

The background is a light blue gradient with various medical icons. A large stethoscope is on the left, with its chest piece pointing towards the center. Several pills are scattered around: two blue and white capsules, one orange and white capsule, and a few small blue circles. There are two orange hearts; one has a white cross and the other has a white ECG line. Faint dotted lines are also visible.

Respiratory Diseases Recognition

Using Respiratory Sound

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Introduction



Respiratory diseases may be caused by infection, by smoking tobacco, or by breathing in secondhand tobacco smoke, radon, asbestos, or other forms of air pollution.

Breath sound have three characters; frequency, intensity, and quality; which helps us to differentiate two similar sounds. Auscultation of the lung is an important part of respiratory examination and is helps in diagnosing various respiratory disorders. Auscultation assesses airflow through the trachea-bronchial tree.



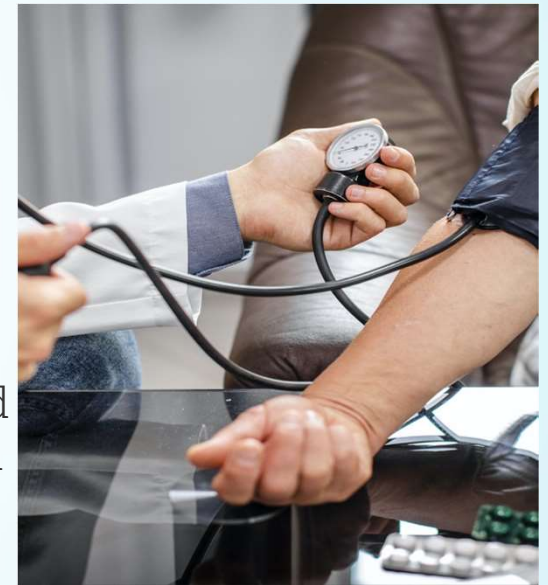
Respiratory audios are important indicators of respiratory health and respiratory disorder. For example, a wheezing sound is a common sign that a patient has an obstructive airway disease like asthma or chronic obstructive pulmonary disease (COPD).

Relevance of the topic

Respiratory audios are important indicators of respiratory health and respiratory disorder.

By the development of this system , doctors can easily diagnosis the disease effected on the respiratory system, condition of the system whether it is healthy or not just by the respiratory sound.

Although , we can save the time and cost . Along with , mentioning the condition of the respiratory system the proposed model also gives some suggestion for the easily recover of health such as exercise , food habits and so on.



Data augmentation:

```
patient_folds = get_patient_folds(patients_list)
start = time.time()
all_results = []

for i in range(1):
    print("We're at fold", i+1)
    test_patients = patient_folds[i]
    train_patients = patient_folds.copy()
    del train_patients[i]
    train_patients = [item for sublist in train_patients for item in sublist]

    test_soundfiles = get_soundfiles_for_patients(test_patients)
    train_soundfiles = get_soundfiles_for_patients(train_patients)

    X_train, labels_train = get_data_for_cnn(train_soundfiles, sound_dir)
    X_test, labels_test = get_data_for_cnn(test_soundfiles, sound_dir)
```



```

all_labels = labels_train + labels_test
test_labels_start = len(labels_train)
factorized_labels, classes = pd.factorize(all_labels, sort=True)
print(classes)
if(len(classes) != 6):
    print("ERROR. Number of classes not 6.")
    print(classes)
    break
categorical_labels = to_categorical(factorized_labels)
y_train = categorical_labels[:test_labels_start]
y_test = categorical_labels[test_labels_start:]

np.save(root + "dataframes/X_train_04_10_split_" + str(i), X_train)
np.save(root + "dataframes/X_test_04_10_split_" + str(i), X_test)
np.save(root + "dataframes/y_train_04_10_split_" + str(i), y_train)
np.save(root + "dataframes/y_test_04_10_split_" + str(i), y_test)

##GETTING THE RESULTS
val_split = int(len(X_train)*0.2)
X_val = X_train[:val_split]
y_val = y_train[:val_split]
X_train = X_train[val_split:]
y_train = y_train[val_split:]

model = get_model(config)
history = model.fit(x=X_train, y=y_train, batch_size=config.batch_size, epochs=config.epochs,
                    validation_data=(X_val, y_val), verbose=1)
#model.save(root + 'models/model_cnn_disease_class_04-03_fold' + str(i) + ".h5")

```

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Git Usage

GitHub is a code hosting platform for version control and collaboration. It lets you and others work together on projects from anywhere.

Git is a DevOps tool used for source code management. It is a free and open-source version control system used to handle small to very large projects efficiently. Git is used to tracking changes in the source code, enabling multiple developers to work together on non-linear development.



Git Hub: https://github.com/lise1905/main_project

References

- [1] Respiratory diseases recognition through respiratory sound with the help of deep neural network.
- [2] Dataset link : <https://www.kaggle.com/datasets/vbookshelf/respiratory-sound-database>





**“Live Healthy, Stay
Young At Heart”**



Thank you!!