Hindi Dysarthric Speech Database

The Hindi Dysarthric Speech Database (HDSD) was published in 2025. Speech samples were gathered from a total of 60 speakers, comprising 42 males and 18 females who were diagnosed with neurological conditions such as PD, PSP, and MSA at the All India Institute of Medical Sciences (AIIMS), Rishikesh, under the supervision of expert neurologists and speech pathologists. Collection of the HDSD was approved by the ethical committees of the Indian Institute of Technology Roorkee and AIIMS Rishikesh.

Recording System

All parts of the session took place in a noise-less room with the talker seated next to a speech pathologist and an experimenter. The close-talk microphone was mounted on the head with a receiving sensor close to the mouth at a distance of 5-10 cm, while the throat microphone was placed near the larynx. Speech data was stored digitally in a computer via dual channel USB audio interface device Scarlet-2i2, Focusrite (https://focusrite.com/products/scarlett-2i2). Both microphones and interface devices are shown in Figure 1.

Figure 1. Acquisition system with Acoustic, throat microphone, and Dual-channel audio interface

Speech Recording Task

There were two tasks for speech data recording:

i) *Phonation task*: A phonation task is performed where the subject was told to say \a\ vowel as long as possible with maximum possible intensity. During phonation, a sound meter is used to measure the sound pressure level in dB.

ii) *Sentence speaking task*: Thirty meaningful sentences taken from the Indic database (K. Prahallad, E. N. Kumar, V. Keri, S. Rajendran, and A. W. Black, "The IIIT-H indic speech databases," *INTERSPEECH 2012*), were recorded. The speech utterances in the Hindi

language consist of 40 types of phonemes. The sentences are formed by 193 words with 122 unique words. All speech materials were digitized and stored at a sampling rate of 16 kHz and a sample resolution of 16-bit.

Subsequent to the recording sessions, all speech materials were digitized and stored using a 16 kHz sampling rate at 16-bit sample resolution. Each sentence was saved in a separate file in standard WAV format. Each sentence is renamed as <subject id><session id><sentence id><microphone id>. If the subject ID starts with 'C', it indicates the control group; else, it is the subject undergoing a neurological diagnosis. Figure 2 shows the examples of two files with an indication of associated attributes.

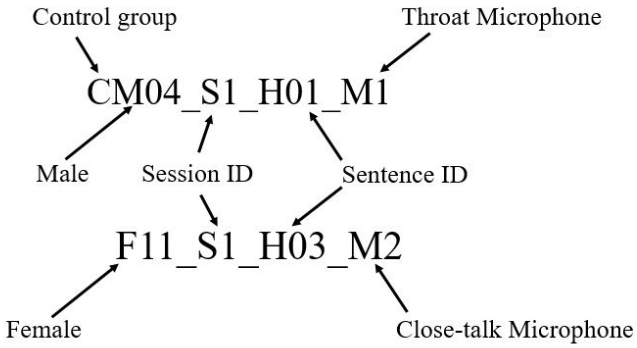

Figure 2. File name format

Word labelling is provided in the "WORD" folder for each speaker.

Database Requisition Process

If you are interested in obtaining a copy of the dataset, send e-mail to manoj.tripathy@ee.iitr.ac.in. In your e-mail, please specify:

- Your name
- Your institution name
- Intended use of the corpus
- Your institutional e-mail address
- The period of time for which you will need access to the data.

This database can be shared with academic institutions/research labs only for carrying out research for academic/ research purposes. To receive the database, one should send a letter through the proper channel (through the Head of the dept/institution) stating the purpose of the requested database. Along with the letter, also enclose the declaration (agreeing to the terms and conditions mentioned below) signed by you and forwarded by the Head of the dept./institution.
The declaration should contain the following statements:

1. The database should be used for academic research and development purposes only.

2. The database or its derivatives should not be used for any commercial benefit.
3. The user should not redistribute the database.
4. IIT Roorkee will not be responsible for any harm caused by using this database.
5. The users should quote the relevant publications of this database in their articles.
6. Neither the name of the IIT Roorkee/AIIMS Rishikesh nor the names of its contributors may be used to endorse or promote products derived from this database without specific prior written permission.

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