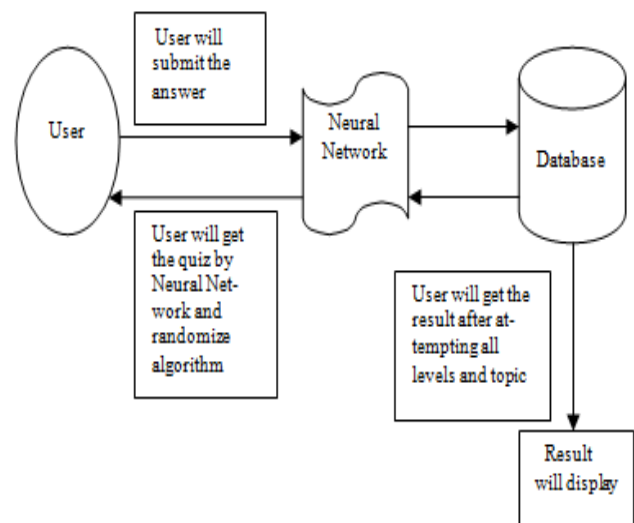


Figure 2: Proposed flow of model

Flow of the system

1. User enters the system by providing name.
2. After that, quiz will start with easy level.
3. User giving correct answer, system will automatically change the difficulty level and at the end, after successfully completed all the level; automatically the topic will change with easy level.
4. When user gives the wrong answer in easy level, automatically difficulty level will change with medium level and so on.
5. After attempting all the level and topic, result will display with marks.

C. Proposed Algorithm

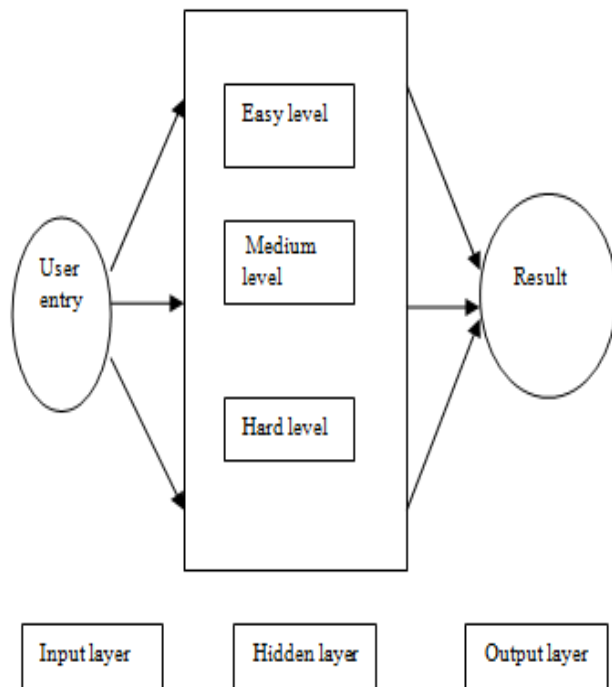


Figure 3: Neural Network

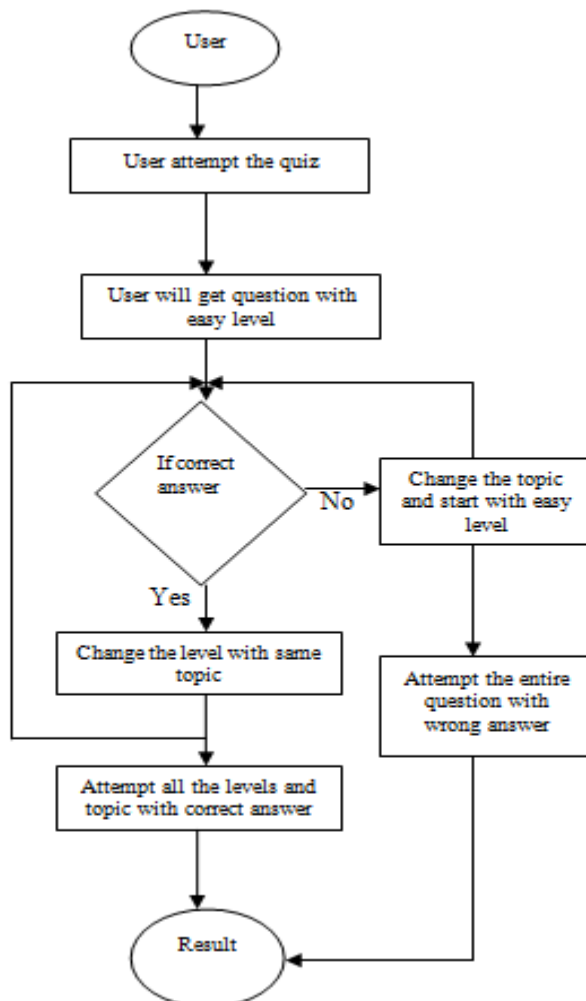


Figure 4: Actual Working of Algorithm

IV. RESULTS AND DISCUSSION

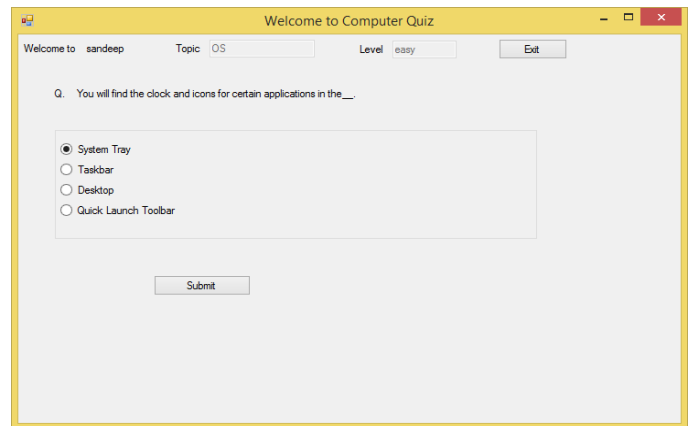


Figure 5: Format of Question

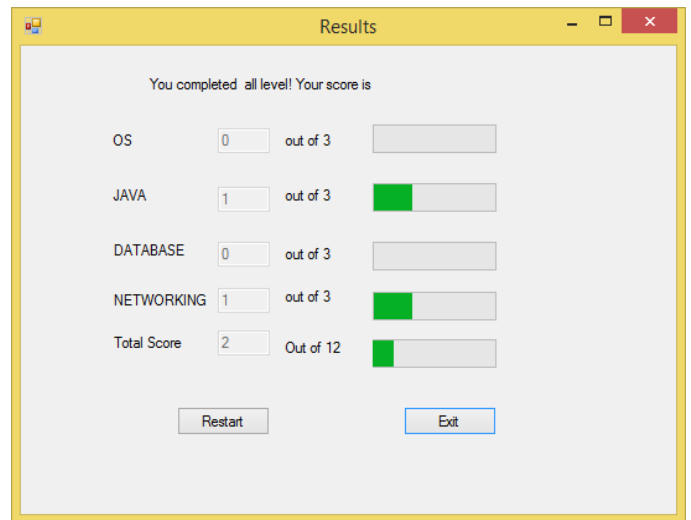


Figure 6: Result

At the end, the result will display after completing the all topic and levels.

CONCLUSION

This paper focus on a quiz developed for educational purpose using neural network and randomize algorithm inspired by Sherlock^[6]. It also provides the mechanism for controlling the difficulty levels of generated quiz. This model will help more to the student as well as learners for preparing for exams and certifications. The proposed model can be deployed in some organization and based on which results can be tested more accurately and more user-friendliness can be provided by integrating various technologies.

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