

Abstract

Autonomous solar panel applications are slowly gaining attention in the field of device development and the research in general. Recent increase in the number of autonomous devices has shown that soon, there will be a lot more of interconnected autonomous devices, which do require self-sufficient power supply and storage solution that does consume as little energy as possible. The aim of the given thesis is to analyze the creation and implementation of the autonomous solar powered application, based on the real example of the Smart Road Crossing.

The thesis covers the theoretical knowledge required to understand and navigate the topic, while also providing the functional requirements for the software. The hardware-based constraints are analyzed and the solutions to overcome the nuances are suggested.

The result of this work is the analysis of the Smart Road Crossing and the software implementation and two mobile applications, that are used to interact with the device.

Solution can be further modified and improved to implement the various features to communicate with additional devices or to gather statistical information about the usage of the exact road crossing.

This thesis is written in English and is 58 pages long, including 4 chapters, 17 figures and 3 tables.