

Image Based OMR Evaluation

Abstract: -

We are proposing a image processing based algorithm to evaluate the OMR sheet evaluation. We can see in many of competitive examinations are multiple-choice based . Evaluation can be done using scanners which can also evaluate the responses. To decrease the cost of using scanner , we present an algorithm which evaluates omr by giving images of omr as input. We will discuss the OpenCV implementation of the image-processing algorithm.

Introduction:-

Every where we can see , many students take standardized tests and they have to answer various questions asked by darkening bubbles in OMR sheets. To grade a standardized test responses of a student takes 10 minutes on an average. But by the algorithm which we are going to describe we provide the details of particular OMR sheet.

We envisage that our algorithm (i) identify students id
(ii) detect response of each question
(iii) compare responses with correct key.

We have designed our algorithm assuming that we know the position of initial question and the position of students identity information.

Algorithm:

The flow of algorithm is divided into three stages:

- i) Aligning the image such that it is straight
- ii) Extracting the response of students from OMR
- iii) Evaluating the responses

i) Making invariant to rotation :

_____ This can be achieved by using the HOUGH transform. The **Hough transform** is a feature extraction technique used in image analysis, computer vision, and digital image processing. The purpose of this algorithm is to find the edge by taking each pixel position i.e x,y and converting it into polar coordinates r,theta. Using this theta we know the angle with which the image is rotated we can use the angle to rotate the image through that and thereby making the image.

ii)Extracting Responses:

The start position of the id,width of each box,start postion of the question and difference between are taken as input. After that we go through each box and find number of black pixels. Using the number we decide which box has been filled.

iii)Final Evaluation:

The read values from the OMR are being stored in array and can be easily compared with the original answers which can be stored before hand.

Drawbacks:

- ⑩ Need to calculate the pixel values before hand
- ⑩ The Warping with the angle could cause errors in some cases.

Results:

Answer Sheet **KLA Tencor**

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Degree <u>B.E</u>	Stream <u>ELECTRICAL & ELECTRONICS</u>

Instructions: For each question, darken a square fully corresponding to the answer option of your choice using a HB pencil provided.

Example:

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b 52

Section-I

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Version 2.0

Answer Sheet **KLA Tencor**

Name <u>Shruti Mulwadkar</u>	Roll No. <u>13108105038</u>
Degree <u>B.E</u>	Stream <u>ECE</u>

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