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## **Automated Lung Cancer Detection Via CNN**

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Abstract: Lung cancer is one of the leading causes of cancer-related deaths worldwide, primarily due to its detection at advanced stages when treatment options are limited. Early diagnosis significantly increases the chances of successful treatment and patient survival. This project proposes an advanced system for the early detection of lung cancer using a combination of image processing and machine learning techniques. The system processes lung CT scan images by applying various preprocessing steps to eliminate noise and improve image quality. It then performs segmentation to accurately identify and isolate the lung region and any suspicious masses or nodules. Once the region of interest is extracted, feature extraction techniques are employed to gather critical data such as texture, shape, and intensity. These features are then fed into a machine learning classifier that is trained to distinguish between normal and abnormal tissues, as well as to identify malignant and benign tumors. The use of artificial intelligence in this context not only improves the precision and reliability of lung cancer detection but also assists radiologists in making more informed decisions. This system aims to reduce diagnostic errors, lower analysis time, and ultimately contribute to better clinical outcomes by enabling earlier and more accurate detection of lung cancer. ...

**Keywords**: Lung cancer detection, CT scan, image processing, machine learning, feature extraction, image segmentation, tumor classification, early diagnosis, medical imaging, computer-aided diagnosis, artificial intelligence



