

# IIITSAINT-EMOMDB: CAREFULLY CURATED MALAYALAM SPEECH CORPUS WITH EMOTION AND SELF-REPORTED DEPRESSION RATINGS

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## ABSTRACT

Mental health conditions such as depression and anxiety are pervasive issues that affect millions of individuals worldwide. Understanding the intricate relationship between emotional perception and mental health is crucial. This work develops a database named IIITSaint-EmoMDB containing Malayalam language speech samples annotated with emotion ratings at valence and arousal scale using three annotators considering four emotion labels: happy, sad, angry and neutral. In addition to emotion ratings, emotional perception is rated from 150 participants according to the circumplex model of valence and arousal. The database also consists of self-reported mental health scores of those participants based on PHQ-9 and GAD-7 questionnaire. Our preliminary analysis of comparing the participants' emotional perception based PHQ-9 and GAD-7 scores revealed that the depressed category showed the highest deviation from the emotion perception of people compared to the mild depression and non-depression categories.

**Index Terms**— emotional perception, depression, emotion, mental health, valence and arousal

## 1. INTRODUCTION

Affective information like emotions and personality traits can be perceived by individuals differently. Perceiving emotions can be based on many facts, such as tone of voice, facial expressions, body language or even just the words used to convey the emotion. Emotional Perception refers to someone's capacity to recognize and identify emotions in oneself as well as others, in addition to the biological and physiological processes involved. It is how someone interprets an emotion and responds to it. This plays a crucial role in shaping one's experiences.

Emotions are complex psychological and physiological states that arise in response to internal or external stimuli. They encompass a wide range of feelings that individuals experience and are characterized by subjective experiences, physiological changes, expressive behaviors, and cognitive

responses. For example, depression significantly influences emotions, often resulting in a range of profound and persistent emotional experiences. Elevated levels of negative emotions and reduced positive feelings are linked to a state of depression or mood.

The primary objective of this research is to create a speech corpus of four emotions: happy, sad, angry and neutral belonging to Malayalam language, a language spoken in Kerala state in India. The data is also collected with emotional perception ratings at valence and arousal scale from fluent native Malayalam listeners. Further, the participants mental state is recorded considering Patient Health Questionnaire -9 (PHQ-9) [1] and Generalised Anxiety Disorder Assessment (GAD-7) [2] in self-reported manner. Thus, the data helps to understand how mental health can affect the emotional perception of individuals [3]. Moreover, the speech samples are verified for their emotion ratings quality using self-reported mental state information. The choice of Kerala state is as the state known for its high literacy rates and progressive social indicators, has also witnessed a rise in the prevalence of mental health disorders in recent years [4]. Additionally, Kerala's unique demographic profile, characterized by a rapidly aging population attributes to the same. However, there is a paucity of studies focusing on mental well-being within the Malayalam-speaking community. Thus, this dataset helps the researchers to build model for speech emotion recognition, depression detection and speech perception analysis on emotion and the state of mental health.

## 2. LITERATURE REVIEW

Understanding the intricate relationship between mental health and emotional perception is essential for promoting well-being and addressing psychological disorders effectively. The ability to accurately identify and interpret emotions in oneself and others, plays a critical role in various aspects of psychological functioning [5]. Individuals with poor emotional perception are at a higher risk of developing mental health disorders such as depression and anxiety. [6] Research

suggests that interventions targeting emotional perception can improve social skills and enhance social functioning in individuals with mental health disorders. [7]

The studies emphasized that the individuals with mental health disorders such as depression and anxiety are shown with dysfunction often observed in brain regions [8]. Emotional perception is a factor that is highly affected in those conditions. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) has outlined different aspects of depression, such as feelings of sadness, loss of interest or pleasure in activities, changes in sleep patterns or appetite, fatigue, feelings of worthlessness or guilt, difficulty in concentrating, psycho-motor changes, and thoughts of self-harm or suicide [9]. Thus, one's speech is largely effected due to psycho-motor changes.

Further, cross-cultural studies have highlighted differences in emotional perception across cultures, which suggests that cultural norms and values influence how emotions are experienced and interpreted [10] [11]. Through this exploration a deeper understanding of depression and a more effective approaches to its treatment and management can be devised to the specific community. However, such studies based on speech emotion perception are lacking in India, particularly in Malayalam speaking community. This could be attributed to the lack of availability of speech corpus containing different emotions, measures indicating depression/anxiety state of the individual and their perception to those different emotions.

## 2.1. Emotion Corpus

The availability of high-quality datasets is crucial for the development and evaluation of speech emotion perception studies. Several speech emotion datasets have been developed, mostly from other than Indian community. One such dataset is the Ryerson Audio-Visual Database of Emotional Speech and Song (RAVDESS), which contains acted speech and song recordings produced by professional actors. The RAVDESS dataset includes a wide range of emotions, such as neutral, calm, happy, sad, angry, fearful, surprise, and disgust [12].

Another widely used dataset is the Berlin Database of Emotional Speech (EMO-DB), which consists of acted speech recordings. The EMO-DB dataset has been instrumental in the development and evaluation of speech emotion recognition systems, which has provided researchers with a standardized benchmark for comparison. Additionally, the Interactive Emotional Dyadic Motion Capture (IEMOCAP) database contains recordings of naturalistic conversations, which captures both audio and video data. The IEMOCAP dataset includes a wide range of emotions expressed in dyadic interactions, that provide valuable insights into the dynamics of emotional expression in spontaneous speech [13]. Another prominent dataset that provides the basis for research is the CMU-MOSEI (Multimodal Corpus of Sentiment Intensity) dataset. CMU-MOSEI encompasses a wide range of videos

from movies, interviews, and monologues, capturing diverse emotional expressions and intensity levels. [14]

## 2.2. Mental Health Survey tools

Mental health questionnaires are standardized tools used to assess various aspects of an individual's mental health, emotional well-being, and specific symptoms related to mental health conditions. These questionnaires are often designed to be self-administered or used by mental health professionals to screen, diagnose, or monitor mental health disorders. Questionnaires like PHQ-9 (Patient Health Questionnaire-9) assess depressive symptoms based on the nine criteria outlined in the DSM-5. It's widely used to screen for and monitor the severity of depression. [1] The GAD-7 (Generalized Anxiety Disorder-7) is a brief questionnaire used to assess and screen for generalized anxiety disorder. It consists of seven items measuring anxiety symptoms. [2] BDI (Beck Depression Inventory) is a widely used self-report questionnaire that measures the severity of depressive symptoms. [8] STAI (State-Trait Anxiety Inventory) is a questionnaire that assesses both state (current) and trait (long-standing) anxiety levels [15]. The Perceived Stress Scale (PSS) consists of several items or questions that individuals respond to based on their perceived experiences of stress within the past month. These items focus on various aspects of stress, including feelings of unpredictability, control, and overwhelm in life situations [3]. These questionnaires have been extensively validated and used in clinical and research settings to assess mental health symptoms and monitor treatment outcomes. Table 1 summarizes the available tools and indicates used tools in this work for IIITSaint-EmoMDB creation.

**Table 1. Mental health survey tools**

Sl.No	Survey Tool Name	Type	Access Info
1	Patient Health Questionnaire-9 (PHQ-9)	Depression	Used
2	Becks Depression Inventory (BDI)	Depression	NA
3	Generalized Anxiety Disorder-7 (GAD-7)	Anxiety	Used
4	State Trait Anxiety Inventory (STAI)	Anxiety	NA
5	Perceived Stress Scale (PSS)	Stress	NA

## 3. IIITSAINT-EMOMDB CREATION

This data mainly aims to facilitate the resources to analyze the variability in emotional perception [16] among the Malayalam speaking community based on participant's mental health state. In this process, a Malayalam speech data is created with emotion labels, which can be used to build speech emotion recognition systems for Malayalam language. The data creation has three main objectives. First, to create a Malayalam speech emotion dataset containing speech files and corresponding emotion labels. Second, to obtain emotional perception response from native Malayalam listeners

at valence and arousal scale. Third, to record mental health profile of the participant in self reported manner using PHQ-9 and GAD-7 survey.

### 3.1. Emotional speech collection

For creation of speech samples, we propose to acquire the data from publicly available sources. As these speech samples required to be uttered by professional actors so as to convey the desired emotion, speech from Malayalam movies were collected as these have emotional contents which are delivered by professional actors. This process is similar as to the data creation of CMU-MOSEI. In CMU-MOSEI, 250 categories were chosen from which videos were selected for data extraction. However, for our dataset, 20 topics were initially chosen for the movie selection. To reduce ambiguity, the number of topics were decreased to 10 by merging similar ones. Table 2 shows the selected categories. Further, we have considered speech samples belonging to four emotion categories Happy, Sad, Angry and Neutral, the choice for four emotions to reduce confusion in the emotion ratings agreement.

**Table 2.** Movie Categories Chosen for Dataset Creation

Drama	Romance	Comedy	Historical	Action Thriller
Horror	Political	Crime	Family	Science Fiction

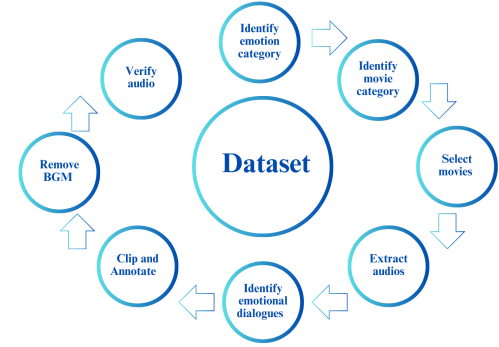
From each category, two movies were selected: One was released before 2010 and one after 2010. This was so that our dataset contains diverse audios. The movies chosen were the top-rated movies in Internet Movie Database (IMDb). Additionally, one more movie from each category was picked. This was based on the most popular movie under each category. This gives a total of 30 movies. To further assure that the desired emotions were there in the selected movies, the movies were searched based on emotions and cross verified if they belonged to the list. From each movie video, audios were extracted and stored in mp3 format.

From these movies, dialogues belonging to one of the four emotions were manually annotated along with their timestamps. The scenes were tagged based on the emotional content of the voice based on the annotator perception and not on the words alone. The audios corresponding to the time stamps were extracted manually using a software known as Audacity. If the clipped audios contained background music, then it was to be removed. These audios were cross verified by two other annotator to ensure unbiased opinion. Figure 1 gives a diagrammatic representation on the entire dataset creation process.

#### 3.1.1. Reliability check

The reliability of the speech emotion datasets is a critical factor in ensuring its validity and generalizability. In order to

ensure the reliability of our dataset, we performed an inter-rater agreement using weighted Cohen’s kappa to check the extent of agreement between two or more raters for a rating. For this, the three annotators were asked to rate valence and arousal using a 5 point likert scale for all the audios in our dataset. It is observed that the average Cohen’s kappa values found to be 0.99 for valence rating with kappa values of 0.988, 0.988 and 1 between annotator 1&2, 1&3 and 2&3 respectively. Similarly for arousal rating, the average kappa value found to be 0.97 with kappa values of 0.971, 0.968 and 0.992 between annotator 1&2, 1&3 and 2&3 respectively.



**Fig. 1.** Dataset Creation Process

#### 3.1.2. Dataset Details

We obtain a total of 1000 speech samples comprising of the four emotions, namely, Angry, Happy, Neutral and Sad extracted from 30 different Malayalam movies. Each audio is a sentence uttered in Malayalam by professional actors, with an average duration of 7 seconds. The speech samples comprising of a total of 139 male and 56 female speakers. The dataset consists of 250 Angry audios, 250 Happy audios, 250 Neutral audios, and 250 Sad audios taken into account by the annotators. A subset of these audios were provided to the participants for the emotion perception study. 150 Participants recorded 3750 ratings each for valence and arousal for the subset.

### 3.2. Speech Emotion Perception Task

#### 3.2.1. Participants:

Total 150 (67% female, 33% male, 0% other) Malayalam-speaking adults (Age: 18–25 years) are selected for the perception experiments. The participation was totally voluntary basis and no compensation was given to the participants. A brief description of the entire process was given to the participants before attending the survey. Participant’s consents were taken prior to performing the survey. They were asked to perform three tasks: (1) Demographic survey (2) Speech Emo-

tion Perception Task, (3) Mental Health Surveys : PHQ-9 and GAD-7 . A short note on how the scores of the questionnaires were calculated was also informed to the participants.

### 3.2.2. Stimuli

We used 25 emotional abstract audios to investigate the differences in the ratings and the properties generated by the two population sets. These abstract audios were a subset of the dataset we had created as a part of this project. The audios were pre-categorized equally into four emotional categories: (1) happy, (2) sad, (3) neutral, (4) angry. All participants were given the same set of audios to rate. 6 audio each of happy, sad and angry and 7 audio of neutral emotion. Total of 25 audios.

### 3.2.3. Perception ratings

Participants were presented with 25 audios. They had to listen carefully to each audio using earphones and rate the speaker's emotion in accordance with the circumplex model of Valence and Arousal. The valence (range: 1 = extremely unpleasant; 5 = extremely pleasant) and arousal (range: 1 = extremely low; 5 = extremely high) was rated on a 5-point Likert scale via mouse click. The valence and arousal ratings (range: 1-5) for audios belonging to the four stimuli categories (Angry, Happy, Sad, Neutral).

## 3.3. Mental health state

Participants were asked to fill the following mental health surveys: the standardized PHQ-9 questionnaire and the GAD-7 questionnaire. In these tasks, participants were instructed to read the presented statement carefully and respond to the choices that best describe their condition/state of mind. The PHQ-9 questionnaire contains nine questions that assess the levels of depression on the nine key symptoms in the past two weeks. The PHQ-9 survey was scored by summing the ratings of its 9 items, where each item was rated on a 4-point scale ranging from 0 to 3. Similarly, the GAD-7 (Generalized Anxiety Disorder Assessment) is a seven-item instrument that is used to measure or assess the severity of generalized anxiety disorder (GAD) [17]. Each item asks the individual to rate the severity of his or her symptoms over the past two weeks. The score was calculated by summing the ratings of its 7 items, where each item was rated on a 4-point scale ranging from 0 to 3. Based on the participant response, we summarize their depression state in six categories: 1. No, 2. Minimal, 3. Mild, 4. Moderate 5. Moderately severe and 6. Severe and anxiety state in four categories: 1. Minimal 2. Mild, 3. Moderate and 4. Severe in Table 3 and 4 respectively.

From the collected PHQ-9 participant response, it is observed that the total score ranges from 0 to 27. It should be noted that the six depression categories typically can be used

**Table 3.** Distribution of participants (percentage in brackets) across PHQ-9 categories

Items	No	Minimal	Mild	Moderate	Moderately Severe	Severe
PHQ-9 Range	(0)	(1-4)	(5-9)	(10-14)	(15-19)	(20-27)
No. of Participants	9 (6%)	37 (25%)	54 (36%)	31 (20%)	16 (11%)	3 (2%)
Consulted professional	0	1	3	2	2	0
History of mental illness	0	0	3	3	1	17

**Table 4.** Distribution of participants (percentage in brackets) across GAD-7 categories

Items	Minimal	Mild	Moderate	Severe
GAD-7 Range	(1-4)	(5-9)	(10-14)	(15-21)
No. of Participants	67 (45%)	52 (35%)	23 (15%)	8 (5%)

for the finer analysis of the mental state and emotional perception. However, to perform a more coarse analysis, the six depression categories in the table can be further simplified to three group as follows: People scoring about 15 on the PHQ-9 scale were assigned to the depressed group. Those scoring below 5 on the PHQ-9 scale were assigned to the non-depressed group. Rest of the participants who scored between 5 to 14 were assigned to the mild depression category. This indicates that the participant in the no and minimal category as non-depressed group, mild and moderate as mild depression group and moderately severe and severe as depressed category. From the collected GAD-7 participant response, it is observed that the total score ranges from 0-21.

## 3.4. Overall summary

Participants completed the study via a graphic user interface we created using Crowdsignal, a data collection and analysis tool offered by WordPress.com. This was shared with the participants via a link as well as a QR code. The order of tasks was fixed for every participant. Each participant began the survey by viewing a welcome page that provided an overview of the study's purpose. Following this, they were presented with a consent form informing them about the anonymity and confidentiality of their data. All participants electronically gave their consent before starting the experiment.

While attending each task, participants received task-specific instructions based on the conditions of the task. In the speech emotion perception task participants were presented with 25 audios from our dataset, 6 audios from Angry category, 6 audios from happy category, 6 audios from sad category and 7 audios from neutral category. A short note on calculating the questionnaire scores were given in the session as well. Participants could also get a copy of their response to perform the same. On average, the entire experiment took 30 minutes to complete. Figure 2 illustrates the schematic flow of the overall experimental session.

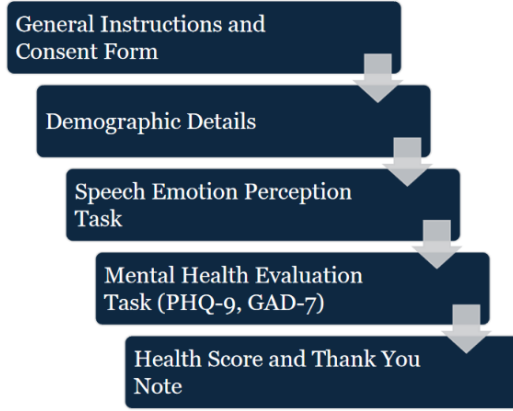


Fig. 2. Structure of Graphical User Interface

#### 4. PRELIMINARY ANALYSIS

We perform the analysis considered total deviation of participant valence and arousal rating from the standard valence and arousal rating across all 25 audios rated by the participant. We consider the average valence and arousal ratings by the three annotators during speech emotion data creation as the standard valence and arousal ratings. In equation form, the deviation is  $\sum_{i=1}^{25} (V_s^i - V_p^i) + (A_s^i - A_p^i)$ , where  $V_s^i, V_p^i, A_s^i, A_p^i$  are the  $i$ -th audio standard valence, participant valence, standard arousal and participant arousal ratings, respectively. From the computations, it is observed that the deviations ranged from 11-55, 55 being the maximum deviation shown by the participants.

We had 2% (from Table 3) of the participants in the severe depression category. Therefore according to our hypothesis the 2% (3 out of 150) of the values that showed the most deviation must fall within severe depression. The top three values were 50, 51 and 55. One participant had 50, two participants had 51 and one participant had 55 as the deviation score. Surprisingly the participant with the highest deviation had the PHQ-9 and GAD-7 scores falling in the category of minimal depression and minimal anxiety. This led us to conduct further research through which we found out that the rating for the audio was not done according to the instructions given. Therefore that value was an outlier. Out of the other three, two participants had severe depression and one participant had severe anxiety.

Similarly, we had 10% of the participants in the moderately severe depression category, therefore we checked the next 15 values (10% of 150) that showed the most deviation. We got the deviation range as 40-49. Through this process, we devised the range of deviations from the standard value. Table 5 shows the deviation ranges for the standard values. In general, the participants who showed deviation within this range fell in the moderately severe depression range. We could find the same for the next range which was moderate depression

with 21% of the participants falling in the category.

Table 5. Range of deviation from standard value

Categories	Range
Minimal Deviation	0 - 26
Mild Deviation	27 - 32
Moderate Deviation	33 - 39
Moderately Severe Deviation	40 - 49
Severe Deviation	50 - 55

But for the mild depression category and minimal depression category, the deviations showed a significant variation from the expected result. We expected about 36% of participants to show mild deviation from the standard value, but only 29% of the participants showed mild deviation. The rest 37% of participants showed only minimal deviation, that is 7% more than the expected result.

This discrepancy arises due to the fact that in accordance with the circumplex model of valence and arousal, a single audio can have more than one value for valence and arousal. This is because valence and arousal is rated on a likert scale where disagreements between adjacent categories do not contribute to significant difference. For example an angry audio can have the valence as extremely unpleasant (value = 1 on likert scale) as well as unpleasant (value = 2 on likert scale). Both these values signify that the audio is angry. Here the single audio has two values, which imply a one point deviation from the standard value. Therefore we can conclude that the 7% variation arises due to this factor.

Figure 3 shows the distribution of the participants across various categories derived from the PHQ-9 scores and perception rating deviation. We can see that the Severe Depression, Moderately Severe Depression and Moderate Depression bars are similar to the bar representing Severe deviation, moderately severe deviation and moderate deviation. Minimal group and mild group show a variation of 7%.

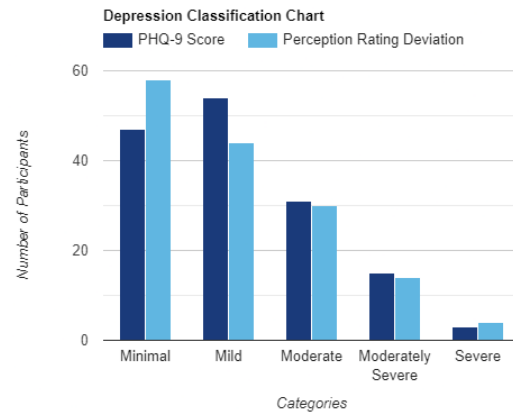


Fig. 3. Distribution of PHQ-9 scores and perception deviation

## 5. CONCLUSION

In this work, we developed a dataset named IIITSaint-EmoMDB consisting of Malayalam language speech samples with emotion ratings in valence and arousal scale and emotional perception ratings from 150 native Malayalam listeners along with their self-reported mental health state. With this dataset, one can be explored the relationship between emotional perception and mental health, focusing on depression and anxiety. Our preliminary analysis suggest a significant association between emotional perception and mental health, with implications for depression and anxiety. This database could be served as a foundation for understanding emotional perception in depressed and non-depressed individuals within this specific demographic, potentially offering valuable insights into mental health assessment and support strategies in Malayalam speaking community. The further developments can be done by increasing the size and diversity of the dataset.

## 6. REFERENCES

- [1] K. Kroenke, R. L. Spitzer, and J. B. Williams. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*, 16(9):606–613, September 2001.
- [2] Robert L. Spitzer, Kurt Kroenke, Janet B. W. Williams, and Bernd Löwe. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*, 166(10):1092–1097, May 2006.
- [3] Sheldon Cohen, Tom Kamarck, and Robin Mermelstein. A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4):385–396, 1983. Place: US Publisher: American Sociological Assn.
- [4] India State-Level Disease Burden Initiative Mental Disorders Collaborators. The burden of mental disorders across the states of India: the Global Burden of Disease Study 1990-2017. *Lancet Psychiatry*, 7(2):148–161, February 2020.
- [5] Shaun M. Eack, Catherine G. Greeno, Michael F. Pogue-Geile, Christina E. Newhill, Gerard E. Hogarty, and Matcheri S. Keshavan. Assessing social-cognitive deficits in schizophrenia with the Mayer-Salovey-Caruso Emotional Intelligence Test. *Schizophr Bull*, 36(2):370–380, March 2010.
- [6] Jack Cotter, Kiri Granger, Rosa Backx, Matthew Hobbs, Chung Yen Looi, and Jennifer H. Barnett. Social cognitive dysfunction as a clinical marker: A systematic review of meta-analyses across 30 clinical conditions. *Neurosci Biobehav Rev*, 84:92–99, January 2018.
- [7] Dianne M. Hezel and Richard J. McNally. Theory of mind impairments in social anxiety disorder. *Behav Ther*, 45(4):530–540, July 2014.
- [8] A. T. BECK, C. H. WARD, M. MENDELSON, J. MOCK, and J. ERBAUGH. An Inventory for Measuring Depression. *Archives of General Psychiatry*, 4(6):561–571, June 1961.
- [9] American Psychiatric Association and American Psychiatric Association, editors. *Diagnostic and statistical manual of mental disorders: DSM-5*. American Psychiatric Association, Washington, D.C, 5th ed edition, 2013.
- [10] Kamaldeep Bhui, Nasir Warfa, Patricia Edonya, Kwame McKenzie, and Dinesh Bhugra. Cultural competence in mental health care: a review of model evaluations. *BMC Health Serv Res*, 7(1):15, December 2007.
- [11] Anja Stuhmann, Thomas Suslow, and Udo Dannlowski. Facial emotion processing in major depression: a systematic review of neuroimaging findings. *Biol Mood Anxiety Disord*, 1:10, November 2011.
- [12] Steven R. Livingstone and Frank A. Russo. The Ryerson Audio-Visual Database of Emotional Speech and Song (RAVDESS): A dynamic, multimodal set of facial and vocal expressions in North American English. *PLoS ONE*, 13(5):e0196391, May 2018.
- [13] Carlos Busso, Murtaza Bulut, Chi-Chun Lee, Abe Kazemzadeh, Emily Mower, Samuel Kim, Jeanette N. Chang, Sungbok Lee, and Shrikanth S. Narayanan. IEMOCAP: interactive emotional dyadic motion capture database. *Lang Resources & Evaluation*, 42(4):335–359, December 2008.
- [14] Amir Zadeh, Paul Pu Liang, Soujanya Poria, Prateek Vij, Erik Cambria, and Louis-Philippe Morency. Multi-attention Recurrent Network for Human Communication Comprehension. *Proc AAAI Conf Artif Intell*, 2018:5642–5649, February 2018.
- [15] Charles Spielberger, Richard Gorsuch, Robert Lushene, PR Vagg, and Gerard Jacobs. *Manual for the State-Trait Anxiety Inventory (Form Y1 – Y2)*, volume IV. January 1983. Journal Abbreviation: Palo Alto, CA: Consulting Psychologists Press; Publication Title: Palo Alto, CA: Consulting Psychologists Press;.
- [16] Mary L. Phillips, Wayne C. Drevets, Scott L. Rauch, and Richard Lane. Neurobiology of emotion perception I: The neural basis of normal emotion perception. *Biol Psychiatry*, 54(5):504–514, September 2003.
- [17] Aaron Beck and Gary Emery. *Anxiety Disorders And Phobias: A Cognitive Perspective*. Basic Books, 1985. Google-Books-ID: 4xgyc7pbgH0C.