Summary: The main objective of the facial edema evaluation is providing the needed information to determine the effectiveness of the anti-inflammatory drugs in development. This paper presents a system that measures the four main variables present in facial edemas: trismus, blush (coloration), temperature, and inflammation. Measurements are obtained by using image processing and the combination of different devices such as a projector, a PC, a digital camera, a thermographic camera, and a cephalostat. Data analysis and processing are performed using MATLAB. Facial inflammation is measured by comparing three-dimensional reconstructions of inflammatory variations using the fringe projection technique. Trismus is measured by converting pixels to centimeters in a digitally obtained image of an open mouth. Blushing changes are measured by obtaining and comparing the RGB histograms from facial edema images at different times. Finally, temperature changes are measured using a thermographic camera. Some tests using controlled measurements of every variable are presented in this paper. The results allow evaluating the measurement system before its use in a real test, using the pain model approved by the US Food and Drug Administration (FDA), which consists in extracting the third molar to generate the facial edema.

MSC:

94A08 Image processing (compression, reconstruction, etc.) in information and communication theory
68T10 Pattern recognition, speech recognition

Software:

Matlab

Full Text: DOI


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