

Detection of information from OMR sheet

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Abstract: - Optical Mark Recognition technology (OMR) is often used to collect information, which is used to create databases. OMR may contain numeric, character or alphanumeric types of data. Group of character's form a string. It means string can also be extracted from OMR. String detection means detect the string or extract the set of characters to form a meaningful data or records or it may be information present on optical marked file. The aim of this paper is to explore the easiest technique used to extract the information from the OMR file (sheet), which reduce the wastage of paper, printer ink, extra manual effort, save time for scanning the OMR sheet, and also reduce the cost and speed up the process with more accuracy.

Introduction: -

What is OMR?

OMR - Optical Mark Reading An OMR system doesn't interpret letters, but only looks for marks on special forms. The OMR-reader uses 42 LEDs to scan for marks in certain positions (where the horizontal line marked by the «skunk marks» on the edge of the sheet cross one of the 42 vertical LED tracks). Measuring the amount of light reflected for each position does detection. Preprinted info must be in a «drop out» color (usually red). The speed can be up to 8000 double-sided sheets an hour, with no need for verification. An OMR system will be used for the elections in Oslo. [1]

What is String Detection?

A string detection system also doesn't interpret letters, but only looks for marks on special file. In String Detection no use of LEDs to scan for marks in certain positions. Using the cropping technique or segmentation technique in Digital Image processing we can detect the information from the sheet. It virtually illuminates manually keying data. Information is collected much faster and more accurately. When using this technique the completed forms or sheet are simple segmented and data is transferred directly to a computer.

How to extract the information from OMR sheet By OMR-reader?

OMR sheets are generated and printed, and ready for circulation. After then circulation of sheets it will fill by the user. After collecting the filled OMR sheets, they can further scan using the OMR-reader, which have LEDs to scan for marks in certain position. Then the information of OMR is automatically saved into a data file under the appropriate key or title. Any number of files may be stored. There is indeed need to develop the technique which will extract information from the OMR sheet to reduce computational efforts, cost, increase the speed of processing and accuracy etc. [1]

How to extract the information from our technique?

In our experimental work, we have worked on synthesized images created by using MS-Paint as shown in fig. 1. Users should fill the forms using MS-Paint tools as shown in fig. 2.

Our system read the OMR sheet from the memory. It crop (segment) image up to the vowel in the first row and first column of the OMR

sheet [2][3]. It then starts to detect for filled or unfilled vowels on the sheet. If it found the filled vowels then it stores the appropriate data and jump to the next column, otherwise check the next vowel in that column. If there is no filled vowel in the whole column then take it as space in the information. After checking the whole image the information displayed which has been saved in database as shown in fig 3.

Figure 1
Unfilled Image (OMR Sheet)
For Filling String or information

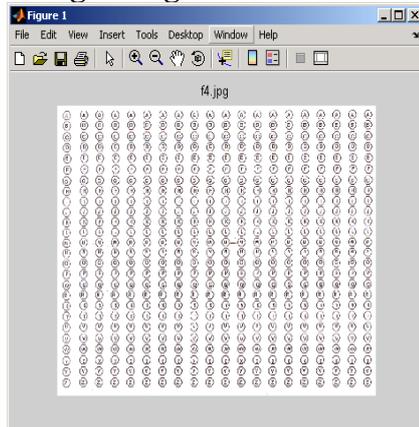


Figure 2
String Filled Image

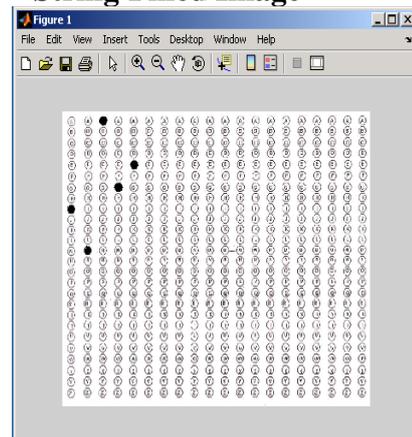
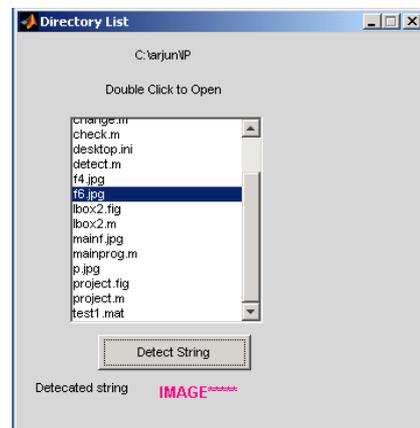


Fig. 3
Display Filled String
(Star Indicate Unfilled column)



Conclusion: This technique is used to extract the information from OMR sheet. In this paper OMR sheet has been created in MS-Paint JPG file. By using various tools like grid points vowels (i.e. circle), text etc. Therefore through this technique we need not have to have any OMR paper sheet, and it also gives more correct result. The extracting of the information is very simple than the OMR-reader.

In future this work can be extended to extract all identity marks of candidate like photograph, signature etc. from OMR by this technique

References

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