Synopsis

**Title:**

Emotional Artificial Intelligence

**Introduction:**

Since the last decade, studies on human facial emotion recognition have revealed that computing models based on regression modeling can produce applicable performance . Emotion detection and recognition were introduced by researches with human observers. Automatic recognition and the study of the facial emotional status represent substantial suggestions for the way in which a person performs, and these are very helpful for detecting, inspection and keeping safe vulnerable persons such as patients who experience mental issues, persons who endure signiﬁcant mental pressure and children with less ability to control themselves.

With emotion recognition ability, machines such as computers, robots, toys and game consoles will have the capability to perform in such a way as to inﬂuence the user in adaptive ways relevant for the client’s mental condition. This is the key knowledge in recently proposed new ideas such as emotional computers, emotion-sensing smart phones and emotional robots . Over the last decade, most studies have focused on emotional symptoms in facial expressions. In recent years, scientists have studied effective transition through body language. The recognition of entire body gestures is expressively more difﬁcult, as the shape of the human body has more points of freedom than the face, and its overall outline differs muscularly through representative motion. The research presented in this paper is an extension of our previous conference article .

Signal and image processing and pattern recognition methods deliver a fundamental role for efﬁcient computing. Firstly, the emotional state of a person can be detected from their facial expression, speech and body gestures by imaging systems. Secondly, the features can be extracted from these recordings on the basis of signal and image processing methods. Finally, advanced pattern recognition methods are applied to recognize the emotional states. As far as is known, this is the ﬁrst time that automatic emotional state detection has been successfully implemented on an embedded device (the ﬁeld-programmable gate array—FPGA). The proposed system is 20 times faster than the Graphics Processing Unit (GPU) implementation and can analyze 30 frames per second in real-time. In this paper, the technique’s implementation and the evaluation of both results are presented. The system is able to display the real-time and automatic emotional state detection model on the connected monitor.

**Project Domain:**

 Artificial Intelligence & Machine learning.

**Objective Of The Project:**

To develop a system that is capable in understanding, analyzing and responding to human emotions with system generated voice, graphics or executing certain tasks which would involve emotions.

**The Existing System:**

The system which is been already developed has certainly having issues with processing more than one parameter and is implemented in a manner to perform a single task which is less to no use in actual world.

**Current Problems:**

* Analysis is done on the basis of on no more than one parameter.
* Accuracy in solving a problem or detecting a emotion is lower
* Cannot perform more than one context related or out of context task.
* Considerable gap between input and output post-processing resulting in delay.

**Proposed System:**

* Analysis will be done on the basis of more than one parameter
* Accuracy in solving a problem or detecting a emotion will be dramatically increased. Thus, increasing the overall capabilities of the system.
* Would be able to perform more than one context related or out of context task faster as per processing payload.
* Response time for an input provided will be made less platform dependent to stabilize the computations even on low end computers.

**Input/Output Requirement:**

* *Input Requirement:* Webcam, Micro-phone, model(phase-2), bottleneck data.
* *Output Requirement:* Speakers, Display, External/Internal Storage.

**Hardware And Software Requirement:**

* *S/w Requirement:* Anaconda 3, Python, Data Visualization tools like Panda and Tensorboard.
* *Operating Systems:* Windows 8/8.1/10, Linux based.
* *H/w Requirement:* Minimum 8gb Ram, Webcam, Micro-phone, Speakers, Display.

**Future scope:**

* The future enhancement can be an action that is done upon recognition of the emotions. If we get a sad emotion, we can have the system play a song or tell a joke or send his/her best friend a message. This can be the next step of AI where the system can understand, comprehend the user’s feelings and emotions and react accordingly. This bridges the gap between machines and humans. We can also have an interactive keyboard where the users can just use the app and the app will then identify the emotion and convert that emotion to the emoticon of choice.
* With further advancement the development of a humanoid with imitation to a actual human is possible.
* There is a condition in the early stages of the disease known as “facial masking” — the face may become expressionless and the voice may lose its ability to express emotion. Because the patient finds it more difficult to transmit their internal emotional state, the caregiver might start to lose empathy, potentially reducing the quality of care. A "bystander robot" that will subtly monitor the relationship between the patient and the caregiver, and if interactions start to deteriorate, nudge things back in a better direction — by "quizzically looking at the person" who is losing empathy. This type of robot needs what he called "a partial theory of mind model". This requires that the robot has … some model of what the caregiver is feeling and what the patient is feeling.

**Conclusion:**

The software project is not only a unique pattern to decode and reconstruct emotions on a computerized system but the study is one among the pioneer research gleaned from several success and failure literatures providing insight into the importance of the technical factors in understanding the complex structure such as emotions.

The major contribution of this project would be to the open source community proposed by providing a composite model establishing the relationship between the human emotions and computer. The organization concerned with super-intelligent computers and harnessing software technology for competitive advantage can use the findings of the study.