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Answer Sheet Evaluation using AI

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ABSTRACT

A lot of software's automating several tasks is coming live each and every day. A variety of improvements have been peeping out in almost every domain that we witness day in and day out. By accentuating the present education system, a lot of technical enhancements have not been brought into action. For instance, consider a typical student's life who gives exams in regular intervals and waits for the results to be out. In spite of a having a hard day by educating so many individuals in class, a teacher has to find time to corrects the answers and submit the report back on time. If the student count is more in a class, the validation process will literally eat up more time which in the end turns out to be a huge complication. Now if a software that could automate the evaluation process comes into play, it brings in two major differences, that is, the student need not wait for the results to be out for a long span and the teacher need not find time to evaluate and validate the answers. Moreover, the bias of being partial will also be broken and the student will be awarded with the marks for what he/she has written. This project aims at creating a digitalized platform to evaluate answer sheets and allocate marks to the answers, leading to the end of paper pen culture for correction. By doing so, a lot of time spent on evaluation and marks allocation can be cut down which in the end saves an ample amount of time.

Keywords - Optical Character Recognition, Answer sheets, Keyword selection, Evaluation, Artificial Intelligence, Keywords matching.

I. INTRODUCTION

Answer Sheet Evaluation is a digital platform that would enable us to evaluate answer sheet, validate the answers, which again is carried out as an online process saving a lot of time. OCR (Optical Character Recognition) is a machine's ability of detecting and extracting handwritten text from notes, letters, essays, whiteboards, forms, and other sources. Reduce paper, pen culture and be more productive by taking photos of handwritten answers instead of transcribing them, and make the digital notes easy to find by implementing search. Handwritten OCR works with different surfaces and backgrounds, such as white paper, yellow sticky notes, and whiteboards. The staff uploads the image of an answer sheet. Once the image is uploaded, the staff panel is checked and the image uploaded is verified.

Our main aim is to provide a system for grading of handwritten answers sheets as a digital platform based on content and style of writing by focusing on the usage of keywords.

II. LITERATURE SURVEY

"Automatic Answer Sheet Checker", an automating the task of scoring subjective answer is considered. The goal is to assign score, which are comparable to those of human score by coupling AI technologies. In

this process involves many image level operation i.e. removal of pre-printed matter, extraction and segmentation of words. Scoring is based on machine learning of parameter and natural language processing. System checks answer and score as good as human being.

"*Question Paper Generator and Answer Verifier",* **e**xams are being digitized all over the world. Meaning that the certain computer is replacing the traditional paper based tests based tests, which have proven to be both more consistent in allocating marks and faster than teacher correcting papers is. The traditional exams usually consisted of subjective answers, which were not the best way of grading the student's perception of the subject. Hence, we are developing a computer-based system that will generate objective based question that will be better suited to grade students academically. The system will generate a question paper and it will grade the student after he/she has solved the question paper. This system will save time as well as the efforts put in by the teachers, which they can spend on activities that are more productive.

"Data Extraction from Exam Answer Sheets using OCR with Adaptive Calibration of Environmental Threshold Parameters", manual Data Collection from a student's exam sheets is always a tedious job which exacts ample amount of time and effort. This paper has suggested a novel approach for developing an automatic, adaptive, fast and reliable system capable of recognizing enrolment number and corresponding marks of student from answer sheet and storing it in the host computer. This system consists a hardware which picks out sheets one by one from a bundle and captures image of the front page of each answer script. This image is processed by proposed robust extraction and noise removal algorithm adaptive to environmental conditions. It is then passed through Optical Character Recognition (OCR) system, which extracts characters using correlation. Accuracy of system depends on the sample space size of OCR system. In our experiment, we have archived average 81 % accuracy in various light and paper (Exam-Sheet) condition. We had trained the OCR with 50 samples of numerals set (0-9). In this way developed system will not only replace the traditional tiring way of manual writing of marks in database but in addition can calculate average marks of all students, ranges of marks for assigning different grade and provide grade for each student automatically.

III. PROPOSED SYSTEM

The project aims at creating a digitalized platform to evaluate answer sheets leading to the end to the paper pen culture. Smart evaluation system is a digital platform that would enable us to evaluate answer sheet, validate the answers which again is carried out as an online process saving a lot of time.

OCR Detect and extract handwritten text from notes, letters, essays, whiteboards, forms, and other sources. Reduce paper clutter and be more productive by taking photos of handwritten notes instead of transcribing them, and make the digital notes easy to find by implementing search. Handwritten OCR works with different surfaces and backgrounds, such as white paper, yellow sticky notes, and whiteboards. In the initial phase, the staffs upload the image of an answer sheet. Once the image is uploaded, the staff panel is checked and the image uploaded is verified. Now we perform optical character recognition to extract the text from the uploaded text. OCR performs removal of Adverbs, supporting verbs, etc., Making Unique keywords from each answer. Intersecting of two sets of keyword.

A. SCORE CALCULATION

(count (Intersecting of staff keywords and student keywords))
/
(unique_keywords_count (student answer))
*
100
=
(P1 || P2 || P3)

B. STEPS

1. Scan the Answer Sheet of the Student.
2. In Staff Panel, Enter the students Register Number and Upload the scanned image then, click submit.
3. In Admin Panel, Click Process OCR to recognize the keywords from the answer sheet.
4. View the Students marks by Clicking Validate.

C. SYSTEM MODULES

- **STAFF PANEL:** The Student answer sheet is scanned and uploaded in the staff panel. On staff view button the evaluated mark for the students will be displayed. The evaluation procedure is based on the keywords. Multiple answer sheets can be validated in a single click by using Process OCR.
- **ADMIN PANEL:** The Process OCR recognize the keywords from the uploaded image and this will evaluate the answer submitted by student with key answer given by subject handling staff. The keywords in the answer sheets are compared with the keywords of three different phrases. The admin panel performs,
  - ✓ Removal of Adverbs, Supporting verbs, etc.,
  - ✓ Making unique keywords from each answer.
  - ✓ Intersecting of two sets of keyword.

D. SYSTEM IMPLEMENTATION

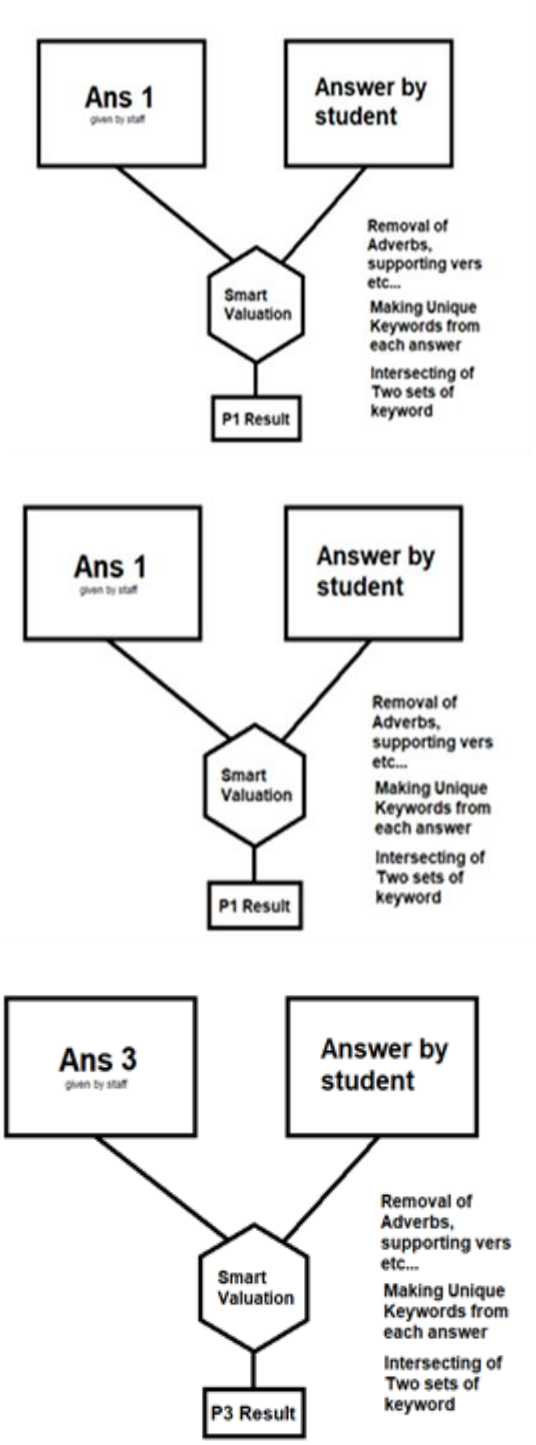

Figure 1. Answer Evaluation

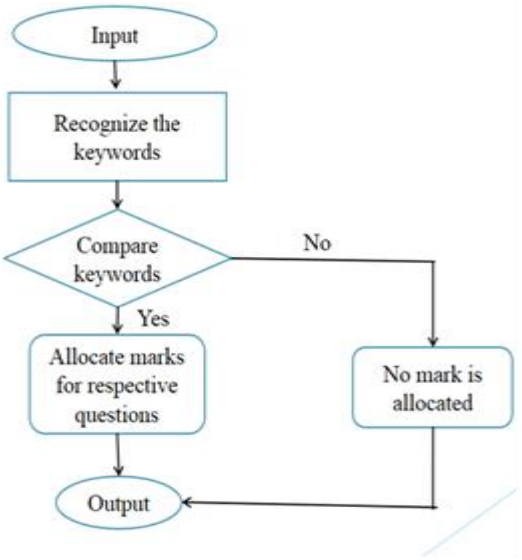

Figure 2. System Implementation

IV. CONCLUSION

Since Answer Sheet Evaluation, system has gain a greater attraction in the field of education, this project proposes an approach to effectively evaluate hand written answer sheets with given marking scheme by subject experts using Optical Character Recognition technique. System is designed to overcome the issues in existing similar systems. Core part of the project was achieved using two methodologies which are keyword extraction and comparison of similarity. Keyword extraction of both student and tutor was done in three steps which were removing adverbs, supporting adverbs, making Unique keywords from each answer, intersecting of two sets of keyword.

V. FUTURE WORK

In the Proposed System, the answer scripts of the student are not stored. In Future, the cloud platform will be used to store them. Various additional modules can be added to the current system, making it even versatile in the way in which the system can accept data that is to be corrected. One example is the addition of a module that would accept voice data from a microphone and correct the same without any human assistance, using the same algorithm.

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