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Analysis of Descriptive Examination Automation Using Natural Language Processing

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ABSTRACT

Now a days due to pandnamiccovid situation maximum education organization conducted the online teaching online examination process .Many examination portals that are deployed over several servers which are used to conduct online examination for various purposes among which some may include conducting a test for entrance examinations, or Olympiads at national and international level and while some portals are designed to conduct a test for placement purposes. But what we have seen is that mostly all the portals are designed to conduct tests that contain multiple choice questions. Here our aim is not to work on the technology that is already existing, rather some technology that is very rare. Here we talk of the descriptive online examination system. Multiple choice questions are easy to deal as they have a question, a few options and a field in the same question that stores the correct option in the database. While in the case of descriptive questions it is not so. It brings in or uses the concepts of Natural Language Processing or NLP to assign marks to answers.

Keywords:— *NLP, Examination System, E-learning Challenges of e-exams*

I. INTRODUCTION

This introduction section put some lights on this article and origin of the motivation,we come to hear news from around the globe that a particular exam was conducted for a job or for a college or examination in schools and the result was published after some time due to reason of these examination organize offline pattern that why its take some time to produce the result, one more thing manual checking means lots of chance for mistake and sometimes wrong evaluation, while this is a good way to conduct an exam but it is inefficient with respect to the current world where automation is the future. The examination system relies on manual work from printing to transporting the paper to the examination hall, then invigilation and the most tedious task of checking the answer sheets which is a huge mess for any examiner which sometimes leads to resource loss. Also, we hear news about paper leaks and answer sheet being lost in the transporting process. The manual checking process will always have that human error based on certain factors like biasing, the mood of the examiner, target completion and much more such factors. Also if we take account of all the paper wastage and the stationary waste which harms our environment leading to do more

bad then good as the enormous amount of trees being chopped off across the world for the process. This helps us understand that the offline examination system is not cost effective or time efficient, resources are also wasted in the process and moreover we all know that resources are scarce in nature and we need to utilize it efficiently to get the maximum output of it. While the offline examination system has a big disadvantage but are not getting replaced at a bigger scale because new online examination system features only multiple choice type of question's while most of the exams contain descriptive question for which multiple choice answers do not a work and hence they are not that compatible and efficient to replace it at a larger level.

We all know that if we have to remove a universally accepted system, the new system should not be just good, rather it should be able to make a quality difference so that the organizations accept it. While there are some examination system and they are good at evaluating the answers but they have little to no scope for the descriptive ones and the analysis is not well implemented to get meaningful results. Even most famous of them just have a simple system of storing the correct options in the database and just matching the correct option with it to calculate the result.

II. NLP

Natural language processing (NLP)[6] refers to the branch of computer science—and more specifically, the branch ofartificial intelligence or AI—concerned with giving computers the ability to understand text and spoken words in much the same way human beings can. Natural language processing has its roots[7] in the 1950s. Already in 1950, Alan Turing published an article titled "Computing Machinery and Intelligence" which proposed what is now called theTuring testas a criterion of intelligence, though at the time that was not articulated as a problem separate from artificial intelligence. The proposed test includes a task that involves the automated interpretation and generation of natural language. So this section is only cover the Brief about NLP Concept

III. The Challenges of E-Exam Design

After being prepared and properly formulated and thoroughly revised, the examination will be ready for answers by students. Before the examination, all necessary student data is fed into the computer for later use, and this is why it is essential to use appropriate and high-quality software [11]. E-exam enables the provision of new kinds of questions through the use of multimedia, easy ways to gather feedback, instant support, assistance, and aids during the examination, distribution of results, easy use of data, and flexibility of examination timing. Moreover, it is easy to prepare equivalent forms of examination at one or various times for a large number of people/examinees in different places and to submit them by mail or through websites. E -exam gives immediate results after all questions are completed and can provide a direct analysis of examination performance for a group of people/examinees. A question bank can be established to form a source of selection for future examinations. It is a low-cost method in terms of work, time, and money [12]. Additionally, e-exam allows for monitoring students from the examiner's computer during the examination, entering students' particulars before starting, printing or saving a direct report to a student, preserving equality between students, assessing students accurately, attaching video or audio clips to questions and specifying a time for examination [10,13].

IV. LITERATURE SURVEY

[1]Assessment is an essential activity to achieve the objective of the course being taught and to improve the teaching and learning process. There are several educational taxonomies that can be used to assess the efficacy of assessment in engineering learning by aligning the assessment tasks in line with the intended learning outcomes and teaching and learning activities. This research is focused on using a learning taxonomy that fits well for computer science and engineering to categorize and assign weights to exam questions according to the taxonomy levels. Existing Natural Language Processing (NLP) techniques, Wordnet similarity algorithms with NLTK and Wordnet package were used and a new set of rules were developed to identify the category and the weight for each exam question according to Bloom's taxonomy. Using the result the evaluators can analyze and design the question papers to measure the student knowledge from various aspects and levels. Prior evaluation was conducted to identify most suitable NLP preprocessing techniques to the context. A sample set of end semester examination questions of the Department of Computer science and Engineering (CSE), University of Moratuwa was used to evaluate the accuracy of the question classification; weight assignment and the main category assignment were validated against the manual classification by a domain expert. The outcome of classification is a set of weights assigned under each taxonomy category, indicating the likelihood of a question to fall into a certain category. The highest weight category was considered as the main category of the exam question. According to the generated rule set the accuracy of detecting the correct main category of a question is 82%.[2] Some users in a community site abuse the anonymity and attempt to manipulate communications in a community site. These users and their submissions discourage other users, keep them from retrieving good communication records, and decrease the credibility of the communication site. To solve this problem, we conducted an experimental study to detect users suspected of using multiple user accounts and manipulating evaluations in a community site. In this study, we used messages in the data of Yahoo! chiebukuro for data training and examination.[3] This study found journalists use government sites most often to retrieve information. Problems include difficulty with verification, unreliable information and lack of contact information[4] Paperless examination is an important role of modern education, which can effectively reduce the teachers' workload and improve work efficiency. However, the current paperless examination system mainly deals with the objective questions, it is almost impossible to deal with subjective questions such as programming languages, particular in SQL. There is no such practical system as far as know. This article describes a novel SQL-based paperless examination system, including objective questions as well as SQL programming questions.[5] Computer greatly influences our educational environment. Over the last years, automatic computer examination systems have been widely used for computer-based tests. But these systems are based on traditional question-answer examination style which is not fit for the sequenced test. The sequenced test should consider the context of the examinee, e.g. the order of questions or the permissions of the examinee, to grade an examinee. In this paper, we propose an effective and practical automatic examination architecture based on task. The task is abstracted from the examination process and can meet the requests of the sequenced test, such as order and dependency. At the end of the paper, we

implement an automatic examination system based on task for the stake test which proves quite efficient in practice.[8] The purpose of developing Examination Management Automation System is to computerize the traditional way of conducting exams. It is a web and android application that can be used by students and exam cell coordinator using their smart phones or PCs. This work keeps track of various details in modules such as Students Details, Staff Details, and Hall Details with proper descriptions. It also have some features to generate reports for bundle handovers, absentees statement and roll lists. This paper is cover as advantages like Fast and convenient, less human effort less paper work, etc [9] This paper aims to present the experiences of educational organizations in e-exam and e-evaluation as an essential tool of e-learning in various countries. The paper recommends that under the global pandemic COVID 2019 evaluating students using intensive continuous evaluation, including eexam supported by authentication methods, which may help detect and reduce or even prevent student violations. The results show that the most used LMS tools were the Moodle and proprietary solutions which were 75% both among many other LMS tools i.e., Blackboard and eFront. The least develop countries are prefer to use open source and proprietary due to the zero cost of these solutions. The internet speed, cost and authenticity were the most challenges faced e-exams centers, which were 99%, 82%, and 68%, respectively.

III . System Analysis

System Analysis is a process of getting the requirements and analysis need accessing its feasibility and possible solutions. The act, process, or profession of studying an activity (such as a procedure, a business or a physiological function) typically by mathematical means in order to define its goals or purposes and to discover operations and procedures for accomplishing them most efficiently.

IV. Existing System

This world has seen a lot many examination portals that are deployed over several servers which are used to conduct online examination for various purposes among which some may include conducting a test for entrance examinations, or olympiads at national and international level and while some portals are designed to conduct a test for placement purposes. But what we have seen is that mostly all the portals are designed to conduct tests that contain multiple choice questions.

IV. Proposed System

In the proposed model we are taking the online examination system to a new level by enabling the examinee to write descriptive answers which will get evaluated on their own The evaluated answers will be stored in the database and they can be viewed anytime and a particular student profile will be maintained for better evaluation of the student. Talking about the technology used in order to build such a model for evaluating descriptive answers, NLP or Natural Language Processing is has a great role to play. Automating the entire offline examination system with the efficiency of computing having no human error involved, this can be done using NLP or Natural Language Processing. The evaluated answers will be stored in the database and they can be viewed anytime and a particular student profile will be maintained for better evaluation of the student.

VI. Implementation Tools Python

Python is a general-purpose interpreted, interactive, object-oriented, and high- level programming language. An interpreted language, Python has a design philosophy that emphasizes code readability (notably

using whitespace indentation to delimit code blocks rather than curly brackets or keywords), and a syntax that allows programmers to express concepts in fewer lines of code than might be used in languages such as C++ or Java. It provides constructs that enable clear programming on both small and large scales. Python interpreters are available for many operating systems. C Python, the reference implementation of Python, is open source software and has a community- based development model, as do nearly all of its variant implementations. C Python is managed by the non-profit Python Software Foundation. Python features a dynamic type system and automatic memory management. It supports multiple programming.

Django also provides an optional administrative create, read, update and delete interface that is generated dynamically through introspection and configured via admin models

VII . SYSTEM ARCHITECTURE

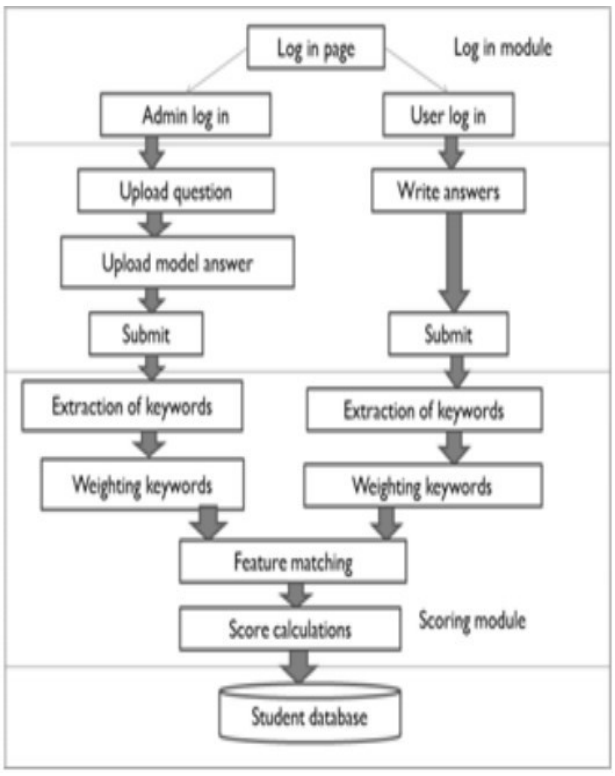

Figure 2. System Architecture

DFD is also known as bubble chart. A DFD may be used to represent a system at any level of abstraction. DFD may be partitioned into levels that represent increasing information flow and functional detail

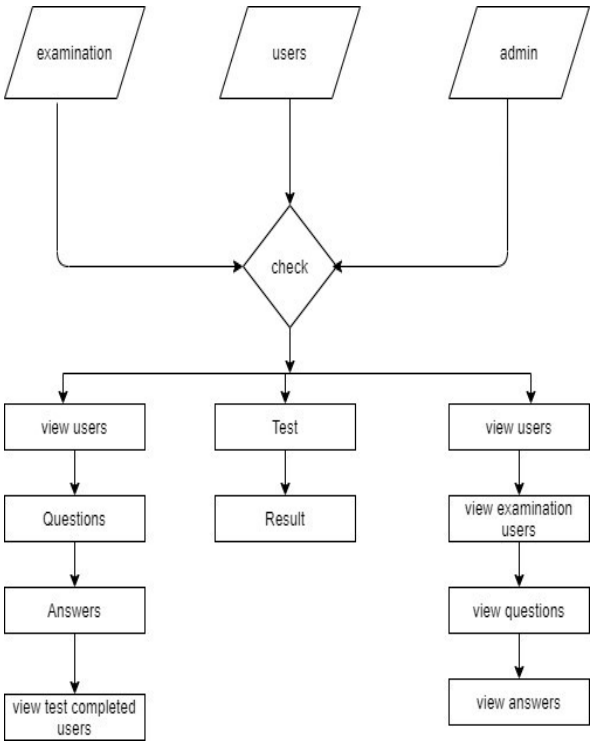

Figure 3: Data Flow Diagram

VIII . RESULT

Results basically refer to any particular output or end point that comes as a result of the completion of the activities and or processes that have been performed as part of the project or as part of the particular project component.

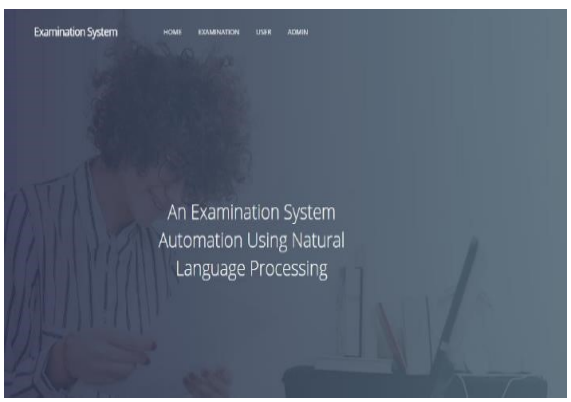

Figure 4: Home Page

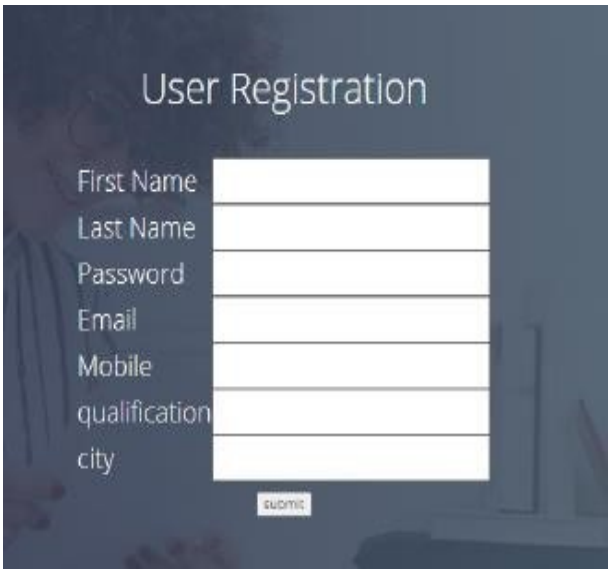

Figure 5: Registration Page

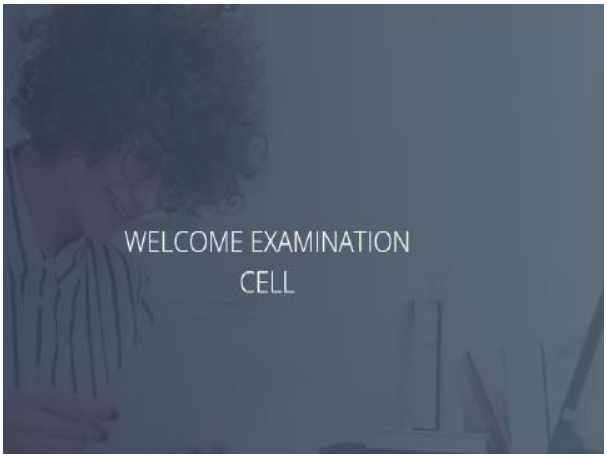

Figure 6: Welcome Page

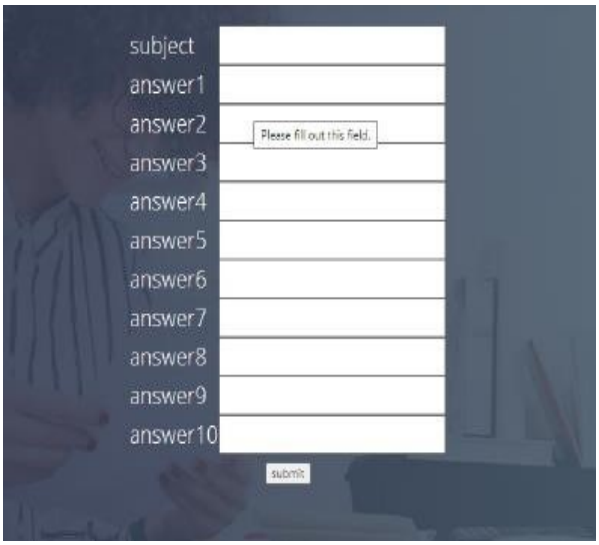

Figure 7 Answer Writing Page

IX. CONCLUSION

It can be seen by conducting tests using such an algorithm at regular intervals that one can determine the trend in the marks obtained by different students and we can give them an analyzed report on the different subjects they need to focus on for which they are weak. With the existing data, we can also implement a predictive machine learning model on the data so that it can predict marks that the students will score in the future. It is observed that students mainly study those subjects that are placement oriented or which are required for placement purpose only. While students neglect the subjects of their core domain.

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