Mood Recognition System

Synopsis
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ABSTRACT

Our Mood Recognition System identifies emotions to the best of its capabilities depending on the internet and the hardware implemented in the system. communication that varies in complexity, intensity, and meaning. Purposed system depends upon human face as we know face also reflects the human brain activities or emotions.

The addition or absence of one or more facial actions may alter its interpretation. In addition, some facial expressions may have a similar gross morphology but indicate varied meaning for different expression intensities. In order to capture the subtlety of facial expression in non-verbal communication,

I will use an existing simulator which will be able to capture human emotions by reading or comparing mood expressions. This algorithm automatically extracts features and their motion information, discriminate subtly different facial expressions, and estimate expression intensity.

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Introduction

An mood recognition system can detect the emotion condition of a person either from his image or speech information. In this scope, an audio-visual emotion recognition system requires to evaluate the emotion of a person from his speech and image information together.

The software described in this SRS will be used to detect people's emotions. This project can be used in several areas that like to measure customer satisfaction in a marketing platform, helping advertisers to sell products more effectively. Real-time mood recognition has been an active field of research over the past several decades. This work aims to classify physically disabled people (deaf, dumb, and bedridden) and Autism children's emotional expressions based on facial landmarks and electroencephalograph (EEG) signals using a convolutional neural network (CNN) and long short-term memory (LSTM) classifiers by developing an algorithm for real-time emotion recognition using virtual markers through an optical flow algorithm that works effectively in uneven lightning and subject head rotation (up to 25°), different backgrounds, and various skin tones. Six facial emotions (happiness, sadness, anger, fear, disgust, and surprise) are collected using ten virtual markers. Fifty-five undergraduate students (35 male and 25 female) with a mean age of 22.9 years voluntarily participated in the experiment for facial emotion recognition. Nineteen undergraduate students volunteered to collect EEG signals.

Initially, Haar-like features are used for facial and eye detection. Later, virtual markers are placed on defined locations on the subject's face based on a facial action coding system using the mathematical model approach, and the markers are tracked using the Lucas-Kande optical flow algorithm. The distance between the center of the subject's face and each marker position is used as a feature for facial expression classification. This distance feature is statistically validated using a one-way analysis of variance with a significance level of $p < 0.01$. Additionally, the fourteen signals collected from the EEG signal reader (EPOC+) channels are used as features for emotional classification using EEG signals. Finally, the features are cross-validated using fivefold cross-validation and given to the LSTM and CNN classifiers. We achieved a maximum recognition rate of 99.81% using CNN for emotion detection using facial landmarks. However, the maximum recognition rate achieved using the LSTM classifier is 87.25% for emotion detection using EEG signals.

Literature Review

There are five basic emotions: happiness, sadness, fear, anger and neutral which were recognized from multiple body movements such as head region, joints, upper and lower body movements, arm bound space to improve the accuracy of emotion recognition system. They have used video datasets to extract motion or kinetic features from speed, space, and symmetry of various body parts under three scenarios as walking, sitting and action independent cases. On extracted geometric and temporal features, ANOVA (Analysis of Variance) and MANOVA (Multivariant Analysis of Variance) were applied to compute relevance of extracted features and normalization of features. To fuse the features, score and rank level fusion techniques were used. As given in the paper, accuracy was 90% in walking, 96.6% in sitting and 86.66% in action independent cases were identified. Thus it can be seen that the feature extraction framework has better understanding of emotions than human beings. Future scope stated in the paper are 1) Along with the body movements, voice and facial expressions can also be taken to improve the performance because action independent scenarios give less accuracy 2) Enhancement in tools to improve communication between human and robots 3) Remote sensing of emotions in case of emergency 4) To implement better tools for training programs in medical rehabilitation centers. 5) Recognizing emotions from body movements is yet to be explored more.

Project Objective

The Objective of this project is to provide its users the most effective result on the system. when a user looks at the window capturing the image of the person, that window must present the emotions of the person. It also includes various datasets that will present when a user presents his/her face. This system will provide the data related to the happiness, sadness, confusion, angry emotion and lots more data is there. When the project is opened, it asks for the human face to recognize and when allowed, then it takes the images and then it specifies the emotion of the person presenting the face. It helps in detecting the emotions if a person is in stress or angry or sad it will specify and will let the observer know as how to help the person, being tested.

Proposed duration time

Procedures	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Requirement Analysis						
Design						
Implementation (Coding)						
Testing						
Maintenance						