

Skin Cancer Detection with Active Thermography

Skin cancer is one of the most dangerous cancer types and to date not yet sustainably curable. Early detection increases the chance for healing and an increased life expectancy. Thus modern and innovative examination methods are crucial factors for skin cancer detection. Using Lock-In thermography and temperature modulated air yields promising results. Healthy skin and lesions undergo different ways of reheating after cooling due to their different metabolic characteristics. The main focus lies on the construction of a new investigation device (inspection head) based on an existing prototype. Modelling and tests are performed in order to develop an optimized and suitable equipment. The diagnostic unit is implemented together with a control unit. In order to assure a safe medical diagnostic unit a risk analysis is carried out and the device is improved accordingly. Usability, weight and shape are designed for user-friendly handling and the Operation of the investigation device is implemented in an optimal way. Preliminary tests at the university hospital of Geneva showed that the technic of Lock-In thermography and the structure of the diagnostic device are useful to distinguish between moles and cancerous lesions. According to dermatologists at the clinic the device system is easy to manage and very comfortable. The Imaging of instant results facilitates a distinct diagnosis. Patients agree that the supply of cooled air down to $-25\text{ }^{\circ}\text{C}$ on skin up to 30 seconds is tolerable. The wiring of the device will be completed after finishing this bachelor thesis and later on the unit will be delivered to the university hospital of Geneva. Medical scientists will conduct a study on patients with suspicion of having skin cancer lesions.



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inspection head