

# A Short Survey on Methodology for Stress Recognition

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## Abstract:

**I**n this paper we have taken a short survey on methodology for stress recognition from different types of signal like voice, face, and behavior appears in the persons while in stress. Here, some of acoustic features are studied from speech signal to analyze the characteristics and behavior of speech. This survey is done for the purpose of our system which is aim to design for the stress detection and classification related to the student in examination duration. In this, we have major focus on the input type of voice signal from the speech signal. Along with this survey we are going to collect a datasets are used for analysis of emotions for detecting emotions in real time speech.

**KeyWords:** Signal processing, recognition, stress detection, classification

## I. INTRODUCTION

The emergence of Technology in digital era represents a sophisticated achievement in evolutionary history of IT sectors. Stress occurs during the any activity or performance like while communication, play task, drama, stage activity or while in examination like oral or written is called as Laboratory stress. And the persons suffers from this type of stress are called Laboratory stressors. The response of the body in stress is deals with myocardial responses. PNI research suggests that chronic stress can lead to or exacerbate mood disorders such as depression and anxiety, bipolar disorder, cognitive (thinking) problems, personality changes, and problem behaviors [1].

Habitual patterns of thought which influence appraisal and increase the likelihood that a person will experience stress as negative (such as low self-efficacy, or a conviction that you are incapable of managing stress) can also increase the likelihood that a person will become depressed. Symptoms of Major Depression may include: sleep problems; fatigue; appetite changes; feelings of worthlessness, self-hate, and guilt; an inability to concentrate or make decisions; agitation, restlessness, and irritability; withdrawal from typical pleasurable activities; and feelings of hopelessness and helplessness. Depression is also associated with an increase in suicidal thinking and suicidal actions, and may make a person more vulnerable to developing other mental disorders.

Dr. Selye Hans (1979b) was the first to study the effects of stress. He suggested that stress had four basic variations, 1.

Good Stress – Eustress- positive, 2. Bad Stress – Distress 3. Overstress – hyper stress 4. Under stress – Hypo stress. The some changes in personality are not uncommon to observe in people who are stressed: Reduced work efficiency or productivity, Lying or making excuses to cover up poor work, Problems in communication, Social withdrawal and isolation, and Decreased concern with punctuality. In this paper as we are detecting emotions in real time speech and impact of it on Human being Lifecycle. Also trying to classify as per Dr. Selye Hans Classification.

## II. EXISTING APPROACHES AND TECHNIQUES

From the more than five decade researches are involve in speech emotion recognition research. It is found that different speech features represent different speech information (speaker, speech, emotion and so on) in highly overlapped manner. Therefore in speech research, very often features are selected on experimental basis also speech relies on a frequency of voice input Hence the parameter settings is the important.

Ashish Panat and Anita Patil [2] studied the emotions and the patterns of EEG signals of human brain for utility in the diagnosis of psychosomatic disorders in more simple and economical way with the help of ECG signal in their Analysis of emotion disorders based on EEG signals of Human Brain. In [3] & [4], [6] Researchers Z. Khalili et al. have worked on Emotion detection using EEG. In [9] Researcher Prashant Lahane et al. also gave their contribution in Emotion detection using EEG and build a efficient and reliable emotion recognition system. In [10] Researchers Adrian et al. Analyzed the emotion using EEG signals, to monitor high performance athletes. In their work results only provide information about the close relationship between brain activity generated by two emotions. lack of benchmarks was one of the limitations in the development.

Simina Emerich and et al [5]; developed a bimodal emotion recognition system using the combination of facial expressions and speech signals with different classifiers. they uses aSVM(Support Vector Machine), Naive Bayes and K-Nearest Neighbor for their research work. Ritu D.Shah et al [13] Researchers also gave their contribution in Emotion detection using SVM

Selvaraj et al [6] They proved that Both RRS and FVS methods showed similar classification accuracy and combination of non-linear analysis and HOS tend to capture the finer emotional changes. Hurst exponent analyzes the smoothness of a time series and is based on self similarity and correlation properties. It also evaluates the presence or absence of long-range dependence and its degree on a time series [6,7,8].

A Tickle et al [11] Researchers used feature extraction tool, auditory sensors to obtain acoustic features from a set of emotional speech waveform. Their result gave the average accuracy of 83.8% using the Berlin Emotional Database.

Shashidhar G. Koolagudi et al [12] Researchers took a review of existing work on emotional speech processing for carrying out further research. They also showed Types of classifiers used for speech emotion recognition as shown in fig 1.. Review of emotional databases, speech features, and classification models are described. and tried to fill the gap of research in the area of speech emotion recognition.

P. Gangamohan et al,[14,15] Researchers reviewed and analyzed methods used for emotional speech and summarized overview of emotional speech data collection in their contribution towards the Analysis of Emotional Speech. This data collection is developed by different research groups. A hierarchical binary decision tree approach was used to accomplish the goal of research. Researchers characterizing the emotions as deviations in their work. In [16] researcher compare four ways to extend binary support vector machines (SVMs) to multiclass classification and shows that work done with SVM gives result accuracy of 75 to 80%

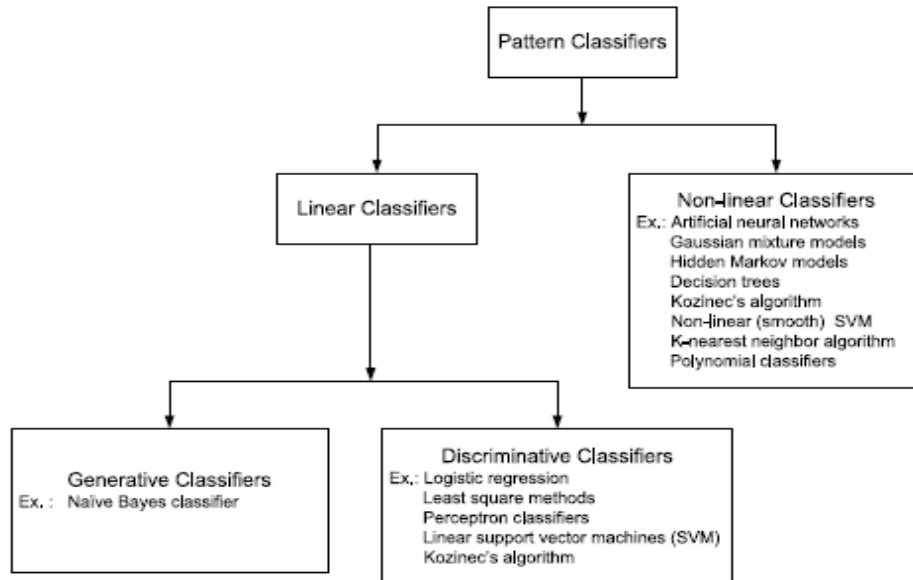


Figure 1: Types of classifiers used for speech emotion recognition [12]

In Berina Alić, et al [22] researchers obtain An accuracy of 99% and specificity of 98% . they uses Artificial Neural Network (ANN) to support stress recognition which is consider as a great tool for classification.

In Akane San et al [23] physiological or behavioral markers for stress done for stress recognition using wearable Sensors and Mobile Phones by the researchers. They consider statistically significant features associated with stress for the recognition . Reserchers' results showed over 75% accuracy

### III. CONCLUSIONS

From the study we observed that due to the lack of information and standardization most of researchers overlap is a common method for research on emotional speech mainly focuses on characterizing the emotions from classification point of view. Majority of the work done and results produced in the literature, are on recognizing speech emotions using ECG Signals. In [16] researcher compare four ways to extend binary support vector machines (SVMs) to multiclass classification and shows that work done with SVM gives result accuracy of 75 to 80%. Accuracy using ANN is about 95-98% which is maximum and the results of wavelet transform are about accuracy 80% to 85%. 75% accuracy obtain in physiological or behavioral markers for stress by researchers using different methods. From the survey it is observe that the there is a few work done on this area of emotion or stress recognition and hence there is a lot of scope of research in this area.

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