

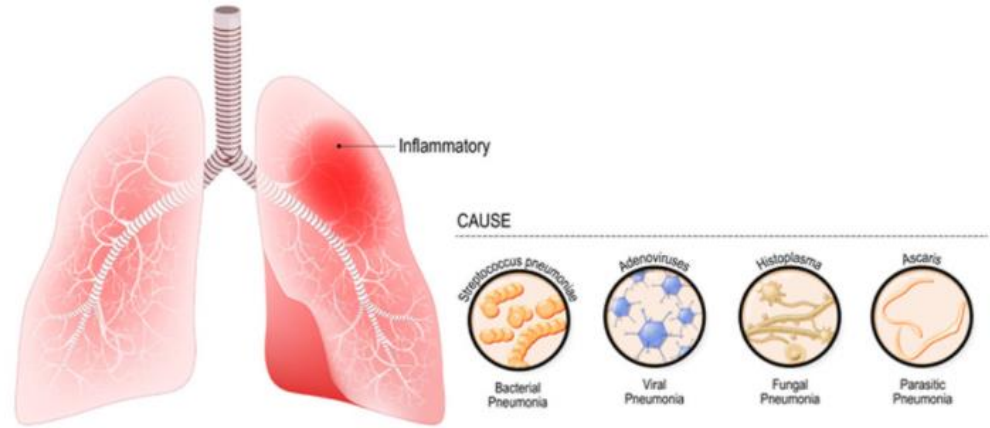


Pneumonia Detection using Deep Transfer Learning

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Background

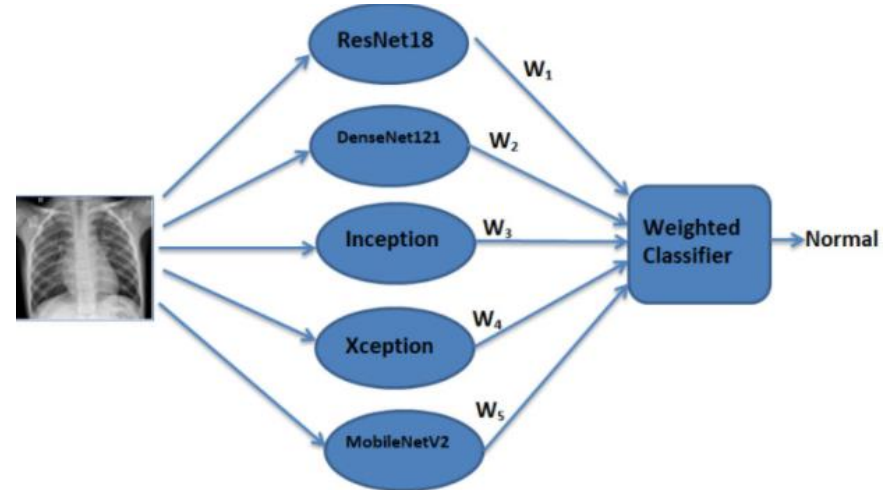
- Radiological images continue to grow at a significant rate compared to the number of trained radiologists/readers available.
- It is estimated that in some cases, an average radiologist must interpret one image every 3–4 seconds in an 8-hour workday to meet workload demands.
- AI-driven radiological image analysis has the potential to increase efficiency & reduce errors by providing trained radiologists with, in some cases, superior detection capabilities.



Research paper



- Efficient Pneumonia Detection in Chest Xray Images Using Deep Transfer Learning.
- Predictions from all transfer learning models are given optimized weights to give the final prediction.
- We have used CNN, ResNet50, DenseNet121 and Inceptionv3



Methodology



- Transform data to python readable format.
- Dataset is already divided into train and test.
- Use 80-20 split for train and validation.
- Perform the Exploratory Data Analysis.
- Preprocess the data and Implement Data Augmentation.
- Try out CNN model.
- Compare with ResNet18, DenseNet121, and InceptionV3 pre-trained neural networks.
- Implement Weighted Classifier for all the models and obtain the classified output.

Results

Model	Accuracy
CNN	91.02
ResNet50	93.58
DenseNet121	95.35
InceptionV3	87.82
Weighted Classifier	93.75

Confusion Matrix for weighted classifier

