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Malmo University ; Media Design Project II
Sensor Stick & Application

Sensor Stick; a perfect gardening tool for for all gardening enthusiasts

Summary

As a gardener it can be diffcult to know exactly when you have to water your plants, beacuse plants need different amounts of water. The moisture in the soil is a complicated process and for new gardeners it can therefore be difficult to know if the soil is too wet or if it's to dry. The sensor stick combined with an application will help new garderns but also experienced garderns to measure the exactly moisture level in the soil. This will help gardeners to provide correct amount of water for their plants both in urban area or indoor plants. "*It will not longer be a problem for garderns to know exactly when they have to water their plants, the sensor stick will do this job".*

Research question

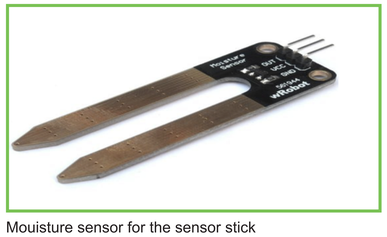
RQ1 How can new gardeners make use of a three layered moisture measuring tools during regular gardening activities?

RQ2 How are the factors indicated the approximate depth of soil to measure the almost exact precision moisture level for plants?

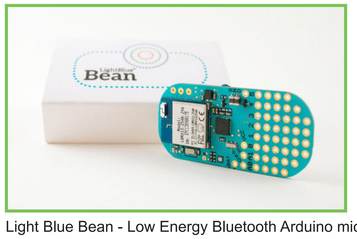
Technologies

The technology needed in order to build the sensor stick prototype consist mainly of an Low energy Bluetooth Arduino and a moisture sensor. The Arduino is a programmable board that we will use to connect the moisure sensor so that we are able to collect and analyze the sensor data. The moisture sensor is a component that has the ability of determining if something touching it is moist or not.

The sensor stick will be supplied with power from batteries. The sensor stick and the application are connected by using bluetooth Low Energy, to transfer data between the application and the Sensor Stick. A moisture Sensor Module for Arduino + Probe, that can measure the moisture levels in the soil. The application is a native android application and coded in JAVA.



Mouisture sensor for the sensor stick

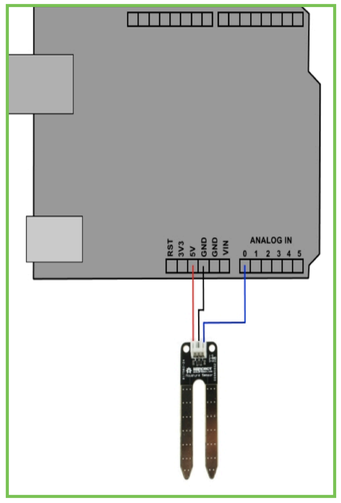


Light Blue Bean - Low Energy Bluetooth Arduino microcontroller

Goal

The goal is that the Moisture Sensor can beused to detect the moisture of soil or judge. If there is water around the sensor and the moisture level is in critical then the blinking light will help gardenders to provide correct amount of water for plants both in urban area or indoor plants.

The goal is also to make the uraban gardeners life a little bit easier and help the gardener to know when he/she have to water their plants. The main goal is that urban gardenes find the sensor stickand the application useful.



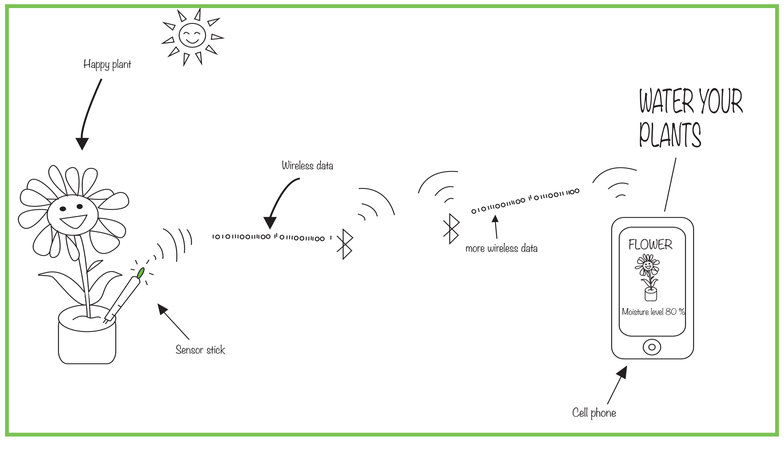
Soil Mouisture sensor; Circuit Diagram

Future work

We plan to develop a mobile application prototype that could help urban gardeners to save the data of moisture at different layers of the soil based on seasons and crop growth stages in different seasons. Future idea is to improve the mobile application by adding features like climatic changes based on the weather report, gardeners personal diary and give suggestions and share information about the crops that grow in different season.

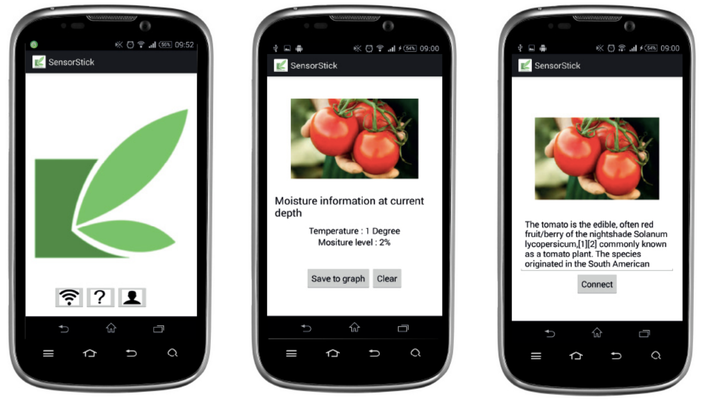
Process Diagram

Below you will find how the process will look like for a stakeholder who are using the sensor stick, combined with an application.



Application

The sensor stick will be combined with an application. Below screenshots from the application.



Result

The result ended in a functional prototype that could sense if the soil was moist or not. If the soil was moist a red lamp started to blink slowly. If the moist in the soil was to dry the lamp would just light. If the moist in the soil was to wet or to mouisture, the red lamp started to blink fast, a **warning**. Below you will find how the sensor look like today, and to the right you will see how the sensor stick could look like in the future.