Zurich University
of Applied Sciences

**School of
Engineering**

ICP Institute of
Computational Physics

Android-Based Medical Image Processing

In addition to visual inspection, Lock-In Thermography can be applied to detect carcinogen skin cells. During this procedure, the skin area to be examined is quickly cooled down and its subsequent warm-up phase is captured with an infrared camera. The temperature change is relatively uniform over the entire area. Detailed analysis of these changes require a transition from a time to the frequency domain. The phase images are created by a Fast Fourier Transform (FFT) operation. The resulting images show temperature change over time.

The present work is part of a bigger project in close cooperation with Dermolockin GmbH. The goal of the thesis is to develop an Android application for an existing hardware prototype. The ready-made solution enables dermatologists to recognize carcinogen skin areas. The application processes the images generated by the prototype on a tablet. In addition, it supports the entire process of prototype v1.0, the connection is established automatically and pictures are processed correctly. Furthermore, the application supports prototype v2.0, which is developed in parallel to this thesis and can be adapted to the new device with minimal configuration.

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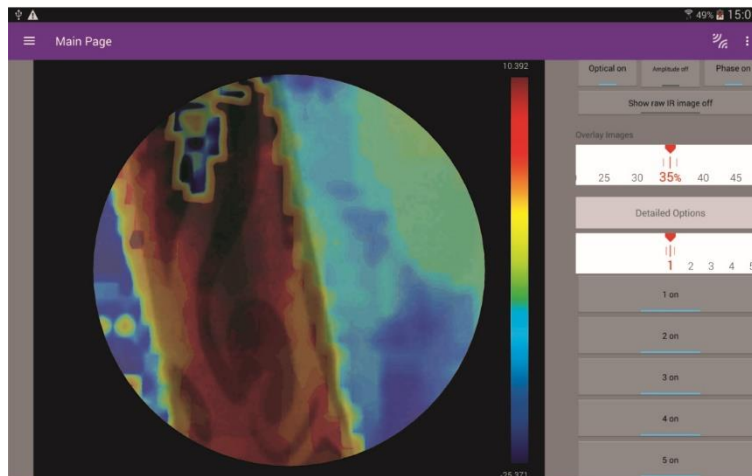
Screenshot of the Android application showing the phase image overlaid over the color image. The menu on the right allows the dermatologist to further investigate the results.