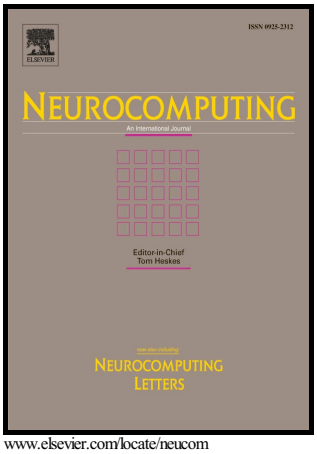

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Recognizing Spontaneous Micro-Expression from Eye Region

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Abstract—Micro-expression is a kind of spontaneous facial expression, which is with short duration and low intensity. Because of its involuntary feature, it is helpful to reveal one's true emotion when someone tries to conceal. Therefore, it has attracted a great of attentions from the field of affective computing. Previous methods focus on recognizing micro-expression on the whole face. In fact, it is worthy to note that micro-expression often appears in the eye area. In this paper, we present a framework to recognize micro-expressions within the eye region, namely eyeME. Specifically, the LBP-TOP feature is extracted from the eye region, and multiple classifiers are trained to recognize the expressions. We test the proposed framework on the widely used CASME2 database. The experimental results showed that the proposed eyeME framework performs better than the methods using the whole face and mouth region when identifying happy and disgust expressions. It confirmed that the information on eye region is critical to the recognition of these kinds of micro-expressions.

Keywords—Micro-expression recognition, eye, local binary patterns, spontaneous expression

1 Introduction

Micro-expression is a kind of short-duration and low-intensity facial expression, which usually just lasts for less than 1/5 second [1]. It usually appears in the moment when someone wants to conceal or restrain their true emotion [2, 3]. Because it is spontaneous and uncontrollable by one's mind, micro-expression is considered as an important cue for revealing one's true emotion or detecting deceptions[4]. In fact, it has a wide range of applications in many fields, such as psychological diagnosis, public security and interrogation[5] etc. Nevertheless, it is difficult for people to distinguish micro-expression in usual communication [6]. Although synthesized micro-expressions could be employed to train people to improve their abilities on distinguishing micro-expressions, such as METT[7], there are much difference between the actions of synthesized and spontaneous expressions[8, 9]. Recently, the compute vision methods for recognizing regular expressions are increasingly powerful[10-13]. It is necessary to develop methods to automatic recognize spontaneous micro-expressions by using computer vision methods.