

# Local Entropy and Standard Deviation for Facial Expressions Recognition in Thermal Imaging

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## Abstract

Emotional reactions are the best way to express human attitude and thermal imaging mainly used to utilize detection of temperature variations as in detecting spatial and temporal variation in the water status of grapevine. By merging the two facts this paper presents the Discrete Cosine Transform (DCT) with Local Entropy (LE) and Local Standard Deviation (LSD) features as an efficient filters for investigating human emotional state in thermal images. Two well known classifiers, K-Nearest Neighbor (KNN) and Support Vector Machine (SVM) were combined with the earlier features and applied over a database with variant illumination, as well as occlusion by glasses and poses to generate a recognition model of facial expressions in thermal images. KNN based on DCT and LE gives the best accuracy compared with other classifier and features results.

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