



BA:

## Designing an Android App to Increase UV Awareness for Medical Applications

This document describes the subject and the general time schedule of the group project of Yawhuei Lam, Vijay Sahdeva, and Valerius Huonder, beginning in the spring term 2012. Adaptations or changes can be agreed upon by the advisors.

Sunlight is a driving force for life and, amongst others due to its role in the production of vitamin D, indispensable for our health. However, over the past decades an increasing number of studies warned against the risks of excessive sunlight exposure. A vast majority of people has already experienced the unpleasant feeling of sunburn after having stayed in the sun too long. Unfortunately, the harmful effects can go beyond unpleasant feelings. Long-term damage, such as premature skin aging and skin cancer are severe implications that can result from an overexposure to sunlight, even if no immediate signs of sunburn are visible

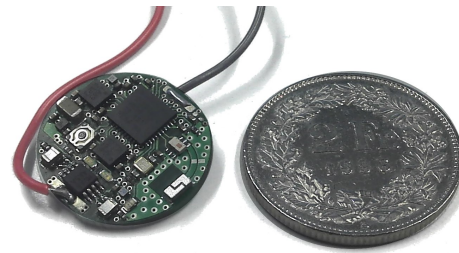
In our lab, we have developed a sensor platform called *Sundroid* that measures UVA and UVB radiation and transmits it to a smartphone over Bluetooth. Sundroid can be used to increase the awareness of people for UV-exposure. Currently this platform is powered by a button cell that has to be exchanged from time to time.

The goal of this thesis is to write an Android application that allows to use the developed sensor for medical studies. The application should allow the users to reflect on their solar exposition and identify the moments, where their behavior was unhealthy. The special focus of this application lies on the stability and simplicity to use. Therefore, it is important that the students design the application carefully and keep the targeted, non-technical users always in mind.

**Requirements:** Good low-level programming skills and experience in hardware design. The student(s) should be able to work independently on the topic.

### Contacts

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## Detailed Project Outline

We denote the following primary tasks mandatory (on the right side you find a rough estimate for the time that we allocate to the respective task):

- Get used to Android platform (★)
- Design and develop the architecture of the application (UML) (★★)
- Implement the Bluetooth connection part (★★)
- Implement the geo-visualization part (★★★)
- Implement the history-visualization part (★★★)
- Implement the server and server communication part (★★)
- Write unit test that test important parts of the software (★★)
- Write a report documenting the development process and the final status of the application and discuss the findings. (★★)
- Prepare a presentation about the results of your work (★★)

## The Students' Duties

- Regular check-ins into the provided *revision control system* (Subversion)
- A final presentation (15 min) of the work and results obtained in the thesis
- A final report (English or German), presenting work and results
- Independent working is expected
- A possibility to work in the ETZ is provided. It is also possible to work at home