STRESS DETECTIONUSING IMAGE PROCESSING AND MACHINE LEARNING

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ABSTRACT

The main motive of our project is to detect stress in the IT professionals using theatrical Machine learning and Image processing techniques. Our system is an enhanced version of the old stress detection systems thatkeep outlive detection and personal counseling. The system supports live detectionand regular analysis of employees. It detects both physical and mental stress levels and furnishes proper remedies by providing survey forms systematically. Our system mainly preventative measures that can help focuses on managing stress and you cope with it. Only medical making the working environment and physiological specialists will healthy and spontaneous for the currently decide whether or not.

Keywords – Stress, Facial Expression,Deep Learning,Framework.

INTRODUCTION

Stress management mechanisms are essential in detecting stress levelsthat interrupt our socioeconomic lives. According to the World Health Organization (WHO),stress isa mental health issue that affects one out of every four people.This necessitates the provision ofcounseling to help depressed people cope.It is notpossible to handlestress, so taking preventative measures can help you cope with it. Only medical and physiological specialists will currently decide whether or not anyone is depressed (stressed). Questionnaires are one of the most common methods for detecting tension.This approach is entirely dependent on the responses provided byindividuals.people wouldbe hesitant to state whether they are anxious or not.Automatic stress monitoring reduces the risk of health problems and increasessociety's well-being. Investigated stress using data from respiration, heart rate (HR), facial electromyography (EMG), Galvanic skin response (GSR) foot, and GSR hand, concluding that features related to the respiratory process are important in stress detection. Maria Viqueira et al.define a method for predicting mental stress using a standalone stress sensing hardware with GSR as the only physiological sensor. David Liu et al. proposed a study based entirely on electrocardiograms to predict stresslevels (ECG). In, the effectiveness of multimodal sensors in detecting discomfort in working persons has done byinvestigated experimentally. It makes use of sensor data from pressure flow, heart rate, blood volume pulse(BVP), and electrodermal function, among other things (EDA). An eye-trackingsensor isused, which analyses the eyemotionswith stressors such as the Stroop word examination and data from pickup activities. The investigators used a series of non-invasive sensors to monitor potential tension using physiological cues such as ECG, GSR, Electroencephalography (EEG), EMG, and peripheral oxygen saturation (SpO2). Physiological sensor data such as GSR, EMG, HR, and Respirationare functional to estimate continuous stress levels. By developing ICT-associated Stressors, we can efficiently detect stress levels using Skin conductancelevel (SCL), HR, and Facial EMG sensors. Several pattern recognition algorithms allow for automated stress detection. Per sensor reading is related to a stress indexused todetermine stress levels.

SYSTEM ANALYSIS

EXISTING SYSTEM

Practicing pressure detection on a current device depends on the optical signal processingthat monitors Galvanic skin response, blood flow, pupil increase, and skin temperature. Another research on this topicrelies on various physiological cues and facial features to track a person's stress levels when they are at work.

PROPOSED SYSTEM

The current system relies onoptical signal processing to identify tension,which considers Galvanic skin response,blood pressure,pupil dilation,and skin temperature.The proposed system Machine Learning algorithms are applied to classify stress.Image processing is at the initial stage for detection.By taking input as image and output may be image or characteristics associated with those images. It displays emotion on the rounder box.The stress levelindicating by anger,fear,Disgusted.

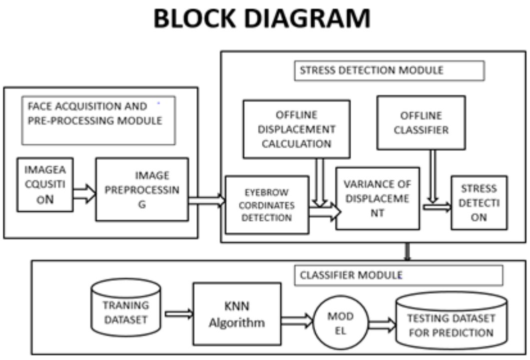


DIAGRAM FOR DATAFLOW

Fig 1: SYSTEM ARCHITECTURE

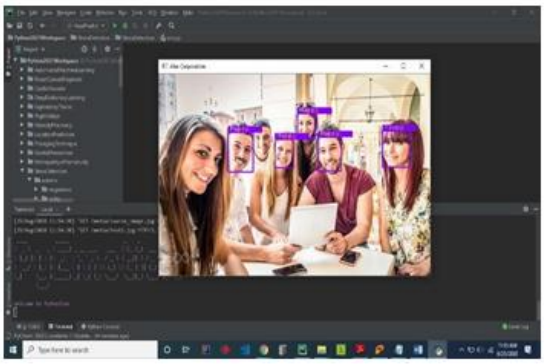
Bubble map is another name for a DFD.It is a basic graphical formalism used to describe a device interms of that data receiver,that processing it performs on that data itgenerates as output.

DFD depicts how the data flows through the system and is transformed by a sequenceof transformations.It's a schematic representation of data flow. These transformations occur when data travels from the input to output.

One of the most popular simulations of the methods is the dataflow diagram(DFD).It representsthe system's various components. DFD defines a system structure.It categorizes the system into two categories, representing a different level of knowledge flow and functional detail.

RESULT

Home Page



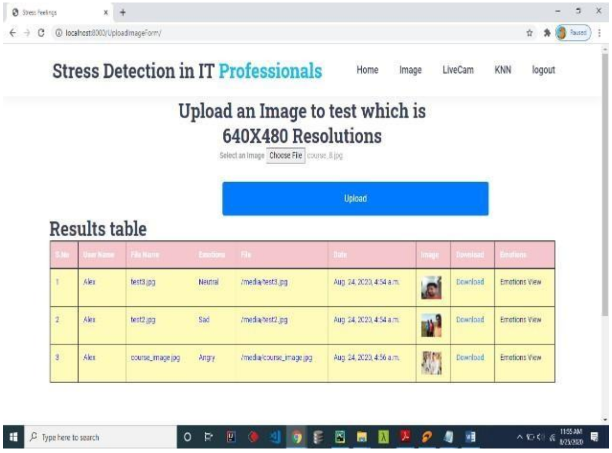
User Register page

User Login Form

User Home Page

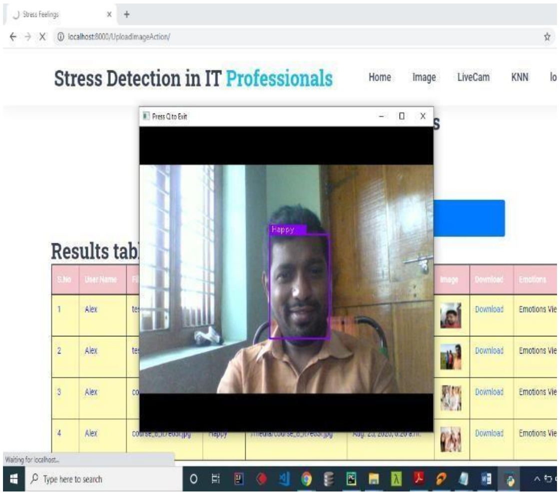
Giving Image as Input

Upload Image



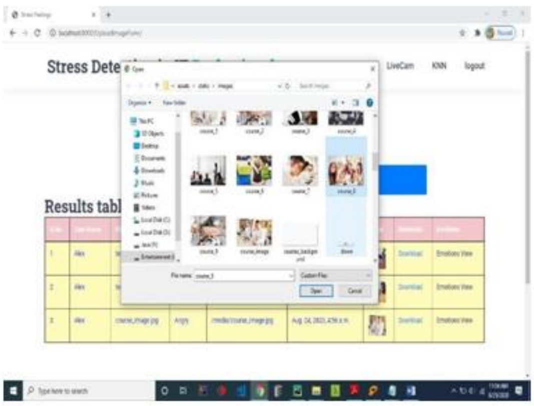
Response Image

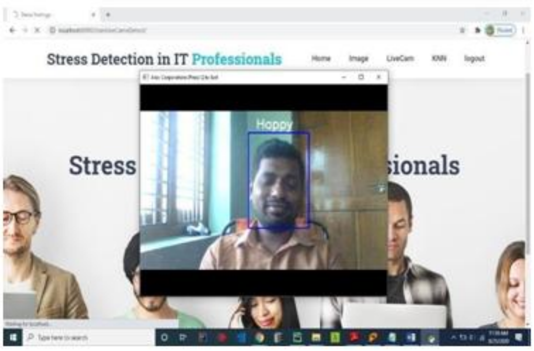
Live Stream



Results

Deep Learning Frame Result

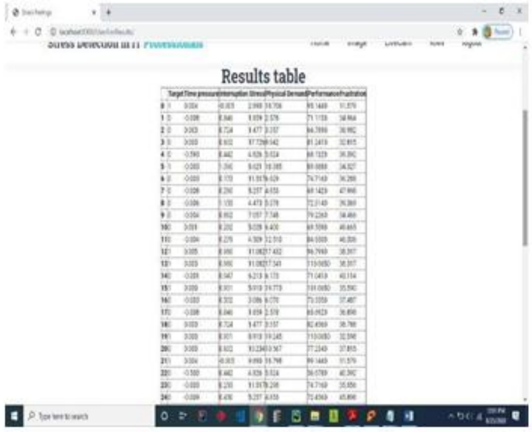




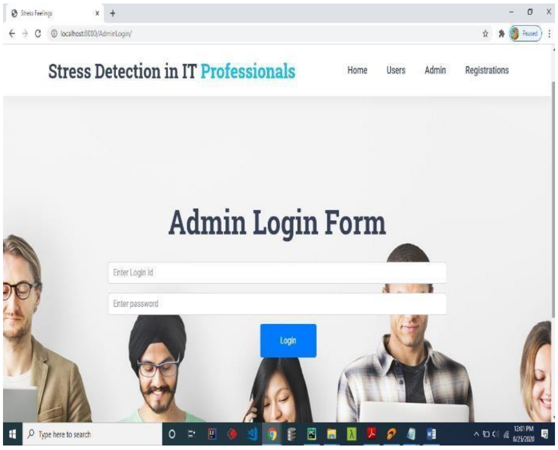
Deep Learning Frame

KNN Results

Dataset View

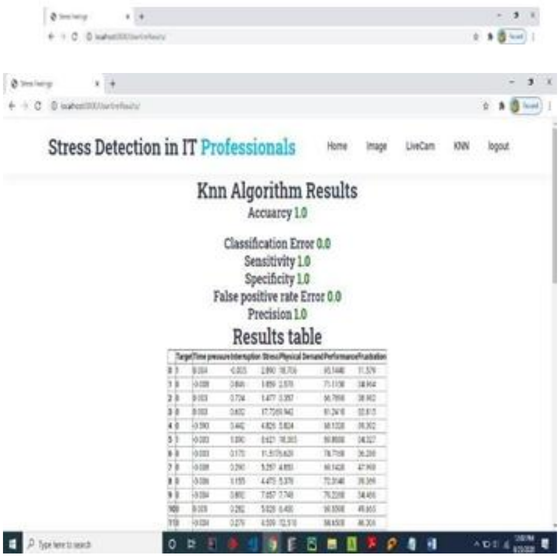


Admin Login Form



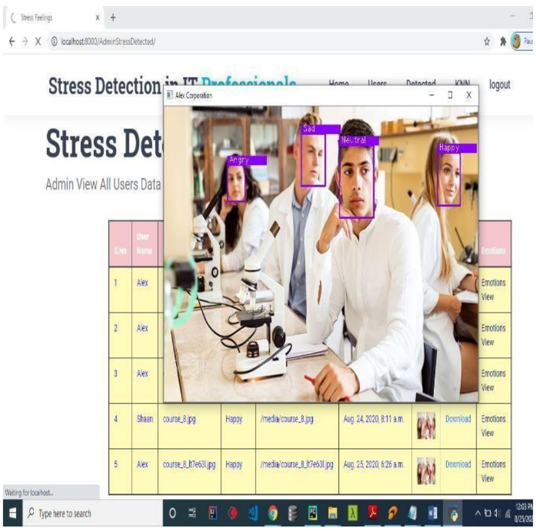
Admin Home Page

Activate Users

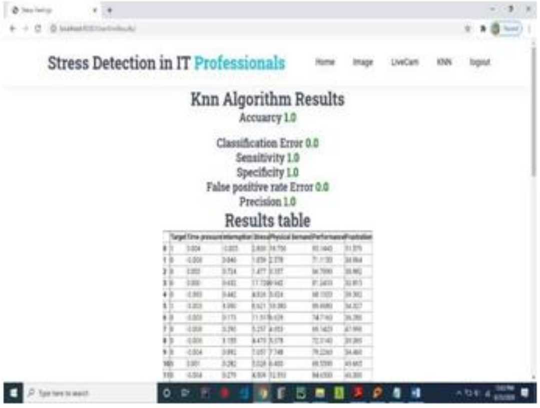


Detected Images

Admin side Results



KNN Results



CONCLUSION

The stress detection system monitors recorded photographs of authenticated users to anticipate stress in workers,making the system safe.When the authenticated user logs in,the image capture is performed automatically depending on the period time. Depending on specific methods of transferring and viewing images, photographs help in detectinguser conflicts. The framework would then use machine learning algorithms to evaluate the tension thresholds,resulting in more effective performance.

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