GLCM Correlation Approach for Blood Vessel Identification in Thermal Image

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Abstract

The maturity of detection in emotions via thermal camera is evolving recently since it is able to detect the hot parts of human face composition replicating the area of blood vessels. The notion of non-invasive tools for data gatherings via a thermal camera has also been vigorously highlighted. We hypothesize that, the impact of cutaneous temperature changes due to blood flows in the blood vessels could be correlated to specific emotion state for healthy as well as autistic children. The autistic children are less able to present emotion through facial expression. In this work, healthy children were assigned as subjects prior to the development of the algorithm for thermal imaging analysis to form a reference model. Facial thermal distribution was analyzed and a technique using Correlation in Gray Level Co-occurrence Matrices (GLCM) was proposed to determine the blood vessels' region. A k-Nearest Neighbor (k-NN) classifier shows a promising result for the proposed method and suggests that these analyses are momentous for distinguishing between five basic emotions and it could be used as non-verbal mediums to help on autistic children.

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