

## Chapter 9

# Intelligent Mental Health Analyzer by Biofeedback: App and Analysis

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### ABSTRACT

*Many apps and analyzers based on machine learning have been designed to help and cure the stress issue. The chapter is based on an experimental research work that the authors performed at Research Labs and Scientific Spirituality Centers of Dev Sanskriti VishwaVidyalaya, Haridwar and Patanjali Research Foundations, Uttarakhand. In the research work, the correctness and accuracy have been studied and compared for two biofeedback devices named as electromyography (EMG) and galvanic skin response (GSR), which can operate in three modes—audio, visual, and audio-visual—with the help of data set of tension type headache (TTH) patients. The authors have realized by their research work that these days people have lot of stress in their lives, so they planned to make an effort for reducing the stress level of people by their technical knowledge of computer science. In the chapter, they have a website that contains a closed set of questionnaires from SF-36, which have some weight associated with each question.*

DOI: 10.4018/978-1-7998-1371-2.ch009

## **INTRODUCTION**

As we can see that almost everyone is suffering from many kinds of stress and we all get some indicators which shows that we are suffering from stress rather it be physical, emotional, personal, sleep or behavioral. But manually the level of stress is difficult to calculate and also the people are much more reliable on medication for getting relief. Many times, the individual is lost in physical pleasure, accumulation of facilities and due to lack of right understanding about the self, one bears the ignorance about one's own being. Due to which they suffer from stress most of the time. These consist of pharmacological treatment, physical therapy, acupuncture, relaxation therapy or alternative medicine. So the main focus of our project is to check the stress level of a person and give remedies to them accordingly. We are more focused on giving remedies to people which do not include any kind of medications.[Singh, V. et al., 2018i] and [Saini, H. et al., 2018j]

## **Motivation**

The experimental research work done by us has motivated us to use our knowledge and make an effort to reduce the stress level of people. Automation and mechanization is rapidly increasing with intelligent machines. Science has done miracles and almost in all walks of life, most works are being done by scientific gadgets and it has no doubt made human life simpler. It has helped to handle complex issues but contrary to this, there is a dark side of the picture that it has created some negative aspects and challenging situations too. The present crisis of science to human life is that the stress, tension, depression, anxiety, hatred, headache, frustration, suicidal tendencies and violence is increasing in our world day by day. The happiness index has been reduced rapidly everywhere. The Human personality is degraded in terms of value system.[Yadav, V. et al., 2018k] and [Yadav., V. et al., 2018j] and [Gupta, M. et al., 2019a]

## **Biofeedback**

Biofeedback therapy is a non-drug therapy in which patients learn to control physical processes that are usually involuntary, such as muscle tone, high blood pressure, and heart rate.

Useful for various conditions such as chronic pain, urinary incontinence, high blood pressure, tension headaches, and migraine. Because the disease is non-invasive and does not include drug therapy, the risk of side effects is low.[Nordqvist, J. 2018].

## **Working of Biofeedback**

Biofeedback therapy by interpreting factors such as brain electrical activity can help people change their unhealthy habits.

There are three common ways to treat biofeedback.

- Thermal biofeedback measures skin temperature.
- An electromyogram measures muscle tone.
- Neurofeedback or EEG biofeedback focuses on brain electrical activity.

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