



Automated Detection of Pancreatic Tumors via Advanced Image Segmentation

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ABSTRACT

Pancreatic cancer is one of the leading causes of cancer-related deaths worldwide, largely because it is often diagnosed at an advanced stage and has a poor prognosis. Therefore, detecting pancreatic tumors accurately at an early stage is important for improving treatment effectiveness and increasing patient survival. In recent years, computed tomography (CT) imaging has become an important tool for detecting and evaluating pancreatic abnormalities, as it provides detailed information about the structure and surrounding anatomy of the pancreas. This study proposes an image-processing-based approach for detecting pancreatic tumors from CT images. The proposed method consists of four main stages: pre-processing, segmentation, feature extraction, and classification. In the pre-processing stage, the acquired CT images are enhanced and denoised to reduce unwanted noise and improve their overall quality. The processed images are then segmented to identify the pancreatic region and locate areas that may contain tumors. From these segmented regions, relevant features are extracted to describe the morphological and textural characteristics of the suspected tumor regions. Finally, the extracted features are given to a classification algorithm to differentiate between tumor-affected and normal pancreatic images. Overall, the proposed approach aims to support computer-aided pancreatic tumor detection and contribute to more efficient and accurate early diagnosis.

KEYWORDS: Pancreatic tumor, CT images, feature extraction.