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SYSTEM FOR EMOTIONAL STATE EVALUATION OF A USER USING A WEBCAM

Abstract

The diploma thesis deals with the evaluation of the user's emotional state using a webcam. The main goal is to implement a system that will be able to automatically classify user emotions in real time based on webcam input data. In the theoretical part, there is an overview of the historical approaches of researchers from the given area. This section describes methods of face detection, facial extraction, and emotional classification. Separate chapters are dedicated to the OpenCV library and the Viola-Jones detector. In the practical part the steps of creating two solutions - face detection in Java and ethical classification thanks to Affectiva SDK are described. We have classified six basic emotional expressions according to Ekman: joy, sadness, anger, disgust, surprise, and fear.

Goals

The main goal of this diploma thesis is to design and implement a system for real-time recognition and evaluation of human emotions based on the face expression obtained with the help of a webcam. The resulting app will provide the ability to analyze the collected data.

Partial goals are:

- Describe the history of research on emotion recognition
- Describe current systems that can be used to detect and track the face, and to classify the user's emotional state
- Describe individual methods for facial image detection, facial feature extraction and emotion classification, and to design our own system based on the analysis of the current state.

Research question

Our research question is: "What is the percentual success rate of emotional evaluation using the software proposed by us compared to the clearly determined emotional states of people, for example, in photographs."

Results

The system is capable of detecting the face within 7.5 meters of the scanning device under normal light conditions, setting the Affdex.FaceDetectorMode parameter to SMALL_FACES. The minimum distance for successful face detection is 20 cm.