# A Study on Emotional Classification Algorithm using Vibraimage Technology

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## ABSTRACT

According to the growth of mechanical and technical development of IT technology, development of new technologies has been attempted by combining the human sensitivity into the existing technology. Particularly, studies to predict recognition based on the physiological signal sensitivity are performed actively. Signal quality of the direct contact sensor is accurate but it is inefficient to use, and the sensitivity measurement of physiological responses of human beings through contact sensing has environmental limitations such as the existing burden and uncomfortable feeling of wearing. Thus, techniques that can be detected by recognizing sensitivity in a free range are required to overcome these problems. In this study, the Vibraimage(vibration imaging) technology based on vestibulo-emotional reflex (VER) is trying to classify on the basis of the sensitivity of two-dimensional emotion model as the non-contact sensing technology. Russell's emotional state model based on the pleasure, displeasure, arousal, relaxation was given as the emotional stimuli. In accordance with confirming the pattern of emotional changes through parameters acquired from the vibration imaging techniques, as a non-contact sensing technology, the Vibraimage technology contributes to the study of sensitive classification.

Keywords: Vibraimage, VER, Russell model

## 1. Introduction

### A. Purpose and necessity

As an existing technique for recognizing a biological signal of people, there have been used ECG(Electrocar diogram), HRV(heart rate variability), PPG(Photoplethy smogram), SKT(skin temperature), EEG(electroencephalo gram) (Jerritta Selvaraj et al., 2013). Using a bio-signal measurement tool, we can measure body condition like as autonomic nerve system and changes of body reaction. However, there was a limit to applying an existing bio-sensor because of the inconvenience of wearing sensors and situational constraints (Tea-Kyeong Lee et al., 2006).

The purpose of this study is to investigate emotional classification algorithms by using new biological sensor Vibraimage technology. Vibraimage technology is non-contact sensing method to detect human psychophysio logical condition which comes from calculated micro-vibration using a video source (V. A. Minkin, 2008). We propose algorithms inferring from 10 kinds of psychophysiological parameters related to the emotional state of human which is a combination of amplitude and frequency contents. Each factor is extracted from the change of video images.

### B. Research proposal

Children expressed their feelings honestly and immedia tely. On this study, first of all, Vibraimage technology extracts valid variables and is displayed in two-dimensional structure of emotional feeling of children. Through a process of finding out what the vibra valid variable associated with the 4-quadrants, new biometric technology is created by using only deduced vibra variables from video images.

## 2. Theoretical Background