International Journal of Scientific Research in Computer Science, Engineering and Information Technology
© 2018 IJSRCSEIT | Volume 3 | Issue 3 | ISSN : 2456-3307

Analyzing the Pain Through Facial Expression

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ABSTRACT

In the present paper classify among different type of soreness by extraction of appropriate facial features and consequent recognition that can be robust to facial expression variations among different samples. Facial features and expressions are critical .Extracting and validating emotional cues through fuzzy analysis concentrate on facial expressions provides key importance for improving the level of interaction of man and machine. A novel fuzzy system is then created, which is based on rules that have been defined through analysis of FAP variations both at the discrete emotional space, for continuous activation assessment.

Keywords : Facial Expression Analysis , Facial Animation Parameters, Fuzzy Network, Rule Extraction, Adaptation, BPA , Fuzzy Relational Mappings , Membership Function

I. INTRODUCTION

As per astrological view Human face is tells about the human being and so many communication and prediction can be measures by face such as; lip reading facial area cheeks ,eyes etc and various expressions shown on the face of human being in different situation when ever he/she is suffering by any type of pain. Interpersonal communication is main part of disease diagnosis predicted by Physicians without interaction by the face expression. Facial expressions are generated by contractions of facial muscles, facial features such as eyelids, eyebrows and lips, often identify by wrinkles. Hence one model a particular expression as a set of given concurrent deformations, facial expression intensities may be measured by determining the geometric deformation of the particular facial features and examining their relation to the ones depicted in the priori represented expressions barring situations of extreme or acted expressions, in most circumstances more than one of these representations may be close enough to the actual measurements. Facial expression representation is an important parameter of this approach is the effectiveness of the image processing procedures. In actual situations, such as processing of visual data from personal interaction feature extraction. The easiest (and safest) way for expression recognizers to get around would be to provide a label for the given sequence. Flexible recognizers should be able to handle the absence of information or evidence and incorporate it into the final estimate. We describe the uncertainty generated during the image processing for feature extraction phase through validation of the results against a set of anthropometric criteria and propose a methodology based on which fuzzy rules containing knowledge on expression analysis and estimation can be evaluated in an uncertain environment. The evaluation of the fuzzy rules representing the mapping between measure features and estimated expression, given the uncertainty contained in the input provided by the image processing.

After the diagnosis of the diseases they prescribe the related treatment for the diseases. After the medicine if the patient is perfectly alright so the treatment is true i.e. true relationship, and if the patient doesn't

get any relief i.e. false relationship .Then once again the patient approach to the Expert. The accuracy of this expert system depends on the accuracy of the data presented to it. The physician subjects the patient to a physical examination from which he obtains more or less objective data .However, measurement errors, organizational problems improper behavior on the part of patients prior to examinations lead to imprecise and sometimes even totally incorrect data and physicians make mistakes, overlook important indications, or fail to carry out a complete examination. Furthermore, they may misinterpret other indications because the boundary between healthy and pathological status is not always clearly defined.. But with this expert system can define the healthy borderline and severe pathological conditions. There has been a growing interest in healthcare among many people. .

Rule-Based Open-Loop Systems

Generally, in open-loop configuration, it is assumed that the pharmacokinetics relationships can be modeled exactly by a linear system some known parameters. Open-loop fuzzy control is based on physiological behavior which is modeled using rules and actions d is used if there is no knowledge about the process, when the rules and membership functions can be extracted directly from the data by clustering the input / output space

3. Fuzzy Methodologies:

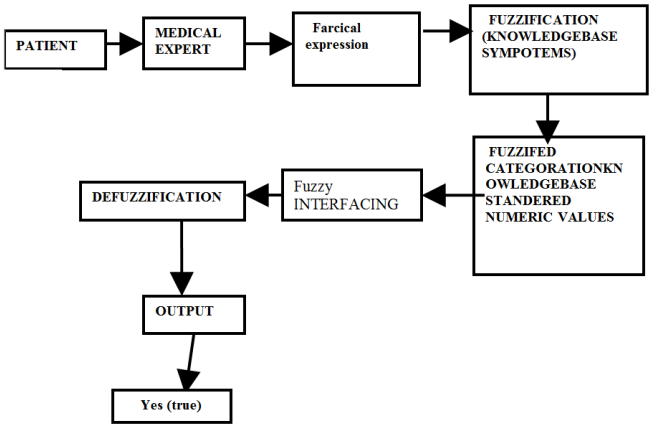

Fig-1

Activation level

A related extension is to think of primary or basic expressions as cardinal points on the periphery of an expression circle. Plutchik has offered a useful formulation of that idea, the 'emotion wheel'; the emotion modified wheel is presented by Figure The activation–emotion space

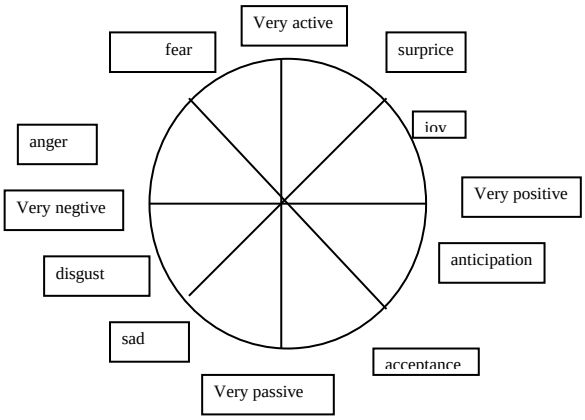

Fig:-2

4. Facial Expression Recognition: Ekman and Friesen find six universal facial expressions that are expressed and interpreted in the same way by humans of any origin all over the orld.They do not depend on the cultural background or the country of origin. Figure shows one example of each facial expression. The Facial Action Coding System precisely describes the muscle activity within a human face .So-called Action Units denote the motion of particular facial parts and state the involved facial muscles. Combinations of AUs assemble facial expressions. Extended systems such as the Emotional FACS specify the relation between facial expressions and emotions.

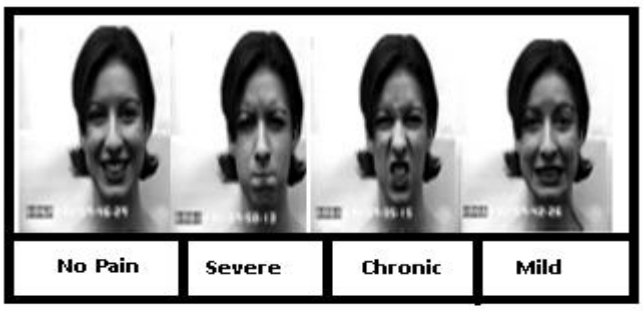

Fig-3

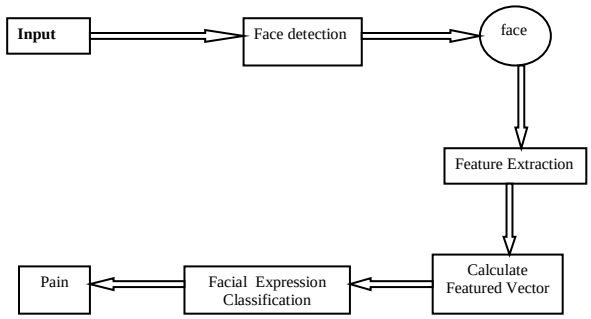

Fig. -4

Procedure for recognizing facial expressions according to Pantic develops into the peak expression. Furthermore, a set of AUs has been manually specified by licensed FACS experts for each sequence. Note that this database does not contain natural facial expressions, but volunteers were asked to act them. Furthermore, the image sequences are taken in a laboratory environment with predefined illumination conditions, solid background and frontal face views. Algorithms that perform well with these image sequences are not necessarily
appropriate for real-world scenes.

II. Feature Extractions

Feature expression representation, an important parameter of the expression analysis process is the effectiveness of the image processing procedures. The appearance and deformation of one or more features may not be available for a given frame of a picture; feature extraction is performed resulting in a set of masks. The left, right, top and bottom-most coordinates of the eye and mouth masks, the left right and top coordinates of the eyebrow masks as well as the nose coordinates, are used to define the feature points. For the nose and each of the eyebrows, a single mask is created. A feed-forward back propagation neural network trained to identify facial area. Second neural network, with similar architecture to the first one, trained to identify mouth regions Luminance based masks, which identify eyelid and sclera regions Edge-based masks. A region growing approach based on standard deviation.

This set of criteria consist of relative anthropometric measurements, such as the relation of the eye and eyebrow vertical positions, which when applied to the corresponding masks produce a value in range [0,1] with zero denoting a totally invalid mask(false membership grade)

III. CONCLUSIONS

Facial appearance study and its classification systems depend on some fuzzy rules for the representation of the knowledge used by the expert system. The facial expression analysis where fuzzy inputs are the output of the imperfect process of feature extraction via image processing, conventional fuzzy rules and conventional rule evaluation methodologies are often inadequate and lead to extremely poor performance and independently apply multiple image processing methodologies by minimizing the uncertainty which indicating the degree to which available knowledge supports the rule it is a reasonable feature of a system approach is dependable and provides wide spread of information to help the physician to reach logical conclusion for a more accurate diagnosis.

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