SMART BEACHMAT

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ABSTRACT

This project aims to raise awareness, and give users guidance in tracking their UV radiation exposure. The project aims to alert users of dangerous levels of sun exposure, based on the users skin type, skin conditions, gender, and age. Although the sensor doesn't directly capture UV radiation, it estimates it based on a combination of visible and infrared light.

The project makes use of multiple frameworks in order to create a smartphone application capable of communicating with a UV sensing IoT device. Data is also stored on the cloud.

The outcomes of this project include a smartphone application, which allows users to create accounts and log in to track the current UV index. The smartphone application is capable of discovering the UV sensing IoT device nearby, and connect to it. User related data is also stored on the server.

GOALS

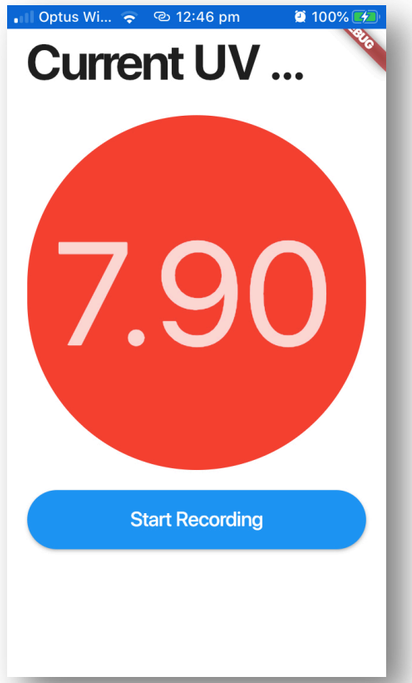
Raise awareness of UV radiation

It's easy to forget that UV radiation is harmful in certain quantities, since we don't necessarily experience any immediate effects.

The UV sensing smart beach mat clip-on aims to raise awareness of the sun's harmful rays by informing the user of their calculated exposure threshold, and notifying them when their threshold is exceeded.

Track UV radiation

The main goal of this project is to give users the control to track and monitor their UV exposure.



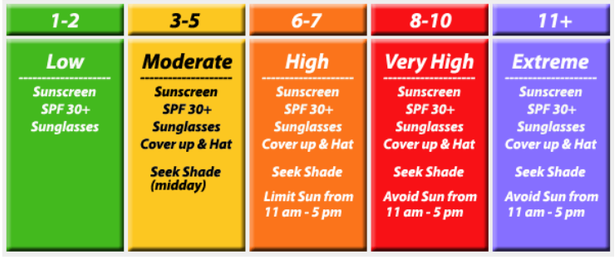
BACKGROUND

UV Radiation

UV radiation is radiation produced by the sun. It causes sunburns, and is also the leading cause of skin cancer in Australia. UV radiation can be high even on cool or overcast days.

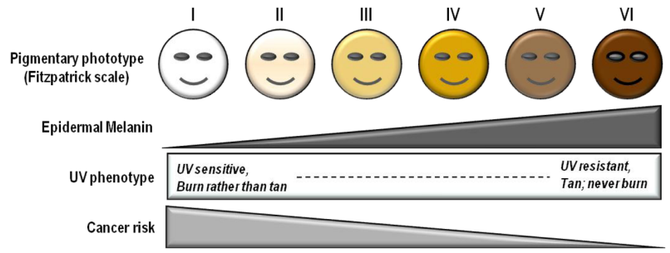
UV Index

UV index is a standard measurement of UV radiation, emitted from the sun. It's an open-ended, linear scale, ranging from 1 to 11+. The lower the UV index, the less harm on the skin.



Fitzpatrick Scale

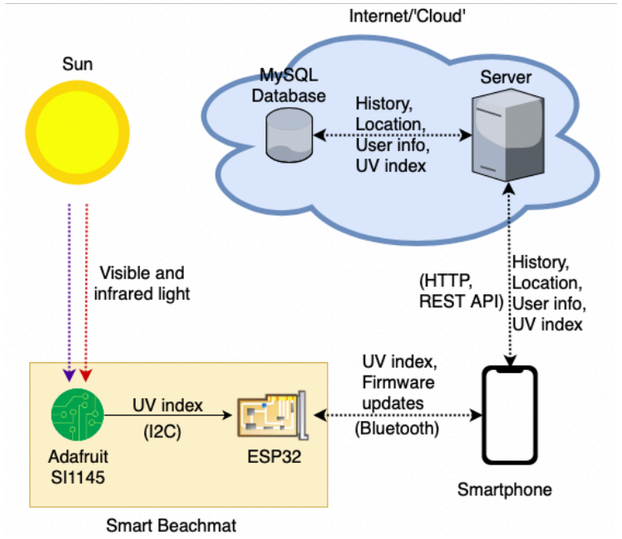
The Fitzpatrick scale is a classification schema for human skin color, and ranges from I to VI. This scale can be used to estimate different skin types' response to UV radiation.



OUTCOMES

Completeness

A smartphone application which can read the current UV index from the smart beach mat clip-on via Bluetooth LE. An API to interact with app for storing user related information. System architecture diagram can be seen below.



Technologies Used

- Flutter (cross-platform app development)
- PHP (backend development)
- MySQL (database storage)
- Arduino (hardware development)