UDYAM'23

ANNUAL TECHNICAL FEST OF ELECTRONICS ENGINEERING SOCIETY

ROUND-1

MOSAIC

The human body cannot function normally without breathing. As a result, respiratory conditions frequently necessitate the examination of clinical physicians. Stethoscope-based respiratory auscultation has long been an important first-line physical exam. The development of stethoscope technology has made it possible to record patient sounds with high quality. Digital stethoscopes and other recording methods can be used to record these sounds.

Sir Sunderlal Hospital's doctors need a way to perform diagnosis of the patient's lung condition—wheezes and crackles—through the use of a computer vision (machine learning) algorithm. So they approached students of IIT Varanasi to get some help. They have provided the digital data, by which spectrophotogram figures and further model training can be accomplished.

Task:

You will be provided with the audio and text file, like the one in the training dataset. And you have to make predictions on Presence/absence of crackles and Presence/absence of wheezes.

ELECTRONICS ENGINEERING SOCIETY

UDYAM'23

ANNUAL TECHNICAL FEST OF ELECTRONICS ENGINEERING SOCIETY

MOSAIC

Data Description(Dataset):

Each file name is divided into 5 elements, separated with underscores (_).

1. Patient number (101,102,...,226)

2. Recording index

3. Chest location

   a. Trachea (Tc)
   b. Anterior left (Al)
   c. Anterior right (Ar)
   d. Posterior left (Pl)
   e. Posterior right (Pr)
   f. Lateral left (Ll)
   g. Lateral right (Lr)

4. Acquisition mode

   a. sequential/single channel (sc),
   b. simultaneous/multichannel (mc)

5. Recording equipment

   a. AKG C417L Microphone (AKG C417L),
   b. 3M Littmann Classic II SE Stethoscope (LittC2SE),
   c. 3M Littmann 3200 Electronic Stethoscope (Litt3200),
   d. WelchAllyn Meditron Master Elite Electronic Stethoscope (Meditron)

ELECTRONICS ENGINEERING SOCIETY

UDYAM'23

ANNUAL TECHNICAL FEST OF ELECTRONICS ENGINEERING SOCIETY

MOSAIC

The annotation files comprise four columns:

- Beginning of respiratory cycle(s)
- End of respiratory cycle(s)
- Presence/absence of crackles (presence=1, absence=0)
- Presence/absence of wheezes (presence=1, absence=0)

SUBMISSION (Link):

Submit the drive link containing the Abstract, Training Code, Testing Code and Model file.
Abstract can be in doc, ppt or any form. It should describe your way of approach, your model's performance, difficulties faced and how you tackled those problems.
Make sure to give view access to the drive link.

Deadline : 20th March '23 , 23:59 hours

ELECTRONICS ENGINEERING SOCIETY

UDYAM'23

ANNUAL TECHNICAL FEST OF ELECTRONICS ENGINEERING SOCIETY

MOSAIC

GUIDELINES:

- The machine learning model should be trained on the provided dataset only.
- Participants are not allowed to use any open source CNN architecture, they must build it by themself using any python libraries like tensorflow, pytorch, etc.
- CNN must be used, so the participant needs to convert the audio file to any of the spectrogram images.
- Any tool can be used for data preprocessing
- Participants are requested to document their progress and code, because a short abstract containing approach, description, code and model file will be asked for final evaluation from each team.
- Final judging for PS1 will be done on the basis of accuracy on the test dataset and the abstract submitted.
- In case of any malpractice or cheating, that team would be disqualified.(Note: code will be reviewed to avoid malpractice)

ELECTRONICS ENGINEERING SOCIETY

UDYAM'23

ANNUAL TECHNICAL FEST OF ELECTRONICS ENGINEERING SOCIETY

https://eesiitbhu.in/

https://www.instagram.com/udyam_iit_bhu/

https://www.facebook.com/udyamfest

https://www.linkedin.com/company/udyam/

ELECTRONICS ENGINEERING SOCIETY