"Lung Cancer Prediction Using Machine Learning: A Comprehensive Study"

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Abstract: *Lung cancer remains one of the leading causes of cancer-related deaths worldwide, largely due to the fact that it is often diagnosed at a late stage. This research aims to develop an automated system for early detection of lung cancer using machine learning techniques. By utilizing the Lungs CT Scan Dataset from Kaggle, we implement advanced image processing methods and convolutional neural networks (CNN) to accurately identify and classify lung nodules as either benign or malignant. Our methodology includes important data preprocessing steps, such as normalization and augmentation, to enhance the performance of the model." "The results of our study show a significant improvement in detection accuracy compared to traditional diagnostic methods, with our model achieving a high accuracy rate. Additionally, our system has the potential to reduce diagnostic errors, increase early detection rates, and offer a cost-effective screening solution. By integrating this automated tool into clinical workflows, we aim to provide radiologists with reliable AI-generated insights, ultimately improving patient outcomes and easing the burden on healthcare systems." This study highlights the transformative potential of machine learning in medical diagnostics and emphasizes the importance of continued research to further optimize these technologies for clinical use..*

Keywords: Lung cancer detection, medical imaging, early diagnosis, healthcare automation, cancer screening