Abstract

Monitoring respiration rate, i.e. the rate air is inhaled and exhaled is an important indicator of an individual’s health. Respiration rate is generally measured using sensors attached to the patient’s body. These contact based methods have a number of limitations, for example the attached sensor can cause discomfort to the patients. A novel, automated, non-contact based method of respiration monitoring, based on thermal imaging of the skin surface centered on the tip of the nose for the nose breathing as well as the mouth region for the mouth breathing. These methods are developed as well as the Image processing techniques were used to enhance the thermal images, remove unwanted noise and segmented the ROI. In this study the shape and size of the region of interest (ROI) are investigated. The ROI represents the facial affected area most affected by exhaled air temperature changes. This
area is the tip of the nose and the upper lip for the nose breathing and the mouth area for the mouth breathing. Segmenting the ROI was considered an important task in monitoring respiration by thermal imaging. Further work is in progress to enhance the algorithm so that it can cope with very large head movements.

References


**Index Terms**

Computer Science  
Information Science

**Keywords**

Non-contact respiration monitoring  
region of interest  
thermal imaging processing.