VARDHAMAN COLLEGE OF ENGINEERING

(AUTONOMOUS)

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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TITLE : INIFIRMARY – A Large Medical Facitility

INTRODUCTION

•**Lung cancer is one of the factors contributing to a rise in the death rate. Therefore, appropriate measures should be taken to detect and identify this illness in its early stages in order to preserve the lives of a huge number of lung cancer patients. The survival rate of many people can be increased if it is discovered and treated in the early stages. If a condition has been identified, a correct diagnosis can help patients live longer.**

OBJECTIVES

•**The project is based on developing a application for patients who are unable to wait for the doctor in hospitals in an emergency situation, such as a lungs infection or a patient who needs emergency medical care.**

•**The user can get free access to check whether he/she is suffering from the lung disease or not .[1]**

METHODOLOGY

Data Preprocessing

• **Image pre-processing involves steps such as creating functions to load image datasets into arrays, resizing raw images to an established base size before feeding it to the neural network. Lung Cancer were classified using X-ray data analysis in order to help the practitioners. In order to do that they used deep learning methods. VGG16 with activation function was used here[2]**

•**Initially, different works on Lung Cancer classification were reviewed for choosing activation function[3]**

Training the Model

•**After normalization 70 percent of the images were sent for training and rest percent were reserved for testing purpose.**

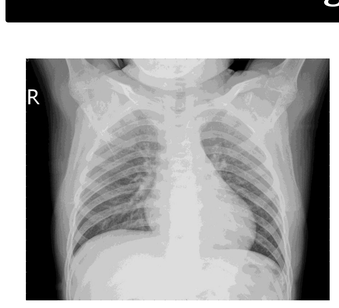
•**Once all the data are prepared , the models were prepared before training the data. The architectures that we are using are VGG16.**

•**By using Sigmoid Activation function the prediction of lung cancer will be calculated.[4]**

•**After sorting the entire data, we apply various CNN architecture in the testing phase. We have applied two classifications for the testing phase. After training the accuracy level that we got have analyzed result has been visualized in graphs.**

•**The trained model will be used for testing and evaluating the data.**

Data set of Testing and Evaluation



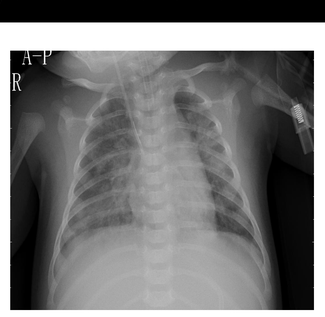


Fig. 3 X-ray Images of Normal and person Suffering from the Lung Cancer.

RESULTS AND DISCUSSION

Sigmoid Functions Graphs

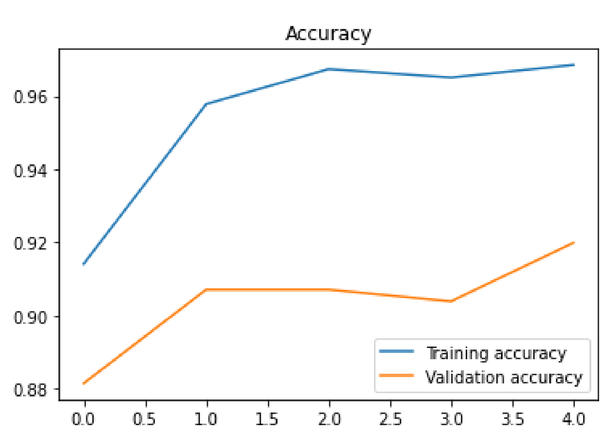


Fig. 1a Accuracy Graph of Sigmoid Function

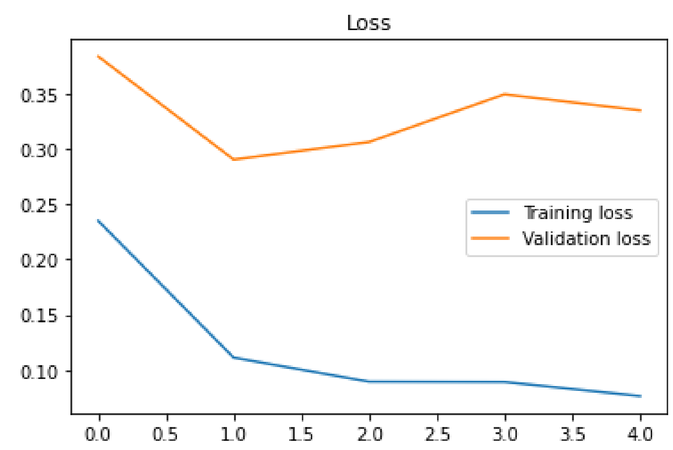


Fig. 1b Loss Graph of Sigmoid Function

Interface of Application

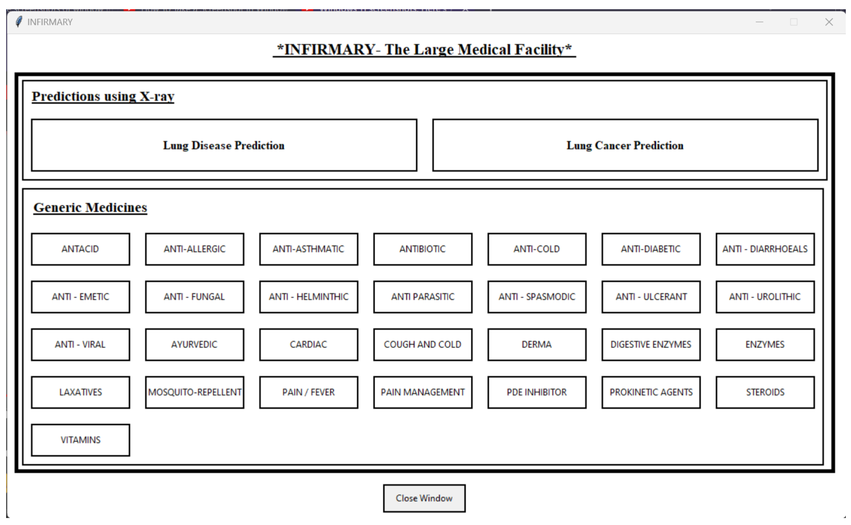


Fig. 2a Main Screen of the Application

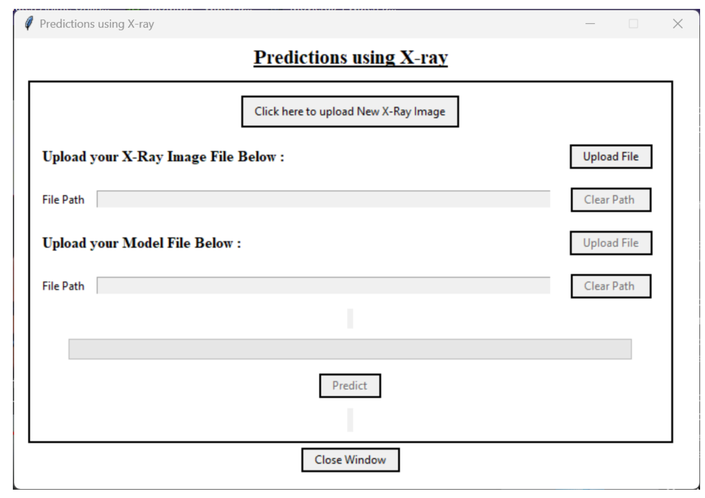


Fig. 2b Interface before Validating X-ray Image

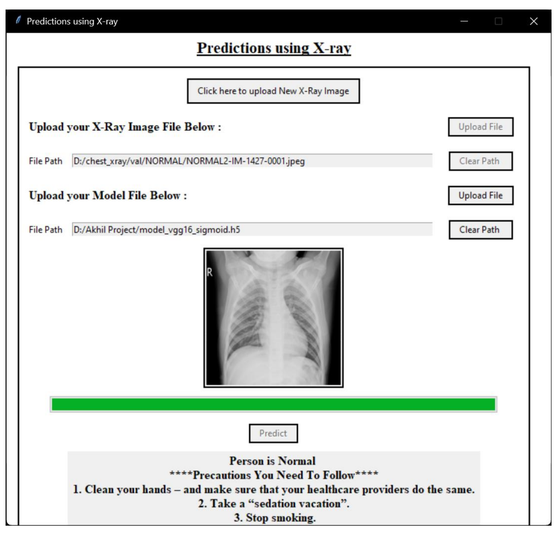


Fig. 2c Interface after Validating an X-ray Image

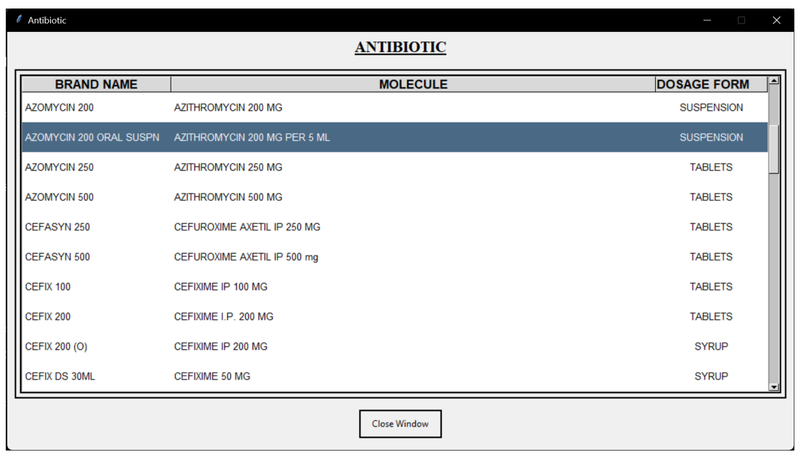


Fig. 2d Interface of Generic Medicine

CONCLUSIONS

1. **Using the DenseNet network, we created an automated lung cancer X-ray image classification model. The denseNet algorithm is then used to analyze and categorize the lung cancer datasets. Our model delivers improved classification results in X-ray image categorization of cancers, with a test accuracy of 91.99 percent, according to experimental results.**
2. **Our innovative approach of lung cancer image classification will aid radiologists' treatment in the future, simplifying the steps of lung cancer diagnosis, improving the accuracy of lung cancer diagnosis, and lowering the rate. Furthermore, we will process the categorization of lung cancer using more high-quality lung cancer X-Ray scans, significantly boosting the network's accuracy.**

REFERENCES/PUBLICATIONS

1. **Silva, F., Pereira, T., Morgado, J., Frade, J., Mendes, J., Freitas, C., Negrao, E., De Lima, B.F., Da Silva, M.C., Madureira, A.J. and Ramos, I., 2021. EGFR assessment in lung cancer CT images: analysis of local and holistic regions of interest using deep unsupervised transfer learning. IEEE Access, 9, pp.58667-58676.**
2. **Das, S. and Majumder, S., 2020, November. Lung cancer detection using deep learning network: A comparative analysis. In 2020 Fifth International Conference on Research in Computational Intelligence and Communication Networks (ICRCICN) (pp. 30-35). IEEE.**
3. **Loddenkemper, R., Gibson, G.J. and Sibille, Y., 2003. The burden of lung disease in Europe: why a European White Book on lung disease? European Respiratory Journal, 22(6), pp.869-69.**

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