Colorectal Cancer Prediction Using Image Processing

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Abstract: *Colorectal cancer (CRC) is a significant health concern worldwide, with early detection being crucial for effective treatment and improved patient outcomes. Image processing techniques have emerged as promising tools for assisting in the early detection and diagnosis of CRC through the analysis of medical imaging data.This study proposes a novel approach for CRC prediction utilizing advanced image processing algorithms applied to colonoscopy and histopathology images. The primary objective is to develop a reliable system capable of accurately identifying suspicious regions indicative of CRC.*

The proposed methodology involves several key steps. First, pre-processing techniques are applied to enhance image quality and reduce noise. Next, feature extraction methods are employed to capture relevant information from the images, including texture, color, and shape characteristics. Machine learning algorithms, such as support vector machines (SVM) or convolutional neural networks (CNN), are then utilized to train predictive models based on the extracted features.

To evaluate the performance of the proposed system, extensive experiments are conducted using a dataset comprising colonoscopy and histopathology images from patients diagnosed with CRC. Performance metrics such as sensitivity, specificity, accuracy, and area under the receiver operating characteristic curve (AUC-ROC) are used to assess the predictive capability of the models.The results demonstrate promising outcomes, indicating the potential of the proposed approach for accurate CRC prediction. By leveraging image processing techniques and machine learning algorithms, this study contributes to the development of advanced tools for early detection and diagnosis of colorectal cancer, ultimately improving patient care and outcomes

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