

OMR Sheet Evaluation using Image Processing

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Abstract: *Optical Mark Recognition (OMR) technology has revolutionized the grading and assessment processes in educational institutions, surveys, and various other fields. OMR sheets, designed with predefined bubbles or checkboxes, are scanned and processed to extract relevant data. This paper presents a comprehensive review of the methodologies and advancements in OMR sheet evaluation using image processing techniques.*

The review begins with an overview of traditional OMR systems and their limitations, such as susceptibility to errors due to variations in scanning quality, paper orientation, and noise interference. Subsequently, it delves into the evolution of image processing algorithms tailored for OMR sheet evaluation.

Several key components of OMR sheet evaluation are discussed, including image pre-processing techniques for enhancing readability, segmentation methods for isolating individual marks, feature extraction algorithms for capturing relevant data, and classification techniques for accurate identification of marked responses.

The review highlights recent trends and innovations in OMR sheet evaluation, such as the integration of machine learning and deep learning algorithms for improved accuracy and robustness. Additionally, it addresses challenges such as handling skewed or distorted images, multi-page OMR sheets, and real-time processing requirements.

Furthermore, the paper discusses benchmark datasets and evaluation metrics commonly used to assess the performance of OMR systems. It also examines practical considerations such as scalability, cost-effectiveness, and usability in diverse settings.

Keywords: Optical Mark Recognition (OMR), Deep Learning, Image Acquisition, Pre-processing Techniques

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