Method for Skin Cancer Detection Based on the Application of Statistical Decision Theory to Dynamic Infrared Image Sequences

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Technology description

A method for skin cancer detection based on the statistical processing of sequence of thermal images. This method combines both thermal image sequences and automated, mathematical decision-making algorithms to identify malignant and benign lesions. This approach is a fast, non-invasive and reliable method for detecting skin cancer that also allows for early detection of skin cancer.

Background

The largest organ of the human body is skin and it serves many functions from serving as a germ barrier to controlling the body’ s temperature. Skin cancer can occur anywhere on a patient’ s body, but is more likely to be found in skin exposed to sunlight, such as the face, neck, hands, and arms. Skin cancer is the most common of all cancers and accounts for nearly half of all cancers in the US. There are three types of skin cancer: melanoma, basal cell, and squamous cell. According to the American Cancer Society, 3.5 million cases of basal and squamous cell skin cancer are diagnosed in the US each year and in 2014 alone, 76,000 cases of melanoma were diagnosed.
All types of skin cancers can be treated and cured fairly successfully if found early. Biopsy is the standard technique utilized in diagnosing skin cancer, which involves taking a sample of the patient’ s skin with the size and location(s) of sample depending on severity of the case. With many new cases of skin cancer each year, the medical community has been pursuing a non-invasive method that also yields to an earlier detection of the disease.

Technology Description

Researchers at the University of New Mexico and their collaborators have developed a method for skin cancer detection based on the statistical processing of sequence of thermal images. This method combines both thermal image sequences and automated, mathematical decision-making algorithms to identify malignant and benign lesions. This approach is a fast, non-invasive and reliable method for detecting skin cancer that also allows for early detection of skin cancer.

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Application area

The method can be used to reduce the costs associated with biopsies without sacrificing reliability.
The diagnosis is made in a non-invasive fashion with a fast acquisition and processing. This reduces the waiting time normally associated with biopsies.
The method may be used to not only detect malignant versus benign lesions, but also to distinguish between different types of benign or malignant cases.
Method allows for early detection of skin cancer by reducing the necessity of a biopsy.
Applications in dermatology and medical diagnosis of skin cancer.

Institution

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