**ABSTRACT**

**IEEE BASE PAPER ABSTRACT:**

Lung cancer is one of the deadly diseases whose prediction is required to reduce the death rate. So, Artificial intelligence is used on CT scan images are used for achieving better accuracy in an automated manner. Deep Learning is one of the emerging trends for predicting values. Convolution Neural Networks is one of the deep learning algorithms which implemented to sample produces better outcomes as compared to other machine learning algorithms. In this paper, the data-set has been taken with 1000 images of chest scans for different types of lung cancers such as Adenocarcinoma, Large Cell Carcinoma and Squamous Cell Carcinoma. Multiple machine learning algorithms has been compared and then it has been confirmed that CNN is one of the best among all to check the accuracy of the prediction. The paper includes VGG – 16 implemented on data set having different types of Lung Cancer and thus helping to check the severity and precautions for the same in a distinct manner.

**OUR PROPOSED PROJECT ABSTRACT:**

Lung cancer remains a significant global health concern, demanding accurate and early detection for effective treatment. This project presents a novel approach to predict lung cancer using Convolutional Neural Networks (CNNs), specifically employing the InceptionV3 architecture. The aim of this project is to develop a robust and accurate model to classify the Lung Cancer. The dataset used in the project contains histopathological images of Lungs which is classified into three classes: Lung benign tissue, Lung adenocarcinoma, and Lung squamous cell carcinoma. The project is implemented in Python, leveraging its versatile libraries and frameworks to handle the complexities of deep learning tasks. The dataset utilized for training and validation comprises 15,000 histopathological images, synthetically augmented from 750 original images of lung tissue. The dataset is HIPAA-compliant and validated, ensuring its quality and ethical compliance. Throughout the project, careful attention is paid to achieving high model accuracy. The training process yielded an impressive training accuracy of 94.00%, indicating that the model effectively learned the intricacies of the training data. Moreover, the validation accuracy reached 93.00%, illustrating the model's generalization capability on unseen data. The use of InceptionV3 architecture enables the model to capture complex patterns and features present in the lung tissue images, facilitating accurate classification across the three distinct classes. By incorporating transfer learning, the model benefits from the pre-trained weights of InceptionV3 on large-scale image datasets, thereby accelerating the convergence of training and enhancing its ability to discern features relevant to lung cancer classification. This project's significance lies in its potential to assist medical professionals in accurately diagnosing lung cancer at an early stage, leading to timely interventions and improved patient outcomes. The model's high accuracy and generalization demonstrate its potential practical application in real-world scenarios, complementing the efforts of healthcare practitioners in the fight against lung cancer. Its notable accuracy and capability to handle a dataset with three classes make it a valuable contribution to the field of medical image analysis and lung cancer diagnosis. The project sets the stage for further research and exploration of CNN-based models in other medical imaging applications, potentially revolutionizing the way we detect and treat various diseases in the future.