



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

Name of the Student : Suman Deb

Roll Number : 136102014

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Thesis Title: Stressed Speech Analysis for Assessment of Emotion and Physical Health

Name of Thesis Supervisor(s) : Prof. Samarendra Dandapat

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SHORT ABSTRACT

Stressed speech or speech under stress is the speech produced with any alteration of speech production from that of the normal or neutral condition. Various reasons, that cause the stress, are emotion, physical exercise, sickness, frustration, workload, sleep deprivation and noisy condition (Lombard effect). Though, speech under emotion and noisy conditions have been studied extensively, few studies have been reported for other stress conditions like physical exercise, sickness, workload and sleep deprivation. In this work, the stressed speech under three different conditions, such as, emotion, physical exercise and sickness, has been investigated.

The first part of the thesis deals with speech emotion analysis. In this part, two breathiness features, harmonic peak to energy ratio (HPER) and multi-scale amplitude feature proposed. Finally, an emotion classification scheme is developed using region switching between vowel-like region (VLR) and non-vowel-like region (non-VLR). The second part of the thesis deals with out-of-breath speech, which is associated with physical exercise. Four features are proposed using mutual information on Fourier parameters. Finally, out-of-breath speech is used to assess the person's physical fitness using Fourier model based Gaussian posteriorgram feature. The last part of the thesis deals with cold speech, which is used to analyze the health of a person suffering from sickness due to common cold