Solar Panel Positioning Software

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INTRODUCTION

This project aims to provide an easy and accurate method to position a solar panel at the most optimal angel and tilt. The solution is based on a Mobil application that utilize the GPS and accelerometer in a modern mobile phone to enable the user to position their solar panel quick and easy, no matter where they are located without requiring an internet access.

The aim is also to make the app as versatile as possible; to make it usable both on mounted panels on roofs as well as small panels used for outdoor activity.

Another aspect we would like to focus on is the steady rise of smartphones in 3rd world countries where consistent electricity supply is rare. With this app the efficiency of solar panels in such areas could be greatly improved, resulting in greater independence from faulty national electricity grids.

	Fixed	*Adj. 2 seasons*	*Adj. 4 seasons*
% of optimum	71,1%	75,2%	75,7%

Percentage of optimal output based on times adjusted per year[1]

The gain of around 6% from fixed to adjusting 4 times per year presumes that the fixed panel has the correct orientation and tilt, something which this app will help with.

THE APPLICATION

The prototype application is developed on the Windows Phone platform.
It works by taking the GPS input and the current time and date from the phone, to determine the most optimal angle for the panel. When the user places his phone on top of a solar panel, the app utilizes the build-in accelerometer of any modern phone in order to help the user align the solar panel in the most optimal angle, using GPS-data, time and date as well as alignment of the phone.

FUTURE DEVELOPMENT

We would like to be able to extend development to both Android and iOS in order to reach a greater range of consumers. Another big improvement we would like to take on in the future is the design of a mobile tracking device which a user can fit a solar panel onto, and have the device autonomously track the sun.
This could either require constant connection to a smartphone, via. USB, Bluetooth or even WiFi, or be a closed system with its own sensors.

[1] Table 1 - Charles R. Landau Software Engineer, http://www.solarpaneltilt.com/