

Machine Learning Approach for Stress Detection using BioSignals

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Abstract

Psychological Stress and Depression have been pinpointed repeatedly as significant issues contributing to the weakening of physical and mental health. Nowadays stress is considered as the biggest threat to individual's well-being. However, stress can be a positive aspect in our daily life, but too much stress can rather be harmful to physical and emotional healthiness where as managing it, is a major concern for populations around the world. Hence, there is significant importance to detect stress in its early stages, before it turns into severe problem. Automatic stress detection can be executed along the four main modalities, viz., Psychological, Physiological, Behavioural and Social Media Interaction modalities, along with appropriate measurements, in order to give hints about the most appropriate ways and means to be used for Psychological Stress Detection.

In Existing system it has proved that stress level can be detected and validated through Heart Rate, Humidity response, Temperature response. These parameters were measured through Fuzzy Logic algorithm. Stress detection in voice gives a great alternative for obtaining a non- invasive way to extract information about a possible deception from a person declaration. Lippold microtremor can be detected through FFT signal processing when a person is under psychological pressure.

This paper speaks about the psychological, physiological, and behavioural modalities for stress detection. The idea is to create a system that accounts these points to add more independency, value and aim to improve the lives of the common people. Proposed system classifies the person as 'stressed' 'not stressed' by taking into account the pupil diameter size and speech of the participant. Threshold calculations are used on the pupil diameter size to detect whether the person is stressed or not and CNN for speech classification.

Index terms

Stress Detection, Pupil Diameter Size, Speech, CNN, Threshold Calculations